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British Columbia Hydro and Power Authority

Optional Residential Time-of-Use Rate Application

Decision and Order G-342-23

December 12, 2023

Before:

T. A. Loski, Panel Chair
A. K. Fung, KC, Commissioner

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Executive Summary

On February 27, 2023, British Columbia Hydro and Power Authority (BC Hydro) filed an application for approval of a new, optional time-of-use rate for residential customers (Optional TOU Rate or Rate) pursuant to sections 58 to 61 of the *Utilities Commission Act*.¹ BC Hydro seeks approval of the rate schedule, effective the later of April 1, 2024 or the earliest launch date of the Rate, currently anticipated to be June 1, 2024.

The purpose of the Optional TOU Rate is to encourage customers to shift their electricity usage from periods of BC Hydro’s system peak use to lower-use periods. This will in turn defer capacity investments in BC Hydro’s system, thereby lowering costs for all customers in the long run.

The Optional TOU Rate is an “add-on” rate that applies year-round and every day of the year. Participating customers will be billed for their total electricity usage during a billing period at their existing residential rate. They will then receive a 5-cent credit or charge for each kilowatt hour (kWh) of electricity consumed or no additional credit or charge depending on the time of day the electricity is consumed as shown in the table below. The five-hour On-Peak period between 4 p.m. and 9 p.m. corresponds to BC Hydro’s system peak hours, when system usage is highest. The eight-hour Overnight period between 11 p.m. and 7 a.m. corresponds to times when system usage is lowest.

Period	Time of Day (Every Day of the Year)	Energy Credit or Charge
Overnight	11 p.m. to 7 a.m.	5 cents per kWh energy credit
On-Peak	4 p.m. to 9 p.m.	5 cents per kWh additional energy charge
Off-Peak	9 p.m. to 11 p.m. and 7 a.m. to 4 p.m.	No credit or additional charge

As part of its decision, the Panel finds the 5-cent energy charge and credit, in addition to the definition of Overnight and On-Peak periods, to be reasonable. The Panel also makes the following findings and observations regarding the Optional TOU Rate:

- Using the embedded cost concept is appropriate to assess whether the Overnight energy charge is sufficient and protects customers who do not participate. BC Hydro’s proposed 5-cent credit would yield an Overnight energy charge that is sufficient to recover the relevant costs for the Overnight period, whether customers are billed under the Step 1 or Step 2 of the residential inclining block rate.
- Using a long-run view of costs is more appropriate to assess the On-Peak energy charge. BC Hydro’s proposed 5-cent charge is generally aligned with the On-Peak period marginal cost, whether customers are billed under the Step 1 or Step 2 of the residential inclining block rate.
- The Rate is supported on an economic and cost of service basis, and generally performs well against the Bonbright rate design principles.
- By Year 5, the Rate is expected to have a revenue to cost ratio within about 10 percent of the revenue to cost ratio for the Residential rate class, which is reasonable for a newly established optional rate.

¹ Rate Schedule 2101 – Residential Service – Time of Use Rate.

The Panel also finds the following BC Hydro proposals with respect to the Optional TOU Rate to be reasonable:

- To not escalate the credit and charge under the Rate by the general rate increases for the first five years after the effective date of the Rate.
- To not make the Rate available to customers in BC Hydro's non-integrated area and common areas of multiple occupancy buildings, as well as to customers without smart meters.
- To have the credit and charge under the Rate be applied to the energy the net metering customer receives from BC Hydro during the hour (i.e. deliveries).
- To not apply the Deferral Account Rate Rider to the credit or charge under the Rate.

The Panel approves the Optional TOU Rate and Rate Schedule 2101 as proposed by BC Hydro, effective April 1, 2024, or the earliest date that BC Hydro can launch the Rate. The Panel finds the Optional TOU Rate as proposed by BC Hydro to not be unjust, unreasonable, unduly discriminatory, or unduly preferential.

The Panel directs BC Hydro to file an evaluation report on the Optional TOU Rate no later than March 31, 2029. The Panel approves BC Hydro's request to rescind various reporting requirements from Directive No. 2 of Order G-92-19 and directs that this information be incorporated into BC Hydro's evaluation report on the Rate to be filed in fiscal 2029.

1.0 Introduction

On February 27, 2023, British Columbia Hydro and Power Authority (BC Hydro) filed its Optional Residential Time-of-Use Rate Application (Application) pursuant to sections 58 to 61 of the *Utilities Commission Act*, seeking approval of Rate Schedule 2101 – Residential Service – Time-of-Use Rate (Optional TOU Rate or Rate), effective the later of April 1, 2024 or the first day of the fourth calendar month following the British Columbia Utilities Commission (BCUC) order approving the rate schedule.

In addition, BC Hydro also proposes to file an evaluation report on the Optional TOU Rate in fiscal 2029 and requests to rescind various reporting requirements from Directive No. 2 of Order G-92-19.²

This decision addresses the Panel’s final determinations on the Application. Section 2.0 of this decision addresses specific aspects of and justification for the proposed Optional TOU Rate. Section 3.0 addresses various issues arising regarding the Optional TOU Rate, such as the performance of the Optional TOU Rate under a different default residential rate, customer and stakeholder engagement, and other concerns raised by interveners. Finally, Section 4.0 addresses BC Hydro’s proposal regarding an evaluation report for the Optional TOU Rate and its request to rescind various reporting requirements from Order G-92-19.

1.1 Regulatory Process

By Orders G-49-23 and G-228-23, the BCUC established a regulatory timetable for the review of the Application that included, among other things, a round of information requests (IRs) to BC Hydro, a procedural conference, and a second round of IRs to BC Hydro with limited scope, followed by final and reply arguments.

Six interveners and ten interested parties registered in this proceeding. The registered interveners consisted of:

- Movement of United Professionals (MoveUP);
- Residential Consumer Intervenor Association (RCIA);
- Commercial Energy Consumers Association of British Columbia (the CEC);
- B.C. Sustainable Energy Association and Vancouver Electric Vehicle Association (BCSEA-VEVA);
- BC Old Age Pensioners’ Organization, Council of Senior Citizens’ Organizations of BC, Active Support Against Poverty, Disability Alliance BC, Tenant Resource and Advisory Centre, and Together Against Poverty Society (BCOAPO); and
- Riverside Energy and Brent Lipson (Riverside-Lipson).

The BCUC received 89 letters of comment from members of the public with a mixture of support for and opposition against the Optional TOU Rate. The comments focused to varying degrees on the following:³

- Support for the Optional TOU Rate, especially from customers who own or expect to own an electric vehicle (EV);

² BC Hydro’s amendments to its Electric Tariff to facilitate Residential customers charging of zero-emission vehicles at their dwelling.

³ Exhibit E-1 to E-89.

- Support for the credit component of the Optional TOU Rate, but not the charge component;
- Concern with the proposed On-Peak period;
- Concern that the Optional TOU Rate will become mandatory;
- Concern that customers would be penalized by the Optional TOU Rate due to the inability to shift their electricity consumption;
- Perception that the Optional TOU Rate would only benefit EV owners;
- Perception that the Optional TOU Rate would discourage people from transitioning from fossil fuels;
- Opposition to the residential inclining block rate (RIB Rate), which is currently the default rate that applies to BC Hydro’s residential customers in its integrated area.

2.0 BC Hydro’s Proposed Optional Residential Time-of-Use Rate

The purpose of the Optional TOU Rate is to encourage customers to shift their electricity usage from periods of BC Hydro’s system peak use to lower-use periods. This will in turn defer capacity investments in BC Hydro’s system, thereby lowering costs for all customers in the long run and reducing socio-environmental impacts associated with such investments.⁴

In recent years, the peak demand on BC Hydro’s system has been exceeding its previous peak demands and is forecast to continue rising.⁵ EVs are forecast to be a significant source of peak demand increases and the BC Government is encouraging increased adoption of EVs through the CleanBC plan and the *Zero-Emission Vehicles Act*.⁶ The magnitude of the peak demand directly impacts BC Hydro’s cost of service, with higher peak demand resulting in more demand-related costs.⁷

BC Hydro retained The Brattle Group to inform the development of the Optional TOU Rate. The Application includes evidence prepared by The Brattle Group related to its review of BC Hydro’s capacity savings estimates and the Optional TOU Rate.⁸

The Optional TOU Rate is an “add-on” rate that applies year-round and every day of the year. Participating customers will be billed for their total electricity usage during a billing period at their existing residential rate. They will then receive a 5-cent credit or charge for each kilowatt hour (kWh) of electricity consumed or no additional credit or charge depending on the time of day the electricity is consumed as shown in Table 1 below. The five-hour period between 4 p.m. and 9 p.m. (On-Peak) corresponds to BC Hydro’s system peak hours, when system usage is highest. The eight-hour period between 11 p.m. and 7 a.m. (Overnight) corresponds to times when system usage is lowest.

⁴ BC Hydro Final Argument, p. 3.

⁵ Exhibit B-1, p. 2-11, Footnote 24.

⁶ Exhibit B-1, pp. 2-6 to 2-7, p. 2-11.

⁷ Exhibit B-1, p. 2-11.

⁸ Exhibit B-1, p. 1-3, Appendices E and F.

Table 1: Optional TOU Rate - Energy Credit and Additional Charge⁹

Period	Time of Day (Every Day of the Year)	Energy Credit or Charge
Overnight	11 p.m. to 7 a.m.	5 cents per kWh energy credit
On-Peak	4 p.m. to 9 p.m.	5 cents per kWh additional energy charge
Off-Peak	9 p.m. to 11 p.m. and 7 a.m. to 4 p.m.	No credit or additional charge

In the lead up to filing the Application, BC Hydro explored several alternative rate designs to the proposed Rate, including options with a different number of time-of-use periods, different eligibility criteria and different price ratios. Throughout the proceeding, several alternatives have been explored, including some with alternative amounts for the credit and charge. BC Hydro concluded that the proposed design including the 5-cent charge and credit outperforms the alternatives.¹⁰ To evaluate the potential outcomes from the proposed Optional TOU Rate, BC Hydro developed a reference case as well as low and high sensitivities.¹¹

The Rate is part of a suite of measures that BC Hydro plans to advance to meet the capacity savings targets in its 2021 Integrated Resource Plan (2021 IRP).¹² Consistent with the capacity savings targets set out in the 2021 IRP, which rely more on customer-based solutions than on new infrastructure, BC Hydro expects the Optional TOU Rate will help it meet an expected increase in peak demand driven in part by EV adoption.¹³

BC Hydro has established the following four rate design objectives, which it states are each advanced by the proposals in the Application:¹⁴

- i) Economic efficiency: the rate design should reflect BC Hydro's marginal costs and send price signals that encourage efficient use of electricity and efficient investment decisions by customers;
- ii) Decarbonization: the rate design should support greenhouse gas reductions through electrification where economically efficient;
- iii) Flexibility: the rate design should incorporate flexibility to respond to changes in the economic and policy environment and anticipate the need for greater product and service differentiation in rate design; and
- iv) Affordability: avoiding or mitigating bill impacts to customers.

The implementation activities necessary to enable optional TOU rates includes the Time-Based Billing Infrastructure (TBBI) project. The TBBI project will, among other things, enable the processing of hourly consumption data together with meter readings for billing purposes.¹⁵

⁹ Exhibit B-1, Section 4.2.2, p. 4-9.

¹⁰ Exhibit B-1, p. 4-72; Exhibit B-6, BCUC IR 22.1.

¹¹ Exhibit B-1, p. 4-17.

¹² Exhibit B-1, p. 4-20.

¹³ Exhibit B-1, p. 4-17.

¹⁴ Exhibit -1, pp. 2-5 to 2-6.

¹⁵ Exhibit B-1, pp. 4-85 to 4-86.

In addition to an overall determination on the Optional TOU Rate, the following sub-sections of this decision discuss the basis for the Optional TOU Rate 5-cent energy credit and charge, the economic and cost of service justification of the Rate, and certain terms and conditions of the rate schedule, such as the application of general rate changes, the availability of the Rate, including to net metering customers, and the application of the Deferral Account Rate Rider (DARR).

2.1 The Basis for the Optional TOU Rate Energy Charge and Credit

This section addresses the basis for the Optional TOU Rate energy credit and charge for the Overnight and On-peak periods, respectively, which are both set at 5-cents per kWh.

BC Hydro explains that the ‘add-on’ 5-cent energy credit and charge design enables a wide range of customers to save by participating and helps protect customers who do not participate.¹⁶ On average, residential customers’ total electricity usage during the On-Peak period (26 percent) is almost identical to their total usage during the Overnight period (26 percent). This means that if customers participating in the Optional TOU Rate do not shift any of their load out of the On-Peak period, they would on average, pay the same as they would under their current rate.¹⁷ Further, if participating customers shifted some of their load out of the On-Peak period, they would be able to achieve bill savings.¹⁸

BC Hydro’s reference case reflects its expectation that the ‘add-on’ 5-cent energy credit and charge design would achieve approximately 100 megawatts (MW) of capacity savings by fiscal 2030 at the customer-meter level, which equates to approximately 73 MW at the system level.¹⁹ BC Hydro also anticipates that the value of the capacity savings expected to be achieved by the Optional TOU Rate will exceed the revenue loss and implementation costs by Year 11 (i.e. fiscal 2035) on a levelized basis and by Year 7 (i.e. fiscal 2031) on an annual basis.²⁰

BC Hydro explains that the Optional TOU Rate is priced to reflect the embedded and marginal cost of providing electricity service to customers. With respect to the 5-cent credit for the Overnight period, BC Hydro views that embedded cost is the appropriate concept to consider when assessing whether the energy charge is sufficient and protects customers who do not participate.²¹ To support this, BC Hydro explains that embedded cost refers to the costs that make up the utility’s existing revenue requirement, and rates that are aligned with the embedded cost of service result in a fair allocation of costs between customer classes.²²

BC Hydro’s fully allocated cost of service studies (FACOS) provide unitized estimates of embedded energy-related costs (\$/kWh), demand-related costs (\$/kW-year), and customer-related costs (\$/account-year). Since the Overnight period corresponds to times when system usage is lowest, BC Hydro explains that the Overnight period charge should only recover energy-related costs and contribute towards customer-related cost, but not

¹⁶ Exhibit B-1, Section 4.1, p. 4-1.

¹⁷ Exhibit B-1, Section 4.2.2, p. 4-7.

¹⁸ Exhibit B-1, Section 4.2.2, p. 4-9.

¹⁹ Exhibit B-1-1, p. 4-18.

²⁰ Exhibit B-6, BCUC IRs 2.1 and 12.2.1.

²¹ Exhibit B-1, Section 4.5.1.1, p. 4-49.

²² Exhibit B-1, Section 4.5.1, p. 4-46 and p. 4-47.

demand-related costs, as these costs would not increase because of additional consumption during that time.²³ BC Hydro notes that the need to recover customer-related costs on an energy basis arises because the Basic Charge²⁴ does not recover 100 percent of the customer-related costs per account per year. BC Hydro calculates the customer-related costs not recovered through the Basic Charge on an average per kWh.²⁵ However, BC Hydro confirms that, at a minimum, it should recover the average embedded energy-related cost during the Overnight period.²⁶

Based on BC Hydro's Fiscal 2022 FACOS, the average embedded energy cost is 4.68 ¢/kWh and the contribution towards customer-related costs not recovered through the Basic Charge is 0.45 ¢/kWh for a total of 5.13 ¢/kWh, in fiscal 2025 dollars.²⁷ With a 5-cent credit, the Overnight period charge will be at least 5.96 ¢/kWh in fiscal 2025 dollars when the Optional TOU Rate is added onto the RIB Rate Step 1 charge. Therefore, BC Hydro has selected the 5-cent credit for the Overnight period, instead of a higher or a lower amount, so that the energy charge paid by participating customers would be high enough to recover the embedded energy-related cost and contribute to customer-related costs while maximizing the amount of bill savings provided to participating customers.²⁸ BC Hydro considers the 5-cent credit to be generally cost reflective while also considering the need to provide meaningful bill savings to participating customers.²⁹

Having selected a 5-cent credit for the Overnight period, BC Hydro then turns its attention to the additional charge for the On-Peak period. Since the average residential customers' consumption during the On-Peak period is approximately the same as during the Overnight period, BC Hydro will be able to maintain revenue neutrality (before load shifting) by selecting a corresponding 5-cent charge for the On-Peak period. Then, to validate whether this 5-cent charge is reflective of the cost to serve an additional kWh of electricity during the On-Peak period, BC Hydro considers its marginal costs.³⁰

Marginal cost refers to the change in cost associated with a change in the quantity of production. Since the goal of the Optional TOU Rate is to reduce the amount of consumption during the On-Peak period, BC Hydro submits that marginal cost is the appropriate concept to consider and rates that are aligned with the marginal cost of service send price signals that encourage the efficient use of the electricity system.³¹ BC Hydro uses the reference prices from the IRP proceeding³² to calculate the relevant marginal capacity and energy cost during the On-peak period of 19.56 ¢/kWh. As an additional check, BC Hydro also considers using the embedded energy-related cost of 4.27 ¢/kWh rather than the generation energy long-run marginal cost (LRMC) of 7.99 ¢/kWh to validate the On-Peak period energy charges because the intended goal of the Optional TOU Rate is to achieve capacity savings rather than reducing overall consumption. This calculation method results in a marginal

²³ Exhibit B-1, Section 4.5.1.1, p. 4-48 and p. 4-49.

²⁴ As per the RIB Rate.

²⁵ Exhibit B-6, BCUC IR 7.3.1.

²⁶ Exhibit B-6, BCUC IR 7.4.

²⁷ Exhibit B-11, BCUC IR 57.2.

²⁸ Exhibit B-1, Section 4.5.1.1, p. 4-50.

²⁹ Exhibit B-1-1, p. 4-50.

³⁰ Exhibit B-1, Section 4.5.1.2, p. 4-51.

³¹ Exhibit B-1, Section 4.5.1, p. 4-47 and p. 4-51.

³² As updated in the June 2023 Signposts Update.

cost reference of 15.84 ¢/kWh, which BC Hydro states is also close to the blended On-Peak charge of 17.18 ¢/kWh.³³

Positions of Parties

Intervenors provide argument regarding different aspects of both the Overnight credit and the On-peak charge for the Optional TOU Rate, which are summarized below.

BCSEA-VEVA agree with BC Hydro that the proposed Optional TOU Rate outperforms alternatives and support the 5-cent approach taken by BC Hydro.³⁴

The CEC submits that BC Hydro's LRMC is the appropriate upside metric for evaluating the On-Peak charge because the rate is optional, forward looking, and is intended to address and change future conditions related to potential capacity constraints. It is not intended to reflect the status quo.³⁵

However, the CEC remarks that both the Step 2 On-Peak rate and the blended On-Peak period charge are lower than BC Hydro's marginal cost reference of 19.56 ¢/kWh. The CEC submits that it would be preferable for the On-Peak charge to at least reflect BC Hydro's LRMC. While the CEC would not be adverse to increasing the On-Peak charge in order to reflect the LRMC, the CEC acknowledges the simplicity of the 5-cent charge and credit and expects that this benefit exceeds that of the minor difference in the price signal between the Step 2 On-Peak charge and the LRMC.³⁶ The CEC agrees that the 5-cent credit is close to the upper limit of bill savings that can be provided to customers while still recovering the average embedded energy costs.³⁷

BCOAPO has no issues with BC Hydro's approach to assessing the appropriateness of the Overnight energy credit and notes that the Overnight rates resulting from the 5-cent credit exceed the embedded cost of energy.³⁸

However, BCOAPO has three concerns with the use of the LRMC to determine the On-Peak charge. First, the criterion being assessed is whether the Optional TOU Rate "encourages economic efficiency", and the objective should be to ensure the price signals reflect the economic value of the customer behaviour the signal will incent, and not to maximize bill savings.³⁹

Second, use of the LRMC is inconsistent with the fact that the proposed rate design is for an optional rate, which is intended to be more reflective of the current policy or economic environment than default rates which are

³³ Exhibit B-1-1, p. 4-55.

³⁴ BCSEA-VEVA Final Argument, pp. 7-8.

³⁵ CEC Final Argument, p. 15.

³⁶ CEC Final Argument, p. 15.

³⁷ CEC Final Argument, p. 13.

³⁸ BCOAPO Final Argument, p. 24.

³⁹ BCOAPO Final Argument, p. 20.

designed to take a longer-term view. BCOAPO points to BC Hydro's use of levelized marginal costs⁴⁰ to assess the default Transmission Service rate.⁴¹

Third, BCOAPO has issues with how BC Hydro calculates the LRMC used to assess the On-Peak rate. BCOAPO points out that BC Hydro did not adjust the marginal cost of generation capacity as it did in the economic assessment, and doing so would reduce the marginal capacity and energy cost from 19.56 ¢/kWh to 17.12 ¢/kWh. This compares to the Step 1 On-Peak rate of 15.96 ¢/kWh and Step 2 On-Peak rate of 19.08 ¢/kWh for a blended on-peak rate of 17.18 ¢/kWh.⁴²

BCOAPO submits that if the On-Peak rates are above the marginal cost benchmark, then the rates will encourage load shifting that is not economically efficient. The applicable levelized marginal costs for capacity and energy have not been provided by BC Hydro but BCOAPO expects them to be lower than the LRMC given that some of its components have a lower value during the initial years. Thus, BCOAPO submits that it is far from clear whether the Optional TOU Rate encourages efficient use.⁴³

RCIA submits that the basis for any credit or charge should be limited to consideration of the short-term marginal costs (i.e. the buying or selling of energy by Powerex). RCIA recommends that BC Hydro be directed to confirm the validity of the 5-cent charge by comparing it to the annualized marginal cost of power during the Overnight or On-Peak period. For clarity, RCIA is requesting that BC Hydro confirm that it is indifferent between selling to its customers at this rate or buying or selling (as appropriate) to and from the market. By basing the credit and charge on short-run (i.e. annual) marginal costs, RCIA submits that the Rate will achieve the main goal of this rate design proposal, namely, to reduce residential peak demand.⁴⁴

In reply, BC Hydro states its opposition to RCIA's proposal for BC Hydro to report on the validity of the 5-cent credit and charge. BC Hydro's reasons for basing the Optional TOU Rate on the long-run marginal capacity costs are explained in the evidence of the Brattle Group as referenced below, and BC Hydro continues to submit that, for those reasons, it is appropriate to base the Optional TOU Rate pricing on long-run marginal capacity costs.

BC Hydro's proposed [Optional TOU Rate] design is based on long-run marginal capacity costs. A long-run view of costs ignores near-term market fluctuations and provides a price signal that is consistent with expectations for a utility's steady-state costs.

A benefit of setting the price based on long-run marginal capacity costs is rate and bill stability. If the rate were tied to short-term costs, it would fluctuate as system conditions change and lead to an unpredictable price signal for customers.

⁴⁰ BC Hydro explained that the levelized marginal cost of energy refers to the present value of BC Hydro's annual marginal costs of energy (\$/MWh) over a period of 10 or 15 years divided by the present value of the energy (1 MW/year) over the same period. BC Hydro's 10-year or 15-year levelized marginal cost of energy will differ from its LRMC if there are years within the 10-year or 15-year timeframe where the LRMC would not apply.

⁴¹ BCOAPO Final Argument, p. 21.

⁴² BCOAPO Final Argument, p. 21.

⁴³ BCOAPO Final Argument, p. 22.

⁴⁴ RCIA Final Argument, PDF pp. 8-9.

Customers will make investments based on the price signal in the TOU rate. An unstable, fluctuating price signal is difficult for customers to plan around.

In this proposed [Optional TOU Rate], using long-run marginal capacity costs also supports a larger On-Peak to Overnight price differential and therefore greater bill savings opportunities for customers.⁴⁵

Panel Determination

The Panel finds that the 5-cent energy charge and credit are reasonable and the optimal alternative. The Panel also finds that the definitions of the Overnight period and the On-peak period are reasonable. The Panel notes that the Optional TOU Rate is structured to achieve revenue neutrality before load shifting due to the amount of energy consumed in each period being approximately equal, thereby protecting customers who do not participate in the Rate. Additionally, the Panel notes that the Rate, as structured, is expected to realize significant capacity savings. Furthermore, in the Panel's view, the simplicity of a symmetrical credit and charge will be beneficial to increase customer understanding.

For the determination of the 5-cent energy credit, the Panel is persuaded that it is appropriate to use the embedded cost concept to assess whether the Overnight energy charge is sufficient and protects customers who do not participate. The Panel acknowledges that the Overnight period corresponds to times when system usage is lowest and there is excess capacity on the system. Thus, the Panel agrees with BC Hydro that the Overnight period charge should not recover demand-related costs, but only energy-related costs and a portion of customer-related costs. As explained by BC Hydro, rates that are aligned with the embedded cost of service (i.e. the utility's revenue requirement), result in a fair allocation of costs between customers classes.

Based on the evidence, the Panel finds that BC Hydro's proposed 5-cent credit would yield an Overnight energy charge that is sufficient to recover the relevant costs for the Overnight period, whether customers are billed under the Step 1 or Step 2 of the RIB Rate. Indeed, the Overnight Step 1 and Step 2 energy charges would be 5.96 ¢/kWh and 9.08 ¢/kWh, respectively, with a blended average of 7.18 ¢/kWh, which are all higher than the embedded cost of 5.13 ¢/kWh, in fiscal 2025 dollars.⁴⁶

For the determination of the 5-cent energy charge, the Panel is persuaded that "marginal cost" is the appropriate concept to validate the On-Peak energy charge. The Panel considers this appropriate as the goal of the Optional TOU Rate, which is to reduce On-Peak electricity consumption, is aligned with the definition of marginal cost, which is the change in cost resulting from a change in quantity consumed. Therefore, rates that are aligned with the marginal cost of service send price signals that encourage the efficient use of the electricity system.

While some interveners favour using the short-run marginal cost or the levelized marginal cost as the appropriate marginal cost benchmark to assess the On-Peak energy charges, the Panel finds that using a long-run view of costs is more appropriate. Specifically, it ignores near-term market fluctuations and provides a price signal that is consistent with expectations of the costs of future investments that are avoided or delayed by the capacity savings achieved by the Optional TOU Rate. The Panel agrees that an important benefit of setting the

⁴⁵ BC Hydro Reply Argument, p. 3.

⁴⁶ The embedded cost of 5.13 ¢/kWh is derived as the sum of the 4.68 ¢/kWh energy-related cost and the 0.45 ¢/kWh customer-related costs not recovered through the Basic Charge, based on BC Hydro's F2022 FACOS.

On-Peak energy charge based on long-run marginal costs is rate and bill stability, which in turn will benefit customer understanding and participation. As customers make investments or change their behaviour based on the price signal in the Optional TOU Rate, a price signal that would fluctuate yearly based on short-run marginal costs would be difficult for customers to understand and plan around.

Based on the evidence, the Panel finds that BC Hydro's proposed 5-cent charge is generally aligned with the On-Peak period marginal cost, whether customers are billed under the Step 1 or Step 2 of the RIB Rate. Indeed, the On-Peak Step 1 and Step 2 energy charges would be 15.96 ¢/kWh and 19.08 ¢/kWh, respectively, with a blended average of 17.18 ¢/kWh, which are all close to the long-run marginal cost of 19.56 ¢/kWh, in fiscal 2025 dollars. Given the Panel finds that a long-run view of costs is superior to a short-run view, the Panel does not see the need for BC Hydro to report annually on the validity of the 5-cent charge in relation to short-run marginal costs as RCIA suggests.

2.2 The Cost of Service and Economic Tests and the Bonbright Rate Design Principles

Citing the BCUC's decision in the BC Hydro's 2015 Rate Design Application (2015 RDA),⁴⁷ BC Hydro states that the BCUC has previously determined that a rate must have a cost of service or economic justification.⁴⁸ Thus, the BCUC may only establish rates to advance public policy purposes if the rates are also able to stand independently on an economic or cost of service basis. BC Hydro indicates that this determination forms part of the legal and regulatory context for the Application.⁴⁹ BC Hydro states that the Optional TOU Rate has both these justifications, as it is expected to send price signals that reflect the cost of service and is expected to provide benefits to all customers across a range of potential outcomes.

The following sections will discuss the revenue to cost (R/C) ratio and the cost of service justification, the benefit to cost (B/C) ratio and the economic justification, and the performance of the Optional TOU Rate against the Bonbright principles.

Revenue-to-Cost Ratio and the Cost of Service Justification

BC Hydro's cost of service assessment compares the forecast revenues from customers enrolled in the Optional TOU Rate to the forecast embedded and implementation costs, with the results presented as an R/C ratio. This assessment examines whether cost shifting is to be expected from participating customers to other customers, and if so, the degree to which costs would be shifted.⁵⁰

The Residential R/C ratio based on the recently completed fiscal 2022 FACOS is 97.3 percent.⁵¹ BC Hydro explains that a comparable R/C ratio for the Optional TOU Rate would provide reasonable certainty that the rates will have the same level of cost recovery as the Residential rate class, and therefore, will not result in cost shifting between customer classes.⁵² BC Hydro states that the R/C ratio for the Optional TOU Rate is projected to begin

⁴⁷ BCUC Decision and Order G-5-17, p. 80.

⁴⁸ Exhibit B-1, Section 4.5.2, p. 4-55.

⁴⁹ Exhibit B-7, BCOAPO IR 6.1.

⁵⁰ Exhibit B-6, BCUC IR 12.1.

⁵¹ Exhibit B-7, CEC IR 1.1.

⁵² Exhibit B-1, Section 4.5.2, p. 4-56 and p. 4-57.

at about 82.2 percent in Year 1 (2025) but to rise to 85.6 percent by Year 2, and then to 87.5 percent by Year 5 (2029), 90.3 percent by Year 10, and 92.6 percent by Year 15.⁵³

BC Hydro explains that the lower R/C ratio in the shorter term is expected due to up-front implementation costs and the time required for participation to ramp up. BC Hydro states that the revenue under-recovery from the Optional TOU Rate will be recovered from all customers, including Residential. All else being equal, the Residential rate class R/C ratio is expected to decrease in the early years, and the R/C ratio of all other rate classes are expected to increase. However, in the future, when the R/C ratio of the Rate exceeds the average R/C ratio of the Residential rate class, the Residential R/C ratio is expected to increase and the R/C ratios for all other rate classes are expected to decrease. BC Hydro submits that this temporary cost shifting is reasonable because it enables the future benefits of the Rate to occur. Those longer-term benefits are more significant than the shorter-term cost shifting and will benefit all customers.⁵⁴

Benefit to Cost Ratio and the Economic Justification

BC Hydro's economic assessment of the Rate compares the benefit it expects to gain from participating customers (i.e. the value of capacity savings) to the costs of implementing the Optional TOU Rate (i.e. the revenue loss associated with the corresponding bill savings and the required implementation costs). The result is presented as a B/C ratio. BC Hydro explains that it presents the B/C ratios on a levelized basis to be consistent with the economic assessments it presents in most of its rate design applications.⁵⁵ This assessment examines the forecast incremental benefits and costs of the new rate to determine if all ratepayers can benefit from it. BC Hydro indicates that the main information that the B/C ratio can convey, which R/C ratios cannot, is the benefit (i.e. future cost avoidance).⁵⁶

BC Hydro states that the Optional TOU Rate has a positive B/C ratio over the longer term, across a range of potential outcomes, which means all ratepayers, including those who do not participate, are expected to benefit as a result of the Rate.⁵⁷ Specifically, economic benefits would be realized by all ratepayers and have a downwards impact on electricity rates, with the exception of the low-end sensitivity, which assumes lower participation and less electricity load being shifted out of the On-Peak period compared to the reference case. BC Hydro's analysis shows that, under the low-end sensitivity, the B/C ratio no longer reaches 1 in Year 15.⁵⁸

Under the reference case, the B/C ratio will exceed 1 at 1.08 in fiscal 2035 or Year 11 on a levelized basis. On an annual basis, the B/C ratio will exceed 1 at 1.41 in fiscal 2031 or Year 7, reaching 2.40 in Year 15.⁵⁹ The Optional TOU Rate has a B/C (levelized) ratio greater than 1 over a 15-year period, indicating that the Rate is forecast to achieve benefits for all ratepayers over the long term.⁶⁰ However, as with the introduction of most optional rates, over the shorter term, costs will exceed benefits due to lower initial participation and up-front implementation costs. A B/C ratio lower than 1 means that the implementation costs and forecast revenue loss

⁵³ BC Hydro Final Argument, p. 12.

⁵⁴ Exhibit B-6, BCUC IR 11.1.

⁵⁵ Exhibit B-6, BCUC IR 12.2.

⁵⁶ Exhibit B-6, BCUC IR 12.1.

⁵⁷ Exhibit B-1, Section 4.5.2, p. 4-56; Exhibit B-1-1, p. 4-58.

⁵⁸ Exhibit B-1-1, Table 4-18, p. 4-58.

⁵⁹ Exhibit B-6, BCUC IR 12.2.1.

⁶⁰ Exhibit B-1-1, p. 4-58.

will result in temporary cost shifting to non-participating customers, which BC Hydro states is reasonable because it enables the future benefits to occur.⁶¹

Performance Against the Bonbright Principles

BC Hydro notes that the BCUC has previously determined that the Bonbright rate design principles are consistent with the *Utilities Commission Act* test of fair, just, and not unduly discriminatory rates and form an appropriate foundation for rate structures.⁶² Therefore, BC Hydro has assessed the Optional TOU Rate against these principles and concludes that the Rate performs well against all eight principles as shown in Table 2.⁶³ Recognizing that the assessment of rate design criteria can change over time, BC Hydro considers the Bonbright rate design principles holistically and attempts to balance the most relevant principles based on the circumstances of the particular rate being considered.⁶⁴

Table 2: Bonbright Rate Design Principles Assessment⁶⁵

Bonbright Rate Design Principles	Optional TOU Rate
1. Recovery of the revenue requirement	The R/C ratio for the Optional TOU Rate is forecast to be similar to the overall Residential rate class over the long term and across a range of potential outcomes.
2. Fair apportionment of costs among customers	The Optional TOU Rate is designed to recover the same amount of revenue if participating customers do not shift their electricity use out of the On-Peak period. Thus, on average, participating customers will only achieve bill savings if they shift their electricity use, resulting in corresponding reductions in the cost to provide electricity service.
3. Price signals that encourage efficient use and discourage inefficient use	The Optional TOU Rate sends price signals to encourage participating customers to shift their electricity use to times when more system capacity is available. These price signals reflect the cost to provide electricity service. The 5-cent credit during the Overnight period is designed to recover the embedded cost of energy and the 5-cent charge during the On-Peak period generally reflects the marginal cost of electricity consumption during that time.
4. Customer understanding and acceptance; practical and cost effective to implement	There is strong customer support for optional TOU rates and this Optional TOU Rate was well understood and well received by survey participants. The symmetrical “add-on” design of the Optional TOU Rate is easy to implement, administer and communicate to customers. The Optional TOU Rate is flexible, as it can be added onto any rate structure.
5. Freedom from controversies as to proper interpretation	Since the Optional TOU Rate is optional, customers will not be forced or defaulted into a rate that does not work for them. Over the long term, all BC Hydro customers are expected to benefit from the Optional TOU Rate, whether they participate or not.
6. Rate stability	The Optional TOU Rate is stable, as the credit and charge are fixed and symmetrical. Due to somewhat equal consumption in the Overnight and On-Peak periods, participating customers’ bills

⁶¹ Exhibit B-1, Section 4.5.1.2, p. 4-59.

⁶² Exhibit B-1, Section 2.2.2, p. 2-4.

⁶³ Exhibit B-1, Section 4.7.1, p. 4-68.

⁶⁴ Exhibit B-7, CEC IR 2.4.

⁶⁵ Exhibit B-1, Section 4.7.1, pp. 4-68 to 4-70.

Bonbright Rate Design Principles	Optional TOU Rate
	will not change much if they do not shift their consumption out of the On-Peak period.
7. Revenue stability	The “add-on” nature of the Optional TOU Rate preserves the customer’s underlying rate structure. Revenue loss will generally only occur from customers’ shifting their consumption out of the On-Peak period, which will have corresponding cost reductions for all ratepayers.
8. Avoidance of undue discrimination	The Optional TOU Rate is available to all residential customers in Rate Zone I and provides a wide range of customers with the opportunity to save. All participating customers are provided with the same credit and charge if they enroll.

Further, with respect to price signals, the Optional TOU Rate provides bill savings to encourage customers to shift their electricity consumption from BC Hydro’s system peak period to other periods of the day. BC Hydro estimates that participating customers with an EV could save an average of \$61 per year and up to \$125 per year and customers in electrically heated single-detached homes could save an average of \$40 per year.⁶⁶ The Rate estimates, on average, that customers will save 1 percent to 3 percent in annual bills by shifting household loads out of the On-Peak Period.⁶⁷

According to The Brattle Group, the price differential of 10 cents per kWh between the On-Peak Period and the Overnight Period and the magnitude of potential savings estimated for participants are similar to those of offerings in other jurisdictions. Given that BC Hydro’s participation assumptions are broadly based on experience with TOU rates across a variety of jurisdictions, The Battle Group states that it is reasonable to assume that the bill savings are consistent with the participation assumptions.⁶⁸

Positions of Parties

BCSEA-VEVA, the CEC, BCOAPO, and RCIA made submissions on the cost of service and economic tests, and the Bonbright rate design principles.

BCSEA-VEVA

BCSEA-VEVA agree with BC Hydro’s assertion that a rate intended to advance a public policy purpose must also have cost of service or economic justification and submit that the Optional TOU Rate does have both⁶⁹ Also, BCSEA-VEVA submit that the Optional TOU Rate performs well against the Bonbright principles of rate design.⁷⁰ In BCSEA-VEVA’s view, the Optional TOU Rate provides an incentive for residential customers to shift their electricity usage from the On-Peak Period to the Off-Peak Period.

Specifically, BCSEA-VEVA agree with BC Hydro that the Optional TOU Rate “has a similar R/C ratio as the overall Residential rate class, across a range of potential outcomes.” Also, BCSEA-VEVA are satisfied on the evidence that implementation of the Optional TOU Rate will benefit all BC Hydro customers by deferring the long-term

⁶⁶ Exhibit B-1-1, p. 4-2.

⁶⁷ Exhibit B-6, BCUC IR 4.2.2.

⁶⁸ Exhibit B-6, BCUC IR 4.2.1.

⁶⁹ BCSEA-VEVA Final Argument, p. 11.

⁷⁰ BCSEA-VEVA Final Argument, p. 12.

need for costly improvements to system capacity. As BC Hydro states, “[t]he magnitude of the peak demand directly impacts BC Hydro’s cost of service, with higher peak demand resulting in more demand-related costs.” Furthermore, BCSEA-VEVA agree with BC Hydro that the Optional TOU Rate “has a positive B/C over the longer-term, across a range of potential outcomes. Thus, all ratepayers, including those who do not participate in the rate, are expected to benefit.”⁷¹

The CEC

The CEC submits that the evidence demonstrates that the Optional TOU Rate: 1) will never fully recover its cost of service even under the high-end sensitivity; 2) is not expected to meet even the Residential rate class R/C ratio for 15 years; and 3) will not recover a large portion of its costs ever under the low-end sensitivity, and particularly so in the early years. This will lower the R/C ratio for the whole Residential rate class.⁷² The CEC argues that the R/C ratio of 82.5 percent in Year 1 and targeting an R/C ratio of only 92.6 percent as a final objective in Year 15 can be considered unjust or unreasonable, in that it is clearly insufficient to yield a fair and reasonable compensation for the service provided by the utility.⁷³

With respect to the benefits of the Rate, the CEC submits that all ratepayers will be facing increased bills for a significantly distant benefit when the B/C ratio becomes positive in the future.⁷⁴ The CEC does not agree with BC Hydro on the significance of the benefits. Thus, it recommends the BCUC find the expected benefits to the other classes to be uncertain and likely minimal because the Residential class would otherwise be requiring the peak capacity and incurring the costs for this capacity in the future, whereas the costs of the Optional TOU Rate should be found to be definite.⁷⁵

The CEC submits that the most fair and logical means for the BCUC to address the proposed rates would be to direct that any under- or over-recovery be recovered from or distributed to the Residential rate class through a deferral account instead of from all customers. Recovering costs from the applicable rate class would preserve the R/C ratio of the Residential rate class and appropriately recover costs from those who primarily benefit. Indeed, the CEC submits that the benefits would be avoided costs of capacity required to provide EV charging during peak hours of the day. The capacity costs otherwise would have applied to the residential customers and resulted in cost of service allocations of capacity costs to residential customers with the consequent rate increases in the future, provided that the R/C ratios were maintained at a minimum.⁷⁶

With respect to the assessment period, the CEC submits that a 15-year recovery period is considerably too long to wait for the service to meet even the 93 percent R/C ratio of the Residential rate class. The CEC argues that a maximum of 10 years should be permitted for the Rate to achieve its R/C objective, and that progress should be carefully reviewed by the BCUC after five years.⁷⁷ The CEC also submits that 10 years for the B/C ratio to reach 1 is a considerable length of time for non-residential ratepayers to foot a disproportionate part of the bill for an optional residential rate that would primarily benefit residential EV owners.⁷⁸

⁷¹ BCSEA-VEVA Final Argument, p. 11.

⁷² CEC Final Argument, pp. 28 to 29.

⁷³ CEC Final Argument, pp. 39 to 40.

⁷⁴ CEC Final Argument, p. 29.

⁷⁵ CEC Final Argument, p. 30 and p. 42.

⁷⁶ CEC Final Argument, p. 37 and p. 42.

⁷⁷ CEC Final Argument, p. 41.

⁷⁸ CEC Final Argument, p. 9 and pp. 25 to 26.

Considering the above, in the CEC’s view, the most important and potentially controversial elements for the BCUC’s consideration are the principles of “fair apportionment of costs among customers” and “avoidance of undue discrimination”. The CEC submits that BC Hydro’s analysis, in respect of these two principles, is limited to considerations of participating ratepayers and the residential ratepayer class and does not consider the impacts on non-residential ratepayers. The CEC points out that the Optional TOU Rate is expected to be subsidized by non-residential ratepayers who do not have the opportunity to participate and/or benefit from the avoided costs of capacity, and other non-participating residential ratepayers to a significant extent.⁷⁹

In reply, BC Hydro opposes the CEC’s proposal that the Optional TOU Rate’s costs and foregone revenues be borne by residential customers through a deferral account mechanism. If that were to be the case, BC Hydro explains that the economics of the Rate would necessarily change and the pricing and design itself may also have to change. However, BC Hydro points out that there is no evidence on the record regarding the impacts of CEC’s submission.⁸⁰

BCOAPO

BCOAPO agrees with BC Hydro that the BCUC determination in BC Hydro’s 2015 RDA forms part of the legal and regulatory context for the current Application and submits that there is a need for the BCUC to determine that the proposed rate design can be justified on either a cost of service or economic basis.⁸¹

In BCOAPO’s view, BC Hydro’s cost of service and economic analysis does not adequately justify the Optional TOU Rate. BCOAPO accepts the premise that recovery of the revenue requirement does not have to occur in the first year and every year for a rate design to satisfy the “recovery of the revenue requirement” criterion. However, the issue is that the R/C ratio does not achieve a value of 1 (or more) until after the 15-year evaluation period,⁸² leading to cost shifting and increased rates/bills for non-participating customers for at least the next 15 years. BCOAPO’s concern is accentuated by the fact that all customers are not equally positioned to benefit from the Rate, as those who will achieve the more significant bill savings are: 1) structural winners who tend to have higher levels of consumption, and 2) those able to buy an EV and charge them at home.⁸³ Likewise, the issue with the B/C ratio is that it does not achieve a value of 1 (or more) until 11 years. BCOAPO also considers this to be too long a period for the same reasons as noted above.⁸⁴

With respect to the Bonbright principles, BCOAPO agrees with BC Hydro that they should be balanced based on the circumstances of the rate being considered.⁸⁵ Citing BC Hydro’s evidence in the BC Hydro Transmission Service Rate Design Application, which is an application for a default rate, BCOAPO infers BC Hydro’s view regarding the application of the Bonbright principles in circumstances that involve the design of optional as

⁷⁹ CEC Final Argument, pp. 49 to 50.

⁸⁰ BC Hydro Final Argument, pp. 9 to 10.

⁸¹ BCOAPO Final Argument, p. 7.

⁸² BCOAPO Final Argument, p. 30.

⁸³ BCOAPO Final Argument, p. 19.

⁸⁴ BCOAPO Final Argument, p. 30.

⁸⁵ BCOAPO Final Argument, p. 15.

opposed to default rates. Amongst other points, the fact that optional rates should be more reflective of current economic drivers and, hence, be more reflective of shorter-term considerations.⁸⁶

BCOAPO has serious reservations as to whether the Optional TOU Rate satisfies four of the Bonbright principles and submits that the BCUC should find that the Rate does not sufficiently satisfy the following:

- 1) Recovery of the revenue requirement: BCOAPO questions whether under recovery for a period of more than 15 years satisfies this criterion.⁸⁷
- 2) Fair apportionment of costs: BCOAPO submits that issues of fair apportionment of costs should primarily focus on non-participants because of the cost shifting and increased rates/bills they will be facing.⁸⁸
- 3) Encourage economic efficiency: BCOAPO is concerned with the use of the LRMC and submits that the use of a levelized marginal cost would be more appropriate to assess an optional rate design.
- 4) Revenue stability: 1) revenue losses will not come only from customers shifting their usage out of the On-Peak period but also from structural winners; and 2) the Optional TOU Rate is likely to put upward pressure on the revenue requirement for a significant period going forward.⁸⁹

BCOAPO notes that several of its concerns arise from BC Hydro's definition of marginal cost and the time used for assessment; specifically, BC Hydro's choice on both is inconsistent with the circumstances of the Rate being considered, which is an optional rate, not a default rate. BCOAPO submits that default rates are meant to be more reflective of the longer term and not typically subject to updating, repricing or change as circumstances change. Rather, as stated by BC Hydro, optional rates are designed to be more reflective of current economic circumstances, which means taking a shorter-term perspective when considering the basis for the marginal costs and the evaluation period to be used. As a result, BCOAPO submits that the optional nature of the Rate being considered calls for the use of shorter-term perspectives in terms of the marginal cost to be used and the length of the evaluation period used.⁹⁰

In reply, BC Hydro states that BCOAPO's arguments, taken together, amount to an indefinite rejection of the Optional TOU Rate as BCOAPO makes no proposals to fine-tune the Rate. BC Hydro disagrees with BCOAPO that the Rate fails to satisfy certain Bonbright principles and does not satisfy the cost of service or economic test.⁹¹

BC Hydro understands that BCOAPO's substantive arguments on these points arise from the length of time the Optional TOU Rate will take to show satisfactory B/C or R/C ratios. BC Hydro states that BCOAPO draws an incorrect inference from BC Hydro's evidence in its Transmission Service Rate Design Application. The inference that "[o]ptional rates should be more reflective of current economic drivers and hence be more reflective of shorter term considerations" is not BC Hydro's evidence, is not a necessary inference from BC Hydro's evidence as cited by BCOAPO, and is unsupported by regulatory principles. Regardless, BCOAPO uses this statement as the springboard for its substantive criticisms of the Rate.⁹²

⁸⁶ BCOAPO Final Argument, pp. 15 to 17.

⁸⁷ BCOAPO Final Argument, p. 18.

⁸⁸ BCOAPO Final Argument, pp. 18 to 19.

⁸⁹ BCOAPO Final Argument, pp. 25 to 26.

⁹⁰ BCOAPO Final Argument, pp. 26 to 27.

⁹¹ BC Hydro Reply Argument, p. 13.

⁹² BC Hydro Reply Argument, pp. 13 to 14.

BC Hydro clarifies that while optional rates can better respond to short-term drivers than default rates, this does not mean that all optional rates need to be short-term or have short-term price signals. In fact, BC Hydro expects the Optional TOU Rate to be in place indefinitely and intends for it to help defer capacity investments that are also long term in nature. While BC Hydro states it will be easier to make adjustment to the Rate once implemented than the default rate, it does not mean that the Rate should be assessed as if it were trying to achieve short-term benefits or as if it were to be in place only for a short period of time, which seems to be the underlying premise of BCOAPO's argument.⁹³

Further, BC Hydro submits that BCOAPO incorrectly considers the Bonbright principles and economic and cost of service tests as bright line pass/fail tests. BC Hydro replies that they are not and the BCUC has never applied them in the mechanistic way implied by BCOAPO; rather, the BCUC has proved itself to be flexible in their specific application, as demonstrated in its decision regarding BC Hydro's 2015 RDA. One of that proceeding's central issues was whether the BCUC had the authority to determine preferential rates for low-income customers. The BCUC concluded that it could set preferential rates for these customers, but only if those rates could be supported on an economic or cost of service basis. On this basis, the BCUC approved a rate on a pilot basis that it determined did not need conclusive evidence of an economic or cost of service rationale at the time of approval. Rather, the matter of economic or cost of service was to be assessed after the fact.⁹⁴

RCIA

RCIA compares the Residential rate class R/C ratio of 93 percent based on the Fiscal 2020 FACOS to the Optional TOU Rate's R/C ratio of 82.2 percent in the first year and 92.6 percent in Year 15 for the reference case. RCIA submits that the anticipated low R/C ratio in the near- and mid-term, arising from low participation and high implementation costs, will have a negative impact on non-participating residential customers. As a result, RCIA recommends that BC Hydro evaluate the program on an annual basis to confirm that program customer participation aligns with forecasted levels. If uptake is slower than forecast, BC Hydro should reduce associated expenditures to try to move the R/C ratio closer to 1. This aligns with the Bonbright principles, emphasizing revenue stability and recovery of revenue requirement in the rate design.⁹⁵

In reply, BC Hydro submits that its proposed reporting in fiscal 2029 is adequate for the purpose of the evaluation recommended by RCIA because it will strike a balance between providing early information and obtaining meaningful results. The evaluation will cover a three-year period from fiscal 2025 to fiscal 2027, with analysis conducted in fiscal 2028, and a report being completed in fiscal 2029. In addition, BC Hydro will have ongoing internal monitoring activities to provide high-level indications of the capacity savings achieved and to inform any non-rate adjustments that may be required (e.g. to marketing and communications efforts).⁹⁶

Panel Determination

The Panel finds that the Optional TOU Rate is supported on an economic and cost of service basis, and generally performs well against the Bonbright rate design principles.

⁹³ BC Hydro Reply Argument, p. 14.

⁹⁴ BC Hydro Reply Argument, p. 15.

⁹⁵ RCIA Final Argument, PDF pp. 10-11.

⁹⁶ BC Hydro Reply Argument, pp. 4-5.

The Panel accepts that the Optional TOU Rate must have a cost of service justification and an economic justification to be considered fair, just, and not unduly discriminatory or unduly preferential. However, the Panel is not convinced that the Bonbright rate design principles and economic and cost of service tests should be applied strictly, as pass/fail tests and applied in a mechanistic manner, as implied by BCOAPO.

The Panel observes that, over time, the Optional TOU Rate's R/C ratio is increasing and gradually approaching the overall Residential rate class's R/C ratio, across a range of potential outcomes. By Year 5, the Optional TOU Rate is expected to have an R/C ratio within about 10 percent of the Residential rate class R/C ratio, which the Panel finds is reasonable for a newly established optional rate. When BC Hydro submits its evaluation report by Year 5 and reports on this metric, amongst others, it will be able to better assess whether the Rate is performing as expected or if modifications to the rate design are needed. The Panel is satisfied that, over time, the Rate's benefits in terms of capacity savings will either match or exceed the costs in terms of implementation and revenue loss.

The Panel does not consider the length of time BC Hydro uses to assess its R/C and B/C ratios to be inappropriate. The Panel notes the B/C ratio exceeds 1 in Year 7 by a large margin (1.42)⁹⁷ and on a cumulative (levelized) basis by Year 11. The Panel considers these timeframes to be reasonable especially given the long-term nature of the rate. As BC Hydro points out, the Optional TOU Rate is not a temporary rate, and once approved, will be in place on a permanent basis, as it is intended to help defer capacity investments that are also long term in nature. The Panel recognizes that optional rates can better respond to short-term drivers than default rates, but this does not mean that all optional rates need to be short term or have short-term price signals. Therefore, the Panel is not persuaded by BCOAPO's submissions that the use of a 10-year or 15-year levelized marginal cost would be more appropriate to assess an optional rate design.

The Panel disagrees with the CEC's assertion that the benefits of the Optional TOU Rate would only accrue to residential ratepayers. In the long run, the Rate is expected to provide benefits to all of BC Hydro's ratepayers by avoiding capacity additions in the future. Therefore, the Panel finds unreasonable, the CEC's proposal that BC Hydro set up a deferral account to capture the Rate's under- and over-recoveries to be recovered from or distributed to the Residential rate class.

The Panel notes that inherent in the above CEC proposal, is the recognition that revenues will exceed costs at some point in the future. But rather than being distributed solely to the Residential rate class, these over-recoveries would contribute to increasing the Residential R/C ratio, while the R/C ratios for all other rate classes would decrease. In the Panel's view, this temporary cost shifting is reasonable and not unduly discriminatory because it enables the future benefits of the Optional TOU Rate to occur, which would take the form of a downward impact on rates for all ratepayers.

Furthermore, the Panel is satisfied that the participation assumptions used in the Application are reasonable given that the price differential between the On-Peak Period and the Overnight Period and the estimated magnitude of participant cost savings are similar to those of TOU offerings in other jurisdictions. Although the estimated savings under the Optional TOU Rate are expected to be higher for participating customers who are EV owners, the Panel is satisfied that there would be sufficient expected savings for customers who are non-EV owners to support BC Hydro's participation assumptions in the Application.

⁹⁷ Exhibit B-6, BCUC IR 12.2.1.

2.3 Application of General Rate Increases

BC Hydro proposes that the 5-cent credit and charge stay consistent and not be escalated by the general rate increase each year to support customer understanding.⁹⁸ BC Hydro explains:

If the credit and additional charge amount changed each year along with the general rate increase, it would almost certainly result in the credit and charge not being whole numbers (i.e., there would be decimals). BC Hydro expects that this would reduce the simplicity and ease of understanding of the [Optional TOU Rate], making it more difficult to communicate to customers, potentially impacting participation.⁹⁹

Absent these annual increases, BC Hydro recognizes that over time, the strength of the price signal provided by the 5-cent credit and charge may start to decrease, along with the percentage of bill savings relative to total annual bills and the estimated load shifting. Using the fiscal 2022 average residential customer consumption and escalating the average bills by forecast general rate increases while holding the Optional TOU Rate bill savings constant, BC Hydro estimates the reduction in savings related to household load shifting is only about 0.06 percent and that related to EV charging load shifting is only 0.28 percent during the five-year period.¹⁰⁰

Regarding load shifting, BC Hydro explains that not applying general rate increases to the Overnight period credit and On-Peak period charge will result in a decrease in the TOU price ratios, which is expected to slightly decrease household load shifting over time from 5.5 to 4.8 percent, (i.e. a 13 percent reduction).¹⁰¹

BC Hydro also calculated what the Step 1 Overnight, Step 2 Overnight, and blended Overnight energy charges would be in the following two scenarios: 1) holding the 5 cents per kWh credit constant; and 2) applying the general rate increases to the 5-cent credit. Then, BC Hydro compared the resulting Overnight energy charges against BC Hydro's Overnight cost of service, comprised of the embedded cost of energy and the customer-related costs not being recovered through the RIB Rate Basic Charge. BC Hydro's analysis showed that, even when the 5-cent credit is increased by the annual general rate increase, BC Hydro would be able to recover its embedded cost of service because the Step 1 Overnight charge in that scenario remained higher than the total Overnight cost of service for the entire five-year period.¹⁰²

BC Hydro also calculated what the On-Peak Step 1, On-Peak Step 2, and blended On-Peak energy charges would be in those same two scenarios and compared the resulting On-Peak energy charges against BC Hydro's On-Peak marginal costs. BC Hydro's analysis showed that the resulting On-Peak period energy charges are generally better aligned with the On-Peak marginal costs for the entire five-year period when the 5-cent charge is escalated by the annual general rate increases.¹⁰³

Despite these results, in BC Hydro's view, it is important in the initial stage to offer a rate design that is easy for customers to understand. BC Hydro proposes to include in the evaluation scheduled to be completed by fiscal

⁹⁸ Exhibit B-1, Section 4.2.2, p. 4-8.

⁹⁹ Exhibit B-6, BCUC IR 5.1.

¹⁰⁰ Exhibit B-6, BCUC IR 5.3.

¹⁰¹ Exhibit B-6, BCUC IR 5.1, Table 4.

¹⁰² Exhibit B-6, BCUC IR 5.3, Table 2 and Revised Table 2.

¹⁰³ Exhibit B-6, BCUC IR 5.3, Table 3 and Revised Table 3.

2029, an assessment of whether general rate increases should be applied to the 5-cent credit and charge going forward.¹⁰⁴

Positions of Parties

The CEC recommends that the BCUC deny BC Hydro's proposal for not escalating the Optional TOU Rate credit and charge with the general rate increases.¹⁰⁵ The CEC does not agree with BC Hydro that avoiding such escalation will materially increase customer understanding and acceptance. The CEC submits that having a fixed-rate incentive will weaken the price signal over time and that customers will easily understand and accept that all aspects of their rates may change in price over time. Therefore, the CEC submits that it would be reasonable for the BCUC to allow escalation by general rate increases and review this matter in fiscal 2029.¹⁰⁶

BCOAPO notes BC Hydro's admission that "over time the strength of the price signal provided by the 5-cent credit and additional charge may start to decrease" and the evidence showing that BC Hydro's proposal will reduce the On-Peak load shifting percentage from 5.5 percent in fiscal 2025 to 4.8 percent in fiscal 2030. BCOAPO also notes that participants' bill savings would be higher if the add-on charge and credit were adjusted annually.

While BCOAPO acknowledges BC Hydro's view on the importance of offering an easily understood rate design, it points out that BC Hydro does not round its rate increases to whole numbers nor does it round its price per kWh to whole numbers to increase customer understanding and acceptance. In BCOAPO's view, BC Hydro's customers are sophisticated enough to appreciate the difference between rates per kWh that are not rounded.

Despite this, BCOAPO notes that the impact of holding the add-ons constant on actual household savings (as a percentage of the household bill) is estimated to be small over the first five years and it is not opposed to BC Hydro's proposal to hold the charge/credit fixed at 5 cents/kWh until fiscal 2029.¹⁰⁷

RCIA submits that the credit and charge should be reviewed annually to ensure they reflect the actual cost of supplying electricity in the various time periods to be an effective price signal capable of incenting an ongoing shift in the timing of energy use.¹⁰⁸

In reply, BC Hydro notes its disagreement with the CEC on the following points: 1) the relative importance of this issue versus BC Hydro's concern that a price signal that changes every year will harm customer understanding and make it more difficult to attract customers in the first place; and 2) the timeline over which BC Hydro's preferred approach would be applied. BC Hydro emphasizes that the key aspect of its proposal is to keep the credit and charge constant for "an initial period". Depending on the initial success of the Optional TOU Rate, BC Hydro submits that it may well be appropriate to increase the credit/charge in the future, including potentially by general rate increases. But BC Hydro asserts that changing it every year from the outset will undermine the likelihood that the rate will succeed in meeting its objectives.¹⁰⁹ Regarding RCIA's submission, BC Hydro replies

¹⁰⁴ Exhibit B-1, Section 4.2.2, p. 4-8.

¹⁰⁵ CEC Final Argument, p. 1.

¹⁰⁶ CEC Final Argument, p. 13.

¹⁰⁷ BCOAPO Final Argument, p. 37.

¹⁰⁸ RCIA Final Argument, pdf p. 9.

¹⁰⁹ BC Hydro Final Argument, pp. 6-7.

that its proposed reporting in fiscal 2029 adequately addresses the matter, as it strikes a balance between providing early information and obtaining meaningful results.¹¹⁰

Panel Determination

The Panel finds BC Hydro's proposal to not escalate the 5-cent credit and charge by the general rate increases for the first five years after the effective date of the Rate to be reasonable and believes that the simplicity of this aspect of the rate design is attractive. Having said that, the Panel is not convinced by BC Hydro's argument about the need for round numbers to increase customer understanding. Like BCOAPO and the CEC, the Panel believes that BC Hydro's customers are sophisticated enough to understand the concept of rate changes, which do not always result in round numbers. BC Hydro's general rate increases, along with all parts of the default RIB Rate (Step 1, Step 2, and Basic Charge), are all expressed with two decimal points. However, the Panel is concerned that changing the 5-cent credit and charge by the general rate increases for the first five years may undermine the success of the Rate.

The Panel notes BC Hydro's proposal to evaluate this aspect of the rate design in fiscal 2029 and report on whether general rate increases should be applied to the 5-cent credit and charge afterwards. The Panel agrees with BC Hydro that this aspect of the rate design can be assessed in fiscal 2029, along with the overall Optional TOU Rate. Alternatively, should BC Hydro observe during the first five years that the weakening of the price signal over time is resulting in changed participants' behaviour or enrollment rate and less capacity savings than expected, BC Hydro has the option of filing an assessment report on this aspect of the Optional TOU Rate design at an earlier date.

2.4 Availability of the Optional TOU Rate

BC Hydro proposes that the Optional TOU Rate be available only to customers in its integrated service area. BC Hydro states that there are fundamental differences in the cost of service and customer needs between BC Hydro's integrated and non-integrated service areas. The Optional TOU Rate has been designed based on the economics, cost of service, and customer feedback in its integrated service area only.¹¹¹

BC Hydro plans to file an application to address residential rate design with the BCUC by June 30, 2024, which is expected to include consideration of including non-integrated area (NIA) customers in integrated area residential customer rates to eliminate the pricing differences between these two customer groups. As part of this upcoming application, BC Hydro plans to conduct further analysis and engage with NIA customers to consider options to offer optional TOU rates.¹¹² Due to different electricity demand, supply constraints, peak times, and costs in the NIA compared to the integrated area, BC Hydro states that further analysis is required to determine the TOU rates that could be offered to NIA customers.¹¹³ In BC Hydro's view, it will be efficient and understandable to include consideration of NIA rates, including optional TOU rates, as part of the overall residential rate design application process.¹¹⁴

¹¹⁰ BC Hydro Final Argument, p. 4.

¹¹¹ Exhibit B-1, p. 4-81.

¹¹² Exhibit B-6, BCUC IR 38.4.

¹¹³ Exhibit B-6, BCUC IR 38.3.1.

¹¹⁴ Exhibit B-6, BCUC IR 38.4.

BC Hydro also proposes that the Optional TOU Rate not be available to common areas of multiple occupancy buildings. BC Hydro explains that most residential common areas have a flatter consumption pattern compared to typical residential dwellings. Most strata corporations will not be able to shift the common area load out of the On-Peak period, but they would likely still benefit from the Rate due to their consumption pattern. BC Hydro plans to explore other rate or demand side management program options to encourage residential stratas to manage their EV charging and other consumptions more efficiently in the common areas.¹¹⁵

Further, BC Hydro proposes that the Optional TOU Rate be available to net metering customers for only the energy delivered from BC Hydro to the customer. The availability of the Optional TOU Rate to net metering customers is discussed in Section 2.5 of this decision.

In addition, to take service under the Optional TOU Rate, customers must have a smart meter as defined in Section 1.2 of BC Hydro's Electric Tariff. This is because BC Hydro requires the hourly consumption data in smart meters to be received and processed by its billing system to enable TOU billing.¹¹⁶

Positions of Parties

Intervenors generally do not oppose BC Hydro's proposed availability of the Optional TOU Rate. However, BCOAPO and MoveUP comment on rates in the NIA.

BCOAPO submits that BC Hydro's failure to address the potential impact and availability of the Optional TOU Rate to NIA communities is "a significant lapse when the value and import of Reconciliation is considered." BCOAPO requests that, if the Application is approved, the BCUC direct BC Hydro to engage in the necessary study to determine how best to integrate the NIA communities into rate offerings such the Optional TOU Rate to minimize negative impacts going forward.¹¹⁷

MoveUP flags for potential consideration in a future application, the legality of maintaining differentiated rates and conditions of service for NIA communities, in particular Zone II communities. However, MoveUP notes that BC Hydro's upcoming application to address NIA rates, services and other issues is the more effective venue to address this issue.¹¹⁸

In reply, although BC Hydro does not directly address BCOAPO's comments, BC Hydro submits that it agrees with MoveUP that the issue it raises should be addressed in BC Hydro's upcoming rate design application if BC Hydro proposes to maintain a differentiated rate structure. BC Hydro notes, as part of the upcoming engagement for that application, it plans to consider proposing current Zone II and NIA customers pay the same rates as Zone I customers.¹¹⁹

Panel Determination

The Panel finds BC Hydro's proposal that the Optional TOU Rate not be available to customers in BC Hydro's NIA at this time to be reasonable. The Panel is persuaded by the evidence filed in this proceeding that there are

¹¹⁵ Exhibit B-1, p. 4-82.

¹¹⁶ Exhibit B-1, pp. 4-84 to 4-85.

¹¹⁷ BCOAPO Final Argument, p. 40.

¹¹⁸ MoveUP Final Argument, pp. 4 to 6.

¹¹⁹ BC Hydro Reply Argument, pp. 18 to 19.

sufficient differences in the cost of service between BC Hydro's integrated and non-integrated service areas to suggest that the Optional TOU Rate would not be currently suitable for the NIA.

The Panel is reassured that BC Hydro will consider, as part of its residential rate design application in June 2024, eliminating the price differential between rates in the NIA and integrated areas, as well as conduct further analysis and engagement with NIA customers to consider options for TOU rates in the NIA. Therefore, the Panel does not consider it necessary to direct BC Hydro to engage in a study to determine how best to integrate the NIA communities into rate offerings available to the integrated area as suggested by BCOAPO. Further, since these issues will be addressed in that future application, it is appropriate that any related BCUC orders be made by the BCUC panel that will be reviewing that application.

The Panel also finds reasonable, BC Hydro's proposal that the Optional TOU Rate not be available in common areas of multiple occupancy buildings. The Panel is persuaded that there are sufficient differences in the consumption pattern of residential common areas compared to typical residential dwellings to indicate that the Optional TOU Rate would not achieve the targeted load shifting behaviour in residential common areas.

The Panel also finds it reasonable that the customers without smart meters would not be eligible to take service under the Optional TOU Rate given the need for hourly consumption data to enable TOU billing.

2.5 Availability to Net Metering Customers

BC Hydro originally proposed in the Application to exclude residential customers who concurrently receive service under Rate Schedule (RS) 1289 (Net Metering Service) from the Optional TOU Rate. However, in response to points raised by interveners, BC Hydro now proposes that the Optional TOU Rate credit and charge be applied to the energy the net metering customer receives from BC Hydro during the hour (i.e. the deliveries). Under BC Hydro's current proposal, RS 1289 would remain unchanged and the TOU credit or charge would not be applied to any customer generation. This also means that there would be no change to how the Generation Account Balance¹²⁰ is used to reduce billed consumption in subsequent periods or how any balance remaining in the Generation Account Balance is paid out on the anniversary date.¹²¹

BC Hydro plans to file an application regarding the Net Metering Service rate with the BCUC by June 2024.¹²² BC Hydro is conducting customer and stakeholder engagement activities for the application, which includes exploring TOU rates for net metering customers (for both energy delivered and received by BC Hydro). In that application, BC Hydro also plans to consider, among other things:

- Compensation for excess generation;
- Credit and charge amounts for electricity consumption;
- The value and benefits of the energy storage and dispatchability; and
- Implications for General Service Net Metering participants.

¹²⁰ When customers generate more electricity than they need at a point in time, that surplus electricity is banked in the Customer's Generation Account. The Generation Account Balance is then applied as a credit to offset electricity consumption later, when customers do not generate enough electricity to meet their needs and require electricity from BC Hydro.

¹²¹ Exhibit B-9, Supplemental BCUC IR 38.5.

¹²² Exhibit B-9, Supplemental BCUC IR 38.5.

BC Hydro explains that the current set up of RS 1289 does not allow for time-based credits/charges to be applied to generation and applying such time-based price signals would require amendments to RS 1289. This is because RS 1289 allows customers to bank their excess generation as kWh and reduce consumption subject to the tariff rate in future periods. Once generation is banked in this manner, it loses its time-based attributes. Compensating generation based on time of day would require a different approach to netting and banking against consumption, and implementing this approach would require revisions to RS 1289.¹²³

In addition, BC Hydro states that including net metering generation in the current scope of the TBBI project would result in a delay of at least six months in the launch of the Optional TOU Rate with an estimated incremental cost of \$1.7 million.¹²⁴ However, including net metering deliveries would have an incremental cost of \$0.1 million and minimal impact to the implementation schedule of the Optional TOU Rate. BC Hydro states that the costs related to some of the incremental development activities to include net metering generation in the current scope of the TBBI project could become stranded if the structure of the net metering rate changes through BC Hydro's planned application for amendments to RS 1289.¹²⁵

The following table provides a comparison of the impact of applying the Optional TOU Rate credit and charge to energy deliveries only and to both energy deliveries and generation (i.e. net consumption).

Table 3: Optional TOU Rate Assessment Results by Scenario¹²⁶

Assessment	Excluding Net Metering Customers (as Originally Proposed by BC Hydro)	Including Net Metering Customers (as Currently Proposed by BC Hydro)	
		Applying the TOU Credit and Charge to <u>Total Energy Delivered</u> by BC Hydro (as Proposed by BC Hydro)	Applying the TOU Credit and Charge to <u>Net Consumption</u>
Estimated F2030 Capacity Savings at Customer Meter Level	101	111	111
F2030 Capacity Savings at System Level (MW)	73	80	80
Year 4 R/C Ratio (F2028)	87.2%	86.9%	85.7%
Year 15 R/C Ratio (F2039)	92.6%	91.4%	88.8%
Year 15 B/C Ratio (F2039)	1.48	1.47	1.46

As shown in the above table, including net metering customers in the Optional TOU Rate is expected to increase the estimated capacity savings, however, it would slightly decrease the R/C and B/C ratios. The table also shows that including net metering generation in the Optional TOU Rate (i.e. the net consumption) is not expected to increase the capacity savings compared to including only deliveries, but it would further decrease the R/C and B/C ratios.

¹²³ Exhibit B-7, Riverside-Lipson IR 1.21(a).

¹²⁴ With an accuracy range of +100 percent to -35 percent (i.e. a range of \$1.1 to \$3.4 million).

¹²⁵ Exhibit B-11, BCUC IR 48.9.

¹²⁶ Exhibit B-11, BCUC IR 48.3.

Positions of Parties

BC Hydro submits that it is more appropriate to consider implementing time-varying price signals for net metering customers' generation through BC Hydro's planned application for amendments to RS 1289 due to:

- The cost and delay associated with undertaking incremental development at this time;
- The potential for stranded development costs;
- The need to revise RS 1289 because its current setup does not allow for time-based charges to be applied to generation; and
- The range of issues that need to be considered in order to properly determine the appropriate time-based price signals to apply to generation from net metering customers in order to increase economic efficiency and provide the appropriate incentives.¹²⁷

Aside from Riverside-Lipson, interveners generally either agree with or do not oppose BC Hydro's current proposal to make the Optional TOU Rate credit and charge available to the hourly deliveries of energy to net metering customers. Riverside-Lipson support including net metering customers in the Optional TOU Rate but recommend approval of a variation of the Optional TOU Rate that is available to net metering customers with identical pricing of deliveries and generation.¹²⁸

In Riverside-Lipson's final argument, they refer to net metering deliveries or the net energy imported from BC Hydro by the customer as "imports" and the net metering generation or the net energy exported from the customer to BC Hydro as "exports". Riverside-Lipson submit that the 5-cent Optional TOU Rate credit and charge should apply to exports as well as imports, where a 5-cent credit is applied to exported energy during the On-Peak period and a 5-cent charge is applied to energy exported during the Overnight period (referred to as "TOU export prices").¹²⁹

In Riverside-Lipson's view, the availability of TOU export prices would reduce costs for all customers, compared to only including TOU import prices or excluding net metering TOU rates altogether. It would also not preclude future changes to net metering TOU rates.¹³⁰ Riverside-Lipson submit that other utilities in North America, including FortisBC, have TOU rates that are available for both imports and exports of energy for net metering customers.¹³¹ Further, excluding TOU pricing for exports creates the potential for "predatory arbitrage schemes" and represents an "unjustified barrier" to the net metering program.¹³²

Riverside-Lipson submit that having TOU export prices available in advance of the conclusion of the proceeding to review BC Hydro's upcoming net metering application would allow for data gathering and better evidence on various matters impacting net metering and TOU rates.¹³³ In addition, Riverside-Lipson question the accuracy of BC Hydro's estimate of billing implementation cost and time required to include TOU export prices. Citing

¹²⁷ BC Hydro Final Argument, pp. 18 to 19.

¹²⁸ Riverside-Lipson Final Argument, p. 20.

¹²⁹ Riverside-Lipson Final Argument, p. 3.

¹³⁰ Riverside-Lipson Final Argument, p. 14.

¹³¹ Riverside-Lipson Final Argument, pp. 4 to 5.

¹³² Riverside-Lipson Final Argument, p. 19.

¹³³ Riverside-Lipson Final Argument, p. 15.

examples of other utilities and costs and timelines for implementing TOU rates, Riverside-Lipson argue that the inclusion of TOU export prices could be implemented at a lower cost than estimated by BC Hydro and it could be done manually on a six-month interim basis to avoid delays in rate availability.¹³⁴

In reply, BC Hydro notes that Riverside-Lipson do not address BC Hydro's argument regarding the risk of stranded development costs, nor do they substantively address the issue of the appropriate price signal for net metering generation. BC Hydro reiterates that the upcoming engagement and proceeding on BC Hydro's planned net metering application is the best opportunity to consult on and consider the appropriate price signal and design.¹³⁵

Regarding BC Hydro's estimate of the cost and delay that would arise from Riverside-Lipson's proposal, BC Hydro notes that Riverside-Lipson have not demonstrated that the other utilities and the costs and timelines cited in their examples are comparable to the work BC Hydro would have to do to accommodate Riverside-Lipson's proposal. Further, BC Hydro notes that Riverside-Lipson's suggestion that BC Hydro's estimates are flawed is not supported by evidence. BC Hydro submits that its estimates reflect its experience and expertise in designing and implementing the type of billing systems necessary to accommodate such a proposal.¹³⁶

Panel Determination

The Panel finds BC Hydro's proposal to have the Optional TOU Rate credit and charge be applied to the energy the net metering customer receives from BC Hydro during the hour (i.e. deliveries) to be reasonable. The Panel is persuaded that the increase to the estimated capacity savings resulting from applying the Optional TOU Rate credit and charge to energy delivered to net metering customers outweighs the reduction to the R/C and B/C ratios.

Regarding the inclusion of net metering generation under the Optional TOU Rate, the Panel is not persuaded by Riverside-Lipson's argument that the incremental time and cost could be less than what BC Hydro estimates. Since BC Hydro is more familiar with its billing systems than are Riverside-Lipson, the Panel is inclined to put more weight on the estimates provided by BC Hydro. As such, it would not be appropriate to delay the implementation of the Optional TOU Rate or incur the additional costs to accommodate net metering generation under the Optional TOU Rate. Further, the Panel notes that BC Hydro plans to file a Net Metering Service rate application in a few months, which could result in the advancement of a different TOU rate for net metering customers and in turn potentially result in stranded development costs if net metering generation was included under the Optional TOU Rate at this time. Given this, the Panel is not persuaded that the potential benefits of advancing TOU rates for net metering generation ahead of BC Hydro's Net Metering Service rate application, such as additional data gathering and capacity savings, outweigh the incremental costs and potential risks.

The Panel commends BC Hydro for proactively responding to the points raised by interveners during the proceeding by amending the Application to accommodate net metering deliveries under the Optional TOU Rate. The Panel also acknowledges BC Hydro's efforts to continue engaging with its customers and stakeholders in the development of its upcoming Net Metering Service rate application.

¹³⁴ Riverside-Lipson Final Argument, pp. 17 to 18.

¹³⁵ BC Hydro Reply Argument, p. 6.

¹³⁶ BC Hydro Reply Argument, pp. 6 to 7.

2.6 Application of the Deferral Account Rate Rider

BC Hydro proposes to not apply the DARR to the Optional TOU Rate credit or charge. This is because BC Hydro expects most participating customers to have net credits, which would result in increasing the credit (and decreasing the customer's overall bill) when the DARR percentage is positive, but decreasing the credit (and increasing the customer's overall bill) when the DARR percentage is negative.¹³⁷

Under BC Hydro's proposal, BC Hydro would receive slightly more revenue when the DARR percentage is positive and slightly less revenue when it is negative than would otherwise be the case. The average annual bill difference between applying and not applying the DARR (positive or negative) is approximately \$0.65 or 0.05 percent for customers without an EV or approximately \$4.23 or 0.23 percent for customers with an EV.¹³⁸

The purpose of the DARR is to recover or refund the balances in BC Hydro's Cost of Energy Variance Accounts to customers. BC Hydro does not expect its proposal to not apply the DARR to the Optional TOU Rate credit or charge to have a material impact on the timing of when the net balances of its Cost of Energy Variance Accounts would be cleared. Assuming that the DARR is set at its maximum of 5 percent every year, BC Hydro explains that the change in amortization resulting from applying the DARR to the TOU credit or charge is \$0.1 million to \$1.6 million per year from fiscal 2025 to fiscal 2039, with a cumulative change of approximately \$12 million. BC Hydro considers the \$12 million to be small relative to the overall balances in its Cost of Energy Variance Accounts.¹³⁹

Positions of Parties

No interveners oppose BC Hydro's proposal to not apply the DARR to the Optional TOU Rate credit or charge.

Panel Determination

Based on the evidence presented in the proceeding, the Panel finds BC Hydro's proposal to not apply the DARR to the Optional TOU Rate credit or charge reasonable. The Panel is satisfied that BC Hydro's proposal would not materially impact the performance of the Optional TOU Rate or the recovery or refund of the net balances of BC Hydro's Cost of Energy Variance Accounts.

2.7 Overall Determination on the Optional TOU Rate and Rate Schedule 2101

The Panel approves the Optional TOU Rate and Rate Schedule 2101 as proposed by BC Hydro, effective April 1, 2024, or the earliest date that BC Hydro can launch the Rate. The Panel finds the Optional TOU Rate as proposed by BC Hydro to not be unjust, unreasonable, unduly discriminatory, or unduly preferential.

In the above sections, the Panel has found that the 5-cent credit and charge under the Optional TOU Rate is reasonable and the optimal alternative and the definition of the Overnight period and the On-peak period is reasonable. The Panel also found that the 5-cent credit would yield an Overnight energy charge that is sufficient to recover the relevant costs for that period and that the 5-cent charge is generally aligned with the On-Peak period marginal cost. The Panel has also found that the Optional TOU Rate is supported on an economic and cost of service basis, and generally performs well against the Bonbright rate design principles. Further, the Panel

¹³⁷ Exhibit B-7, BCOAPO IR 61.1.

¹³⁸ Exhibit B-11, BCUC IR 51.2.

¹³⁹ Exhibit B-11, BCUC IR 51.1.

has found that BC Hydro’s proposals on the availability of the Optional TOU Rate, including with respect to net metering customers, and the applicability of the DARR are reasonable.

The Panel acknowledges that BC Hydro had originally anticipated April 1, 2024 as the earliest launch date of the Optional TOU Rate. However, BC Hydro notes that it now anticipates June 1, 2024 as the earliest launch date due to delays in the TBBI project, but that it will endeavour to launch earlier if possible.¹⁴⁰

3.0 Other Issues

3.1 The Default Residential Inclining Block Rate

Throughout the proceeding, several alternatives were explored, including the leading alternative prior to BC Hydro’s development of its “add-on” Optional TOU Rate: a TOU rate with fixed time-based energy charges for On-Peak, Off-Peak and Overnight periods, applied during the winter months with a flat energy charge applied to all consumption during the non-winter months.¹⁴¹ BC Hydro’s modelling shows that the performance of this alternative changes significantly depending on the underlying default rate structure; performing similarly to the Optional TOU Rate under an underlying flat rate but significantly worse under the current underlying RIB Rate in terms of participation and capacity savings.¹⁴² In contrast, BC Hydro demonstrates that the Optional TOU Rate is expected to perform very similarly whether the underlying default rate is the RIB Rate or a flat energy charge rate, which demonstrates the flexibility and robustness of the Optional TOU Rate.¹⁴³

Positions of Parties

MoveUP does not oppose the Optional TOU Rate but observes that the default RIB Rate and the Optional TOU Rate “present a potential tug-of-war between encouraging customers to use less electricity and facilitating their using more.”

BCSEA-VEVA submit that the design of the Optional TOU Rate fits very well over the underlying default RIB Rate. While BCSEA-VEVA look forward to BC Hydro’s future examination of potential changes to the RIB Rate, they acknowledge that these changes are beyond the scope of this Application and believe that approval and implementation of the Optional TOU Rate should go ahead as soon as possible and not be delayed pending potential changes to the RIB Rate. In any case, BCSEA-VEVA note that if the RIB Rate is replaced with a flat energy rate in the future, the Optional TOU Rate is expected to perform very similarly whether the underlying default rate is the RIB Rate or a flat energy charge rate.¹⁴⁴

BC Hydro does not directly address MoveUP and BCSEA-VEVA’s respective submissions on this matter in its Reply Argument.

¹⁴⁰ BC Hydro Reply Argument, Cover Letter.

¹⁴¹ Exhibit B-1, Section 4.7.3, p. 4-72

¹⁴² Exhibit B-6-1, Supplemental Response to BCUC IR 17.2

¹⁴³ Exhibit B-12, BCSEA IR 1.3

¹⁴⁴ BCSEA-VEVA Final Argument, p. 6

Panel Discussion

Based on BC Hydro's analysis, the Panel is satisfied that the Optional TOU Rate would perform similarly under the default RIB Rate and a flat rate. The Panel notes that BC Hydro had been directed to file an application with the BCUC by June 30, 2024 for changes to the default RIB Rate design.¹⁴⁵ Any impacts and necessary changes to the Optional TOU Rate resulting from the BCUC's final determinations on the RIB Rate design application can be assessed in the future evaluation report on the Optional TOU Rate.

3.2 Customer and Stakeholder Engagement

BC Hydro conducted a 24-month long consultation process, engaging more than 35,000 customers and stakeholders to review and explore various residential rate design options.¹⁴⁶ These activities included various surveys, telephone interviews, town halls, online discussion, and focus groups.¹⁴⁷

In addition to engaging with customers and the public, BC Hydro also invited stakeholders and interveners representing various customer groups and local governments to participate in the consultation process. These activities included three rate design workshops held from May 19, 2021 to November 29, 2022 that had a total of 227 participants.¹⁴⁸

The November 29, 2022 workshop presented the Optional TOU Rate design, which received overall support from the workshop participants.¹⁴⁹

Positions of Parties

The CEC submits that BC Hydro's consultation and engagement have been extensive and comprehensive.¹⁵⁰ No other interveners directly commented on BC Hydro's customer and stakeholder engagement.

Panel Discussion

The Panel is satisfied with the customer and stakeholder engagement performed by BC Hydro to inform the Application.

3.3 Optional Nature of the Optional TOU Rate

As discussed in Section 2.0 of this decision, the Optional TOU Rate is a part of a suite of measures that BC Hydro plans to advance to meet the capacity savings targets in its 2021 IRP. BC Hydro notes that it conducted extensive customer and stakeholder consultation to develop the 2021 IRP. This consultation indicated strong support for time-varying rates, and in particular, the voluntary opt-in nature of the rate.¹⁵¹

¹⁴⁵ Decision and Order G-140-23, Directive No. 5.

¹⁴⁶ Exhibit B-1, p. 3-1.

¹⁴⁷ Exhibit B-1, pp. 3-18 to 3-20.

¹⁴⁸ Exhibit B-1, pp. 3-32 to 3-34.

¹⁴⁹ Exhibit B-1, pp. 3-36 to 3-38.

¹⁵⁰ CEC Final Argument, p. 53.

¹⁵¹ Exhibit B-1, pp. 2-12 to 2-13.

In addition, several letters of comments filed with the BCUC expressed concern that the Optional TOU Rate will cease to be optional in the future.¹⁵²

Positions of Parties

RCIA recommends the BCUC direct BC Hydro to maintain, on an indefinite basis, the optional nature of the proposed Rate.¹⁵³

In reply to RCIA, BC Hydro notes that there is no evidence filed in this proceeding to suggest that BC Hydro plans to make the Optional TOU Rate mandatory. Further, BC Hydro notes that the directive recommended by RCIA “would be of no lawful effect, because it would fetter the Commission’s discretion.”¹⁵⁴

Panel Discussion

The Panel declines RCIA’s recommendation. Such an order is not warranted since the rate schedule, including the optional nature of the Rate, cannot be changed without further order of the BCUC. It would not be appropriate for the Panel to make a directive that would fetter the BCUC’s discretion in the future regarding the Optional TOU Rate.

3.4 Electric Vehicle Charging Technology

In the CEC’s final argument, it recommends the BCUC encourage BC Hydro to do the following to increase the success of the Optional TOU Rate:¹⁵⁵

- Investigate technology which can be implemented in apartments and condos where EV charging may be provided in the building, but is not tied to the individual customer units; and
- Investigate technology for setting a timing for EV charging at a residence (i.e. a device to enable “set and forget” participation).

In reply, BC Hydro submits that the directions recommended by the CEC are not necessary because it is pursuing a combination of education and marketing efforts and incentives for smart-charging technology for customers to support the proposed Optional TOU Rate. As a result, BC Hydro is continuously considering new technologies as they become available.¹⁵⁶

Panel Discussion

The Panel finds that directions to encourage BC Hydro to investigate EV charging technology as suggested by the CEC are not warranted. The Panel is satisfied that BC Hydro is pursuing a combination of education and marketing efforts and incentives for smart-charging technology for customers to support the Optional TOU Rate. There is no evidence filed in this proceeding to indicate that BC Hydro is not investigating and considering new EV charging technology or that the CEC’s recommendation would have a material impact on the success of the Optional TOU Rate.

¹⁵² Exhibits E-9, E-36, E-37, E-47, E-58, E-59, and E-65.

¹⁵³ RCIA Final Argument, p. 11.

¹⁵⁴ BC Hydro Reply Argument, p. 5.

¹⁵⁵ CEC Final Argument, p. 23.

¹⁵⁶ BC Hydro Reply Argument, pp. 10 to 11.

4.0 Evaluation Report

BC Hydro proposes the BCUC direct BC Hydro to file an evaluation report on the Optional TOU Rate in fiscal 2029 and requests a BCUC order to rescind various reporting requirements from Directive No. 2 of Order G-92-19 and instead, incorporate any helpful reporting requirements into the proposed evaluation report.

BC Hydro plans to evaluate the Optional TOU Rate to verify whether it is achieving the expected benefits. BC Hydro plans to conduct the analysis required for the evaluation report during fiscal 2028, covering the evaluation period from fiscal 2025 to fiscal 2027.¹⁵⁷ BC Hydro expects to complete the evaluation in fiscal 2029, which is expected to include:¹⁵⁸

- Analysis of the economic impact on all ratepayers;
- Fully allocated cost of service analysis;
- Assessment of structural winners;
- Net load impacts attributable to the Rate;
- Customer and stakeholder feedback;
- Whether general rate increases should be applied to the 5-cent credit and additional charge going forward; and
- Incorporate any of the reporting requirements set out in Directive No. 2 of Order G-92-19 to BC Hydro's January 15, 2019 Electric Tariff Terms and Conditions Amendments Application that the BCUC still considers helpful.

BC Hydro states that the evaluation report will also include a comparison between the expected and actual participation rates, capacity savings, implementation costs, and revenue losses of the Optional TOU Rate.¹⁵⁹

To facilitate more efficient reporting to the BCUC, BC Hydro proposes to include the reporting requirements set out in Directive No. 2 of Order G-92-19 as part of this evaluation. That directive required BC Hydro to file in its annual reports to the BCUC, information regarding its experience resulting from the amended terms and conditions to facilitate Residential Service Customers to charge their Zero Emission Vehicles at their Dwelling and to include, at a minimum, the following information:¹⁶⁰

- Number of accounts that have installed additional meters and whether BC Hydro is meeting the needs of customers;
- Analysis of having one basic charge per account with additional meters and any plans to review the basic charge in a future process; and
- Whether additional amendments to the Electric Tariff are appropriate for other rate classes that may have similar multi-unit characteristics such as commercial strata developments.

¹⁵⁷ Exhibit B-6, BCUC IR 41.2.

¹⁵⁸ Exhibit B-1, pp. 4-89 to 4-91.

¹⁵⁹ Exhibit B-6, BCUC IR 41.1.

¹⁶⁰ Exhibit B-1, pp. 4-90 to 4-91; Order G-92-19.

BC Hydro states that the evaluation report will include information on the number of customers installing a second BC Hydro meter to facilitate their EV charging and BC Hydro's incremental costs to administer these additional EV charging meters, which duplicates certain information that is contemplated in Directive No. 2 of Order G-92-19.¹⁶¹

In addition, BC Hydro explains that the rate of adoption of a second meter for the purpose of EV charging remains relatively small, resulting in sample sizes that are too small for obtaining meaningful results and limiting the value of annual reporting.¹⁶²

Positions of Parties

Intervenors generally do not oppose BC Hydro's proposal for a BCUC directive to file an evaluation report on the Optional TOU Rate in fiscal 2029 and they do not oppose BC Hydro's request for a BCUC order to rescind various reporting requirements from Directive No. 2 of Order G-92-19.

However, BCOAPO suggests that the evaluation report include information showing the number of customers that opt in/out more often than once and the frequency.¹⁶³ The CEC, on the other hand, recommends that the BCUC require BC Hydro to include in the evaluation report, "a recommended means to immediately increase the cost benefit ratio if [the Optional TOU Rate] is not on track to maintain a minimum of .93 R:C on an ongoing basis, including by 2035."¹⁶⁴

In addition, although not directly related to the proposed evaluation report, the CEC recommends that the BCUC direct BC Hydro to provide, in its annual regular reports, information regarding approximate timeframes for when such rates can be expected for the General Service rate class. The CEC notes that BC Hydro currently expects to apply for an optional commercial TOU rate in fiscal 2026 with implementation in fiscal 2027. The CEC also appeals to BC Hydro to ensure that such rates are provided with priority in the next two years.¹⁶⁵

BC Hydro did not directly respond to the above matters in its reply argument.

Panel Determination

The Panel directs BC Hydro to file an evaluation report on the Optional TOU Rate no later than March 31, 2029. Subject to the other determinations and directives contained in this decision, the evaluation report is to include, but is not limited to, the following matters as they relate to the Optional TOU Rate:

- **Analysis of the economic impact on all ratepayers;**
- **Fully allocated cost of service analysis;**
- **Assessment of structural winners;**
- **Net load impacts attributable to the Rate;**
- **Customer and stakeholder feedback;**

¹⁶¹ Exhibit B-1, Appendix I, p. 1.

¹⁶² Exhibit B-1, Appendix I, Table I-1; Exhibit B-6, BCUC IR 41.4.

¹⁶³ BCOAPO Final Argument, p. 47.

¹⁶⁴ CEC Final Argument, p. 42.

¹⁶⁵ CEC Final Argument, pp. 46 to 47.

- **Whether general rate increases should be applied to the 5-cent credit and additional charge going forward; and**
- **A comparison between the expected and actual participation rates, capacity savings, implementation costs, and revenue losses of the Optional TOU Rate.**

The Panel is satisfied that an evaluation report filed in fiscal 2029 would allow the report to cover an evaluation period sufficient to provide a meaningful assessment of the performance of the Optional TOU Rate and whether any changes to the Optional TOU Rate are warranted. The Panel is not persuaded of the need for the additional information to be included in the evaluation report as proposed by BCOAPO and the CEC.

The Panel approves BC Hydro’s request to rescind various reporting requirements from Directive No. 2 of Order G-92-19. The Panel directs BC Hydro to incorporate in its evaluation report on the Optional TOU Rate to be filed in fiscal 2029, information regarding its experience resulting from the amended terms and conditions to facilitate Residential Service Customers to charge their Zero Emission Vehicles at their Dwelling and to include, at a minimum, the following information:

- **Number of accounts that have installed additional meters and whether BC Hydro is meeting the needs of customers;**
- **Analysis of having one basic charge per account with additional meters and any plans to review the basic charge in a future process; and**
- **Whether additional amendments to the Electric Tariff are appropriate for other rate classes that may have similar multi-unit characteristics such as commercial strata developments.**

The Panel is satisfied that it would be more efficient to incorporate the reporting requirements of Directive No. 2 of Order G-92-19 into BC Hydro’s evaluation report on the TOU Rate given the duplication of certain information. Further, given the relatively slow adoption rate to date of a second meter for the purpose of EV charging, the Panel is persuaded that reporting the information in fiscal 2029 would produce more meaningful results compared to reporting annually.

With respect to the CEC’s recommendation for the BCUC to direct BC Hydro to provide information in its annual regular reports regarding a potential TOU rate for the General Service rate class, the Panel declines. Since, as noted by the CEC, BC Hydro already plans to advance an optional commercial TOU rate in fiscal 2026, which would be subject to BCUC review and approval, the Panel considers that there is little value in requiring BC Hydro to report annually on the anticipated timeframe for the implementation of such a rate.

DATED at the City of Vancouver, in the Province of British Columbia, this 12th day of December 2023.

Original signed by:

T. A. Loski
Panel Chair / Commissioner

Original signed by:

A. K. Fung, KC
Commissioner



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Utilities Commission

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**ORDER NUMBER
G-342-23**

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

and

British Columbia Hydro and Power Authority
Optional Residential Time-of-Use Rate Application

BEFORE:

T. A. Loski, Panel Chair
A. K. Fung, KC, Commissioner

on December 12, 2023

ORDER

WHEREAS:

- A. On February 27, 2023, British Columbia Hydro and Power Authority (BC Hydro) filed its Optional Residential Time-of-Use Rate Application (Application) seeking approval of Rate Schedule 2101 - Residential Service - Time-of-Use-Rate (Optional Residential TOU Rate), effective the later of April 1, 2024 or the first day of the fourth calendar month following the British Columbia Utilities Commission (BCUC) order approving the rate schedule;
- B. BC Hydro proposes that the Optional Residential TOU Rate be as follows:
 1. Available to BC Hydro's Residential Service Customers on a voluntary, opt-in basis, in BC Hydro's integrated service area;
 2. Applicable for all electricity consumption under a Residential Service account, including electric vehicle charging; and
 3. An "add-on" rate that applies year-round and every day of the year, such that participating customers are first billed for their total electricity usage during a billing period based on their existing Residential Service rate, and then will receive:
 - i. A 5-cent credit for each kilowatt hour (kWh) of electricity consumed during the Overnight period (11 p.m. to 7 a.m.);
 - ii. A 5-cent additional charge for each kWh of electricity consumed during the On-Peak period (4 p.m. to 9 p.m.); and

- iii. No credit or additional charge for each kWh of electricity consumed during the Off-Peak period (9 p.m. to 11 p.m. and 7 a.m. to 4 p.m.);

C. In the Application, BC Hydro also:

- 1. Proposes to submit an evaluation report for the proposed Optional Residential TOU Rate in fiscal 2029 as described in the Application; and
 - 2. Requests relief from the reporting requirements of Directive No. 2 of Order G-92-19, which required BC Hydro to file information with the BCUC regarding its experience resulting from the amended terms and conditions to facilitate Residential Service Customers to charge their Zero-Emission Vehicles at their Dwelling;
- D. By Orders G-49-23 and G-228-23, the BCUC established a regulatory timetable for the review of the Application that included, among other things, a round of information requests (IRs) to BC Hydro, a second round of IRs with limited scope, and final and reply arguments;
- E. During the proceeding to review the Application, BC Hydro filed an updated Rate Schedule 2101 - Residential Service - Time-of-Use-Rate in Attachment 1 to its supplemental response to BCUC IR 38.5 in Exhibit B-9. This updated rate schedule reflects, among other things, BC Hydro's proposal to include the application of the credits and charges under the Optional Residential TOU Rate to the hourly deliveries of energy by BC Hydro to net metering service customers;
- F. In BC Hydro's reply argument dated November 10, 2023, it notes that it now anticipates June 1, 2024 as the earliest launch date of the Optional Residential TOU Rate, but that it will endeavour to launch earlier if possible; and
- G. The BCUC has reviewed the Application, evidence and arguments filed in this proceeding and considers that a determination on the proposed Optional Residential TOU Rate is warranted.

NOW THEREFORE pursuant to sections 58 to 61 and 99 of the *Utilities Commission Act*, and for the reasons in the decision issued concurrently with this order, the BCUC orders as follows:

- 1. Rate Schedule 2101 – Residential Service – Time-of-Use as shown in Attachment 1 to BC Hydro's supplemental response to BCUC IR 38.5 in Exhibit B-9 is approved, effective April 1, 2024 or the earliest date that BC Hydro can launch the Optional Residential TOU Rate.
- 2. BC Hydro is directed to file Rate Schedule 2101 – Residential Service – Time-of-Use with the BCUC for endorsement no later than March 11, 2024.
- 3. BC Hydro is directed to file an evaluation report on the Optional Residential TOU Rate no later than March 31, 2029.
- 4. Directive No. 2 of Order G-92-19 is rescinded.
- 5. BC Hydro is directed to comply with all other directives contained in the decision issued concurrently with this order.

DATED at the City of Vancouver, in the Province of British Columbia, this 12th day of December 2023.

BY ORDER

Original signed by:

T. A. Loski
Commissioner

British Columbia Hydro and Power Authority
Optional Residential Time-of-Use Rate Application

Glossary and List of Acronyms

Term / Acronym	Description
2015 RDA	BC Hydro's 2015 Rate Design Application
2021 IRP	BC Hydro's 2021 Integrated Resource Plan
Application	The Optional Residential Time-of-Use Rate Application filed by BC Hydro on February 27, 2023
B/C	Benefit to cost
BC Hydro	British Columbia Hydro and Power Authority
BCOAPO	BC Old Age Pensioners' Organization, Council of Senior Citizens' Organizations of BC, Active Support Against Poverty, Disability Alliance BC, Tenant Resource and Advisory Centre, and Together Against Poverty Society
BCSEA-VEVA	B.C. Sustainable Energy Association and Vancouver Electric Vehicle Association
BCUC	British Columbia Utilities Commission
CEC	Commercial Energy Consumers Association of British Columbia
DARR	Deferral Account Rate Rider
EV	Electric vehicle
FACOS	Fully allocated cost of service studies
IR	Information request
kWh	Kilowatt hour
LRMC	Long-run marginal cost
MoveUP	Movement of United Professionals
MW	Megawatts
Net Metering Service	Service under Rate Schedule 1289
NIA	Non-integrated area
On-Peak	The five-hour period between 4 p.m. and 9 p.m. that corresponds to BC Hydro's system peak hours, when system usage is highest
Optional TOU Rate	Rate Schedule 2101 – Residential Service – Time-of-Use Rate
Overnight	The eight-hour period between 11 p.m. and 7 a.m. that corresponds to times when system usage is lowest
R/C or R:C	Revenue to cost
Rate	Rate Schedule 2101 – Residential Service – Time-of-Use Rate
RCIA	Residential Consumer Intervenor Association
RIB Rate	Residential inclining block rate

Term / Acronym	Description
Riverside-Lipson	Riverside Energy and Brent Lipson
RS	Rate Schedule
TBBI	Time-Based Billing Infrastructure

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

and

British Columbia Hydro and Power Authority
Optional Residential Time-of-Use Rate Application

EXHIBIT LIST

Exhibit No.	Description
<i>COMMISSION DOCUMENTS</i>	
A-1	Letter dated March 6, 2023 – Appointing the Panel for the review of BC Hydro’s Optional Residential Time-of-Use Rate Application
A-2	Letter dated March 14, 2023 – BCUC Order G-49-23 establishing the regulatory timetable
A-3	Letter dated April 18, 2023 – Panel requesting Excel models from BC Hydro
A-4	Letter dated April 21, 2023 – BCUC approving BC Hydro’s request for extension of the deadline to file Excel models
A-5	Letter dated May 30, 2023 – BCUC Information Request No. 1 to BC Hydro
A-6	Letter dated July 18, 2023 – BCUC submitting Procedural Conference Information
A-7	Letter dated August 25, 2023 – BCUC Order G-228-23 with further regulatory timetable
A-8	Letter dated September 12, 2023 – BCUC Information Request No. 2 with limited scope to BC Hydro
A-9	Letter dated September 20, 2023 – BCUC amending the Panel for the review of the application
A-10	Letter dated October 25, 2023 – BCUC response regarding BCOAPO Final Argument extension request
A-11	Letter dated November 7, 2023 – BCUC response regarding BC Hydro Reply Argument extension request

Exhibit No.	Description
<i>APPLICANT DOCUMENTS</i>	
B-1	BRITISH COLUMBIA HYDRO AND POWER AUTHORITY (BC HYDRO) - Optional Residential Time-of-Use Rate Application dated February 27, 2023
B-1-1	Letter dated August 14, 2023 – BC Hydro submitting Errata and Update No. 1 to the Application
B-1-2	Letter dated October 17, 2023 – BC Hydro submitting Errata and Update No. 2 to the Application
B-2	Letter dated March 21, 2023 – BC Hydro submitting compliance with Order G-49-23 Directives 2, 3 and 4
B-3	Letter dated April 20, 2023 – BC Hydro submitting extension request to file Excel Models
B-4	Letter dated April 28, 2023 – BC Hydro submitting Excel Models in compliance with Exhibit A-3
B-5	Letter dated May 23, 2023 – BC Hydro submitting confirmation of public notice
B-6	Letter dated July 24, 2023 – BC Hydro submitting responses to BCUC Information Request No. 1
B-6-1	Letter dated October 17, 2023 – BC Hydro submitting Errata to responses to BCUC Information Request No. 1
B-7	Letter dated July 24, 2023 – BC Hydro submitting responses to Intervener Information Requests No. 1
B-8	Letter dated August 18, 2023 – BC Hydro submitted at Procedural Conference a proposed regulatory timetable
B-9	Letter dated August 29, 2023 – BC Hydro submitting Supplement Responses to BCUC Information Request No. 1

Exhibit No.	Description
B-10	Letter dated September 8, 2023 – BC Hydro submitting Revised Responses to BCUC Information Request No. 1
B-11	Letter dated October 10, 2023 – BC Hydro submitting responses to BCUC Information Request No. 2
B-12	Letter dated October 10, 2023 – BC Hydro submitting responses to Intervener Information Request No. 2
B-13	Letter dated October 17, 2023 – BC Hydro submitting revised responses to Exhibits No. B-9 and B-10
B-14	Letter dated November 6, 2023 – BC Hydro submitting extension request to file Reply Argument

INTERVENER DOCUMENTS

C1-1	MOVEMENT OF UNITED PROFESSIONALS (MOVEUP) – Letter dated March 20, 2023 submitting request to intervene by Jim Quail
C1-2	Letter dated June 12, 2023 – MoveUP submitting Information Request No. 1 to BC Hydro
C2-1	BC SUSTAINABLE ENERGY ASSOCIATION (BCSEA) - Letter dated April 2, 2023 submitting request to intervene by Thomas Hackney
C2-2	Letter dated April 28, 2023 – BCSEA Request to also represent Vancouver Electric Vehicle Association (VEVA) as a joint intervener
C2-3	Letter dated June 13, 2023 – BCSEA-VEVA submitting Information Request No. 1 to BC Hydro
C2-4	Letter dated August 18, 2023 – BCSEA-VEVA submitting procedural conference transcript correction

Exhibit No.	Description
C2-5	Letter dated September 12, 2023 – BCSEA-VEVA submitting Information Request No. 2 to BC Hydro
C3-1	LIPSON, BRENT AND RIVERSIDE ENERGY SYSTEMS (LIPSON-RIVERSIDE) - Letters dated April 14, 2023 and May 26, 2023 submitting updated request as joint interveners
C3-2	Letter dated June 12, 2023 – Lipson-Riverside submitting Information Request No. 1 to BC Hydro
C3-3	Letter dated September 12, 2023 – Lipson-Riverside submitting Information Request No. 2 to BC Hydro
C4-1	RESIDENTIAL CONSUMER INTERVENER ASSOCIATION (RCIA) - Letter dated April 21, 2023 submitting request to intervene by Abdulrahman Abomazid
C4-2	Letter dated June 13, 2023 – RCIA submitting Information Request No. 1 to BC Hydro
C4-3	Letter dated September 13, 2023 – RCIA submitting Information Request No. 2 to BC Hydro
C5-1	BC Old Age Pensioners’ Organization, Council of Senior Citizens’ Organizations of BC, Active Support Against Poverty, Disability Alliance BC, Tenants Resource and Advisory Centre, and Together Against Poverty Society (BCOAPO) - Letter dated May 1, 2023 submitting request to intervene by Irina Mis
C5-2	Letter dated June 13, 2023 – BCOAPO submitting Information Request No. 1 to BC Hydro
C5-3	Letter dated September 27, 2023 – BCOAPO submitting Information Request No. 2 to BC Hydro
C5-4	Letter dated October 24, 2023 – BCOAPO submitting extension request to file Final Argument
C6-1	Commercial Energy Consumers Association of BC (CEC) – Letter dated May 26, 2023 request to intervene by David Craig
C6-2	Letter dated June 13, 2023 – CEC submitting Information Request No. 1 to BC Hydro

Exhibit No.	Description
C6-3	Letter dated September 13, 2023 – CEC submitting Information Request No. 2 to BC Hydro

INTERESTED PARTY DOCUMENTS

D-1	WARD, W. (WARD) – Letter dated March 6, 2023 submitting request for Interested Party Status
D-2	HYDRO-QUEBEC (HYDRO-QUEBEC) – Letter dated March 7, 2023 submitting request for Interested Party Status by Frederick Pelletier
D-3	HOLLAAR, S. (HOLLAAR) – Letter dated March 16, 2023 submitting request for Interested Party Status
D-4	TANG, I. (TANG) – Letter dated March 17, 2023 submitting request for Interested Party Status
D-5	KING, M. (KING) – Letter dated March 19, 2023 submitting request for Interested Party Status
D-6	VANKAYALA, V. (VANKAYALA) – Letter dated March 19, 2023 submitting request for Interested Party Status
D-7	GREEN, J. (GREEN) – Letter dated March 22, 2023 submitting request for Interested Party Status
D-8	O’BLENIS, R. (O’BLENIS) – LETTER DATED MARCH 23, 2023 SUBMITTING REQUEST FOR INTERESTED PARTY STATUS
D-9	PAPAGEORGE, N. (PAPAGEORGE) – LETTER DATED MARCH 30, 2023 SUBMITTING REQUEST FOR INTERESTED PARTY STATUS
D-10	TREMBLAY, R. (TREMBLAY) – LETTER DATED APRIL 2, 2023 SUBMITTING REQUEST FOR INTERESTED PARTY STATUS

Exhibit No.	Description
<i>LETTERS OF COMMENT</i>	
E-1	Lind, J. (Lind) – Letter of Comment dated March 4, 2023
E-2	Ward, W. (Ward) – Letter of Comment dated March 6, 2023
E-3	White, A. (White) – Letter of Comment dated March 7, 2023
E-4	King, S. (King) – Letter of Comment dated March 9, 2023
E-5	King, M. (King) – Letter of Comment dated March 19, 2023
E-6	Hull, A. (Hull) – Letter of Comment dated March 18, 2023
E-7	Green, J. (Green) – Letter of Comment dated March 22, 2023
E-8	Curak, J. (Curak) – Letter of Comment dated March 23, 2023
E-9	Frey, G. (Frey) – Letter of Comment dated March 29, 2023
E-10	Gallacher, R. (Gallacher) – Letter of Comment dated March 29, 2023
E-11	Major, G. (Major) – Letter of Comment dated April 3, 2023
E-12	Ouang, D. (Ouang) – Letter of Comment dated April 2, 2023
E-13	Tremblay, R. (Tremblay) – Letter of Comment dated April 2, 2023
E-14	Justus, K. (Justus) – Letter of Comment dated April 1, 2023
E-15	Rickerby, J. (Rickerby) – Letter of Comment dated April 1, 2023
E-16	Sidu, K. (Sidu) – Letter of Comment dated April 7, 2023
E-17	Steventon, D. (Steventon) – Letter of Comment dated April 7, 2023
E-18	Forster, T. (Forster) – Letter of Comment dated April 11, 2023
E-19	VanderSpek, I. (VanderSpek) – Letter of Comment dated April 13, 2023

Exhibit No.	Description
E-20	Wolf, B. (Wolf) – Letter of Comment dated April 13, 2023
E-21	Cameron, J. (Cameron) – Letter of Comment dated April 15, 2023
E-22	Friis, L. (Friis) – Letter of Comment dated April 15, 2023
E-23	Bernoe, S. (Bernoe) – Letter of Comment dated April 15, 2023
E-24	Weaver, J. (Weaver) – Letter of Comment dated April 17, 2023
E-25	Hoffele, J. (Hoffele) – Letter of Comment dated April 20, 2023
E-26	Ross, D. (Ross) – Letter of Comment dated April 21, 2023
E-27	Allen, D. (Allen) – Letter of Comment dated April 23, 2023
E-28	Saulnier, K. A. (Saulnier) – Letter of Comment dated April 23, 2023
E-29	Barthel, D. (Barthel) – Letter of Comment dated April 23, 2023
E-30	Dietzfelbinger, C. (Dietzfelbinger) – Letter of Comment dated April 25, 2023
E-31	Wright, N. (Wright) – Letter of Comment dated April 25, 2023
E-32	Vickers, J. (Vickers) – Letter of Comment dated April 26, 2023
E-33	Snowden, J. (Snowden) – Letter of Comment dated April 27, 2023
E-34	Schostek, D. (Schostek) – Letter of Comment dated April 27, 2023
E-35	Oke, S. (Oke) - Letter of Comment dated May 1, 2023
E-36	Robertson, M. (Robertson) - Letter of Comment dated May 1, 2023
E-37	McFadyen, D. (McFadyen) - Letter of Comment dated May 1, 2023
E-38	Pahti, S. (Pahti) - Letter of Comment dated May 2, 2023
E-39	Porter, J. (Porter) - Letter of Comment dated May 2, 2023
E-40	Martin, W. (Martin) - Letter of Comment dated May 2, 2023
E-41	Parmar, M. (Parmar) – Letter of Comment dated May 2, 2023

Exhibit No.	Description
E-42	Scheuer, A. (Scheuer) – Letter of Comment dated May 2, 2023
E-43	Worsley, P. (Worsley) – Letter of Comment dated May 2, 2023
E-44	Dempster, R. (Dempster) – Letter of Comment dated May 2, 2023
E-45	Bell, M. (Bell) – Letter of Comment dated May 2, 2023
E-46	Thomas-Olson, L. (Thomas-Olson) – Letter of Comment dated May 3, 2023
E-47	Ohlhausen, L. (Ohlhausen) – Letter of Comment dated May 3, 2023
E-48	Chang, L. (Chang) – Letter of Comment dated May 3, 2023
E-49	Drabik, C. (Drabik) – Letter of Comment dated May 3, 2023
E-50	Sandhu, K. (Sandhu) – Letter of Comment dated May 3, 2023
E-51	Hurkens, R. (Hurkens) – Letter of Comment dated May 4, 2023
E-52	Gregory, H. (Gregory) – Letter of Comment dated May 4, 2023
E-53	Caron, J. (Caron) – Letter of Comment dated May 4, 2023
E-54	Burgess, B. (Burgess) – Letter of Comment dated May 4, 2023
E-55	Tung, D. (Tung) – Letter of Comment dated May 5, 2023
E-56	Kamphuis, M. (Kamphuis) – Letter of Comment dated May 6, 2023
E-57	Hanson, L. (Hanson) – Letter of Comment dated May 6, 2023
E-58	Smith, B. (Smith) – Letter of Comment dated May 7, 2023
E-59	Ten Cate, P. (Ten Cate) – Letter of Comment dated May 8, 2023
E-60	Benna, M. (Benna) – Letter of Comment dated May 9, 2023
E-61	Lake, P. (Lake) – Letter of Comment dated May 9, 2023
E-62	Croteau, B. (Croteau) – Letter of Comment dated May 10, 2023
E-63	Longson, A. (Longson) – Letter of Comment dated May 11, 2023

Exhibit No.	Description
E-64	Jutt, Q. (Jutt) – Letter of Comment dated May 11, 2023
E-65	McGowan, L. (McGowan) – Letter of Comment dated May 12, 2023
E-65-1	McGowan – Additional Letter of Comment dated August 31, 2023
E-66	Ellis, J. (Ellis) – Letter of Comment dated May 13, 2023
E-67	Garry, G. (Garry) – Letter of Comment dated May 13, 2023
E-68	Holmquist, R. (Holmquist) – Letter of Comment dated May 17, 2023
E-69	Pearn, J. (Pearn) – Letter of Comment dated May 16, 2023
E-70	Talbot, L. (Talbot) – Letter of Comment dated May 17, 2023
E-71	Beckett, D. (Beckett) - Letter of Comment dated May 21, 2023
E-72	Cross, D. (Cross) - Letter of Comment dated May 21, 2023
E-73	Rader, S. (Rader) - Letter of Comment dated May 24, 2023
E-74	Riecken, D. (Riecken) - Letter of Comment dated May 31, 2023
E-75	MacGregor, L. (MacGregor) - Letter of Comment dated June 2, 2023
E-76	Morton, F. (Morton) - Letter of Comment dated June 10, 2023
E-77	Hahn, T. (Hahn) - Letter of Comment dated June 25, 2023
E-78	Louhimo, R. (Louhimo) - Letter of Comment dated July 5, 2023
E-79	Evans - Letter of Comment dated July 11, 2023
E-80	Fernihough, W. (Fernihough) - Letter of Comment dated July 27, 2023
E-81	District of Saanich Council (Saanich) - Letter of Comment dated July 27, 2023
E-82	Samuel, G. (Samuel) – Letter of Comment dated July 29, 2023
E-83	Paniak, J. (Paniak) – Letter of Comment dated August 2, 2023
E-84	Evans, P. (Evans, P.) – Letter of Comment dated August 16, 2023

Exhibit No.	Description
E-85	Smith, F. (Smith, F.) – Letter of Comment dated August 21, 2023
E-86	Downie, D. (Downie) – Letter of Comment dated September 22, 2023
E-87	Davies, T. (Davies) – Letter of Comment dated September 28, 2023
E-88	Cramer, D. (Cramer) – Letter of Comment dated September 28, 2023
E-89	Salt, J. (Salt) – Letter of Comment dated September 29, 2023