BC Hydro
Power smart

Chris Sandve
Chief Regulatory Officer
bchydroregulatorygroup@bchydro.com

December 20, 2024

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

Dear Patrick Wruck:

RE: British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Transmission Service Market Reference-Priced Rates Application
Compliance with BCUC Order No. G-104-20 Directive 2
Evaluation Report of Rate Schedule 1892

BC Hydro writes in compliance with BCUC Order G-104-20, Directive 2, to provide the Evaluation Report for Rate Schedule (**RS**) 1892 – Transmission Service – Freshet Energy (**Freshet Rate**) (the **Report**). The Freshet Rate provides participating customers market pricing for incremental consumption during May 1 to July 31 inclusive (**Freshet Period**). It was designed to assist in the management of a seasonal energy surplus during the defined Freshet Period by encouraging industrial customers to use more electricity.

The Freshet Rate was approved by BCUC Order G-17-16, on a pilot basis, as part of the BC Hydro 2015 Rate Design Application. Customers taking service under RS 1823 – Transmission Service - Stepped Rate and RS 1828 – Transmission Service – Biomass Energy Program were eligible to take service under the Freshet Rate pilot on an optional basis for a two-year period (calendar 2016 and 2017).

By BCUC Order G-45-18 the pilot was extended for 2018 and by BCUC Order G-106-19, it was extended for 2019.

On October 31, 2019, BC Hydro filed the Transmission Service Market Reference-Priced Rates Application, which sought approval of the Freshet Rate to be made available on a permanent basis commencing April 1, 2020. BCUC Order G-104-20 approved the Freshet Rate on a permanent basis and directed BC Hydro to file an evaluation report of the Freshet Rate, as set out in the Reasons for Decision attached as Appendix A to the order, by December 31, 2024.

As set out in the Report, the Freshet Rate achieved gross participation from approximately 13% of eligible customers in the transmission service class and increased domestic energy sales from participating customers by 237 GWh. It resulted in revenue gains of $0.051 million in fiscal 2021, $0.16 million in fiscal 2022, and $0.20 million in fiscal 2023. However, it resulted in revenue losses of $0.88 million and $0.20 million in fiscal 2024 and fiscal 2025, respectively, due to drought conditions.

Customers took various actions to increase load during each of the fiscal 2021 to fiscal 2025 Freshet Periods such as:

- Using idle production capacity (including higher utilization of operating plants, temporary re-start of existing equipment, addition of production shifts, manufacture of more energy intensive product grades, and transfer of feedstock between facilities);
- Optimizing production to maximize output without the constraint of avoiding setting a High Load Hour demand peak under RS 1823;
- Re-scheduling maintenance shutdowns into non-freshet months; and
- Turning down and curtailing self generation (planned and unplanned).

BC Hydro is planning to engage its transmission customers on optional transmission service rates in early 2025 and hopes to file a rate choices application in June 2025, to seek approval of optional rates effective April 1, 2026. BC Hydro will include the future of the Freshet Rate within the scope of this engagement, including whether the current Freshet Rate should continue to be offered and if so, whether any changes to the terms and conditions and pricing should be made to further mitigate the potential for revenue loss.

BC Hydro is providing the confidential Report to the Commission only. A public version of the Report is being filed under separate cover redacting commercially sensitive BC Hydro and customer information. BC Hydro does not make detailed monthly information regarding system conditions and energy costs public. Publication of such information would enable third parties to model BC Hydro’s system. This would, in turn, harm BC Hydro’s customers. In light of the high degree of commercial sensitivity and significant potential risks associated with inadvertent disclosure, this information is being made available to the BCUC only and cannot be made available to interveners (even on undertakings).

BC Hydro seeks this confidential treatment pursuant to section 42 of the *Administrative Tribunals Act* and Part 4 of the Commission’s Rules of Practice and Procedure.

For further information, please contact Shiau-Ching Chou at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

Chris Sandve
Chief Regulatory Officer

ac/kl

Enclosure

BC Hydro Transmission Service Market Reference-Priced Rates Application

Evaluation Report of Rate Schedule 1892

December 2024

PUBLIC

Table of Contents

List of Figures

List of Tables

1 Executive Summary

Rate Schedule (**RS**) 1892 Freshet Energy Rate (**Freshet Rate** or **RS 1892**) was approved by British Columbia Utilities Commission (**BCUC** or the **Commission**) Order G-17-16, on a pilot basis, as part of the BC Hydro 2015 Rate Design Application. Customers taking service under RS 1823 – Transmission Service - Stepped Rate and RS 1828 – Transmission Service – Biomass Energy Program were eligible to take service under the Freshet Rate pilot on an optional basis for a two-year period (calendar 2016 and 2017).

The Freshet Rate provides participating customers market pricing for incremental consumption during May 1 to July 31 inclusive (**Freshet Period**).

By BCUC Order G-45-18 the pilot was extended for 2018 and by BCUC Order G-106-19, it was extended for 2019. On October 31, 2019, BC Hydro filed the Transmission Service Market Reference-Priced Rates Application,[1] which sought approval of the Freshet Rate to be made available on a permanent basis commencing April 1, 2020. BCUC Order G-104-20 approved RS 1892 on a permanent basis and directed BC Hydro to file an evaluation report of RS 1892, as set out in the Reasons for Decision attached as Appendix A to the order, by December 31, 2024.

Appendix A to the order stated the following on page 20:

> “[T]he Panel directs BC Hydro to file a full evaluation report of the Freshet Rate by December 31, 2024. The format and contents of the evaluation report should be consistent with the evaluation reports prepared for the pilot period, coupled with a full assessment of implementation costs, load shifting, and the breakdown of the three system conditions by each year.”

[1] Refer to: https://docs.bcuc.com/documents/proceedings/2019/doc_56395_b-1-bch-application.pdf.

BC Hydro is filing this Freshet Rate Evaluation Report in compliance with Directive 2 of BCUC Order No. G-104-20.

1.1 Objectives

This report evaluates the performance of BC Hydro's Freshet Rate over the past five years (fiscal 2021 to fiscal 2025).

The Freshet Rate was designed to assist in the management of a seasonal energy surplus during the defined Freshet Period by encouraging industrial customers to use more electricity. BC Hydro's system energy surplus arises during freshet from high system inflows combined with an increase in must-take supply from Independent Power Producers (**IPP**) and low domestic loads. The Freshet Rate helps to mitigate this system condition by providing BC Hydro with options to:

- Increase the ability to import market electricity during low-priced periods;
- Reduce the volume of surplus energy forced to export markets; and/or
- Reduce spill risk at BC Hydro facilities.

The Freshet Rate was also responsive to the 2013 Industrial Electricity Policy Review (**IEPR**) task force recommendations[2] to develop innovative rate options for industrial customers and to recover what BC Hydro would otherwise obtain on the export market, but with potential economic benefits to B.C.

The objective of this report is to assess how well the Freshet Rate has achieved these objectives.

[2] Recommendation 13 of the IEPR task force final report stated, "BC Hydro should work with its industrial customers and the Commission to develop options that take advantage of industrial power consumption flexibility".

1.2 Overview of Results

BC Hydro's main finding is that the Freshet Rate helped mitigate the freshet seasonal surplus in some years, but this did not occur in all years because of the recent drought conditions.

Key metrics are:

1. Customer take-up/participation;
2. Incremental energy sales and revenue; and
3. Ratepayer impact.

Each of these metrics are discussed below. In summary, over the five-year period, the Freshet Rate:

(i) Achieved gross participation from approximately 13%[3] of eligible customers in the transmission service class. The net participation rate was 10%, which accounts for some participants opting out of the Freshet Rate, mainly because of high Mid-Columbia (**Mid-C**) market prices during the Freshet Period in certain years.

(ii) Increased domestic energy sales by 237 GWh and revenue by $11.21 million from participant customers; and

(iii) Resulted in revenue gains of $0.051 million in fiscal 2021, $0.16 million in fiscal 2022, and $0.20 million in fiscal 2023.[4] However, it resulted in revenue losses of $0.88 million and $0.20 million in fiscal 2024 and fiscal 2025, respectively, due to drought conditions. These ratepayer impacts are after

---

3 Some customers preferred the seasonal Freshet Rate, while others would prefer the annual Incremental Energy Rate Pilot which was available from January 1, 2020 – March 31, 2023

4 Revenue gains and losses in this report are net of the marginal cost of energy. BC Hydro uses "system marginal value" as its marginal cost of energy for incremental sales. The system marginal value represents the estimated marginal value of energy in the system. Please refer to section 3.1.1.2 for more detail regarding BC Hydro's methodology used in this report.

accounting for verified costs.[5] Overall, there was a revenue loss of $0.67 million over the five-year period.[6]

1.3 Customer Take-up/Participation

This evaluation report covers the fiscal 2021 to fiscal 2025 Freshet Periods.

There were 25 participant customer sites in fiscal 2021, 23 in fiscal 2022, 21 in fiscal 2023, 15 in fiscal 2024, and 12 in fiscal 2025,[7] with representation in each year from customers served under RS 1823 – Stepped Rate, RS 1828 – Biomass Energy Program, and RS 1830 new default rate for transmission service effective April 1, 2024.[8]

The average gross participation over the five years is 13%. This is calculated by the average number of participant sites over the five years divided by the average total number of RS 1823, RS 1828, and RS 1830 transmission service customer sites over the five years (the average is 151 sites). The average net participation over the five years is 10%. This accounts for the number of participants that opted-out of the Freshet Rate each year.

Figure 1 below shows the number of customer sites that participated and opted out of RS 1892 each year during the evaluation period.

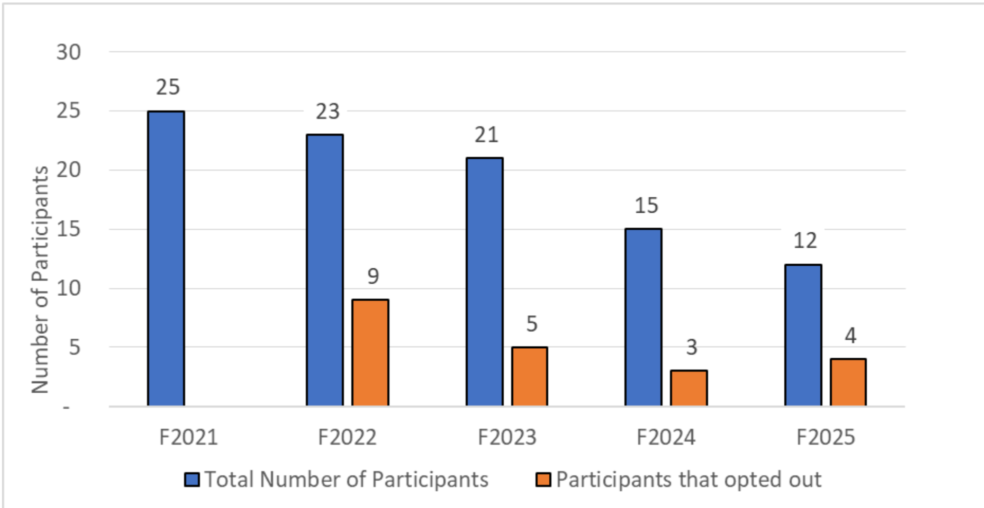
[5] As explained in section 3.1.1.3, verified costs include implementation costs and verified load-shifting costs.

[6] For comparison over the pilot period, BC Hydro experienced ratepayer gains of $1.4 million in fiscal 2017, $1.0 million in fiscal 2018 and $1.3 million in fiscal 2019 along with a ratepayer loss of $0.5 million in fiscal 2020. This resulted in a total ratepayer gain of $3.2 million over the four-year pilot period, after accounting for verified costs.

[7] BC Hydro's initial estimate of participation in its 2015 Application was three to five customers.

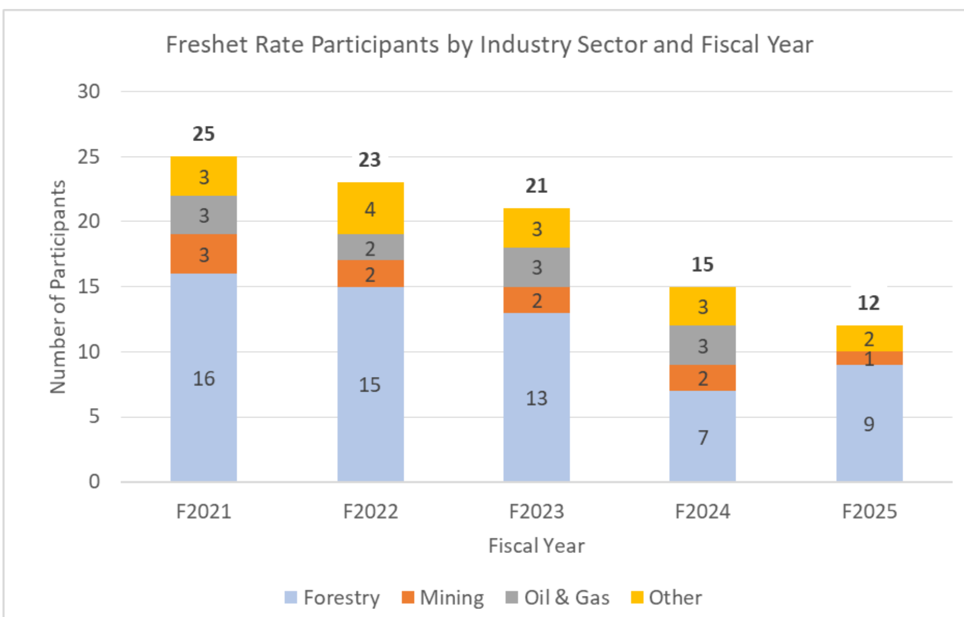
[8] Commission Order G-353-23, approving new default rate schedule for BC Hydro's transmission service customers, RS 1830. https://www.ordersdecisions.bcuc.com/bcuc/orders/en/522045/1/document.do

Figure 1 Customer Site Participation by Year



The rate had participation from a broad cross-section of industry sectors, as shown in Figure 2 below.

Figure 2 Customer Site Participation by Industry Sector



Fiscal 2021 Freshet Rate Participation

Twenty-five unique transmission customer sites from across the province participated in the Freshet Rate in fiscal 2021. No customers opted out of the rate.

Fiscal 2022 Freshet Rate Participation

Twenty-three unique transmission customer sites from across the province participated in the Freshet Rate in fiscal 2022. Nine customers subsequently opted out of the rate in fiscal 2022, reducing the total number of participant sites to 14:

- One customer opted out in June 2021; and
- Eight customers opted out in July 2021.

All nine customers opted out of the rate due to high Mid-C market prices.

Fiscal 2023 Freshet Rate Participation

Twenty-one unique transmission customer sites from across the province participated in the Freshet Rate in fiscal 2023. Five customers subsequently opted out of the rate in fiscal 2023, reducing the total number of participant sites to 16:

- One of the five customers requested service under RS 1880 in May 2022; therefore, supply under RS 1892 was automatically cancelled for the fiscal 2023 Freshet Period;
- Two customers opted out in May 2022; and
- Two customers opted out in July 2022.

The four customers who opted out of the rate did so due to high Mid-C market prices in May and July 2022.

Fiscal 2024 Freshet Rate Participation

Fifteen unique transmission customer sites from across the province participated in the Freshet Rate in fiscal 2024. Three customers subsequently opted out of the rate in fiscal 2024, reducing the total number of participant sites to 12:

- Two of the three customers requested service under RS 1880 in May and June 2023, respectively; therefore, supply under RS 1892 for these two customers was automatically cancelled for the fiscal 2024 Freshet Period; and
- One customer opted out of the rate in July 2023 due to high Mid-C market prices.

Fiscal 2025 Freshet Rate Participation

Twelve unique transmission customer sites from across the province participated in the Freshet rate fiscal 2025.[9] Four customers subsequently opted out of fiscal 2025, reducing the total number of participant sites to eight:

- One of the four customers requested service under RS 1880 in July 2024; therefore, supply under RS 1892 for this customer was automatically cancelled for the fiscal 2025 Freshet Period; and
- Three customers opted out of the rate in July 2024, due to high Mid-C market prices.

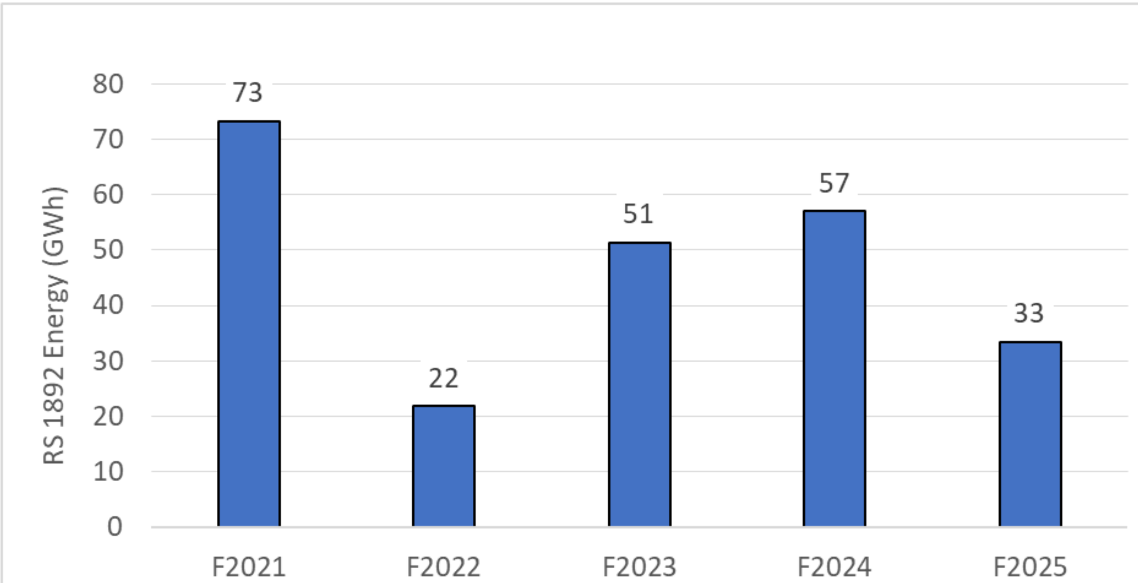
1.4 Incremental Energy Sales and Revenue

The rate resulted in incremental energy sales and revenue during each year from fiscal 2021 to fiscal 2025.

Refer to Figure 3 below for the annual RS 1892 incremental sales. Total RS 1892 energy sales were 73 GWh in fiscal 2021, 22 GWh in fiscal 2022, 51 GWh in fiscal 2023, 57 GWh in fiscal 2024, and 33 GWh in fiscal 2025.

9 Of the 12 participant customers, 10 took service under RS 1830.

Figure 3 Annual RS 1892 Energy Sales per Year



Refer to Table 1 below for the RS 1892 energy sales and revenue. Over the five years, total cumulative RS 1892 energy sales were 237 GWh and total cumulative RS 1892 revenue was $11.21 million.

The average RS 1892 energy sales over the five-year period was 47 GWh/year. This is in line with BC Hydro's initial estimate of incremental energy consumption in its 2015 Rate Design Application (**RDA**) of 11 to 66 GWh/year.[10] However, average energy sales declined relative to the average energy sales under the Freshet Rate Pilot, which was 153 GWh/year from fiscal 2017 to fiscal 2019.

[10] BC Hydro reported expected take-up of 5 to 30 MW of average incremental energy over the Freshet Period during a stakeholder workshop (refer to TSR Workshop No. 2, May 7, 2015, contained in Appendix C-5B, page 38 of 212, of the 2015 RDA). BC Hydro provided the corresponding gigawatt hour range of 11 to 66 GWh over the Freshet Period (please refer to 2015 RDA Transcript Volume 2, page 221, lines 4 to 10). The link for the transcript is: https://docs.bcuc.com/documents/transcripts/2016/doc_45557_01-25-2016_bch-transcript-srp-vol2.pdf.

Table 1 Summary of Incremental Sales and Revenue

	F2021	F2022	F2023	F2024	F2025	TOTAL
Total number of Participant Customer Sites	25	23	21	15	12	
RS 1892 energy sales (MWh)	73,218	21,752	51,372	56,978	33,304	236,625
Average incremental load (Average MW/ hr)	33	10	23	26	15	
Average unit cost of market-priced energy (C$ / MWh)	13.72	71.20	58.03	59.71	52.59	
RS 1892 energy revenue ($M)	1.00	1.55	2.98	3.40	1.75	
Plus C$ 3 /MWh adder ($M)	0.22	0.07	0.15	0.17	0.10	0.71
Plus applicable deferral account rate rider and trade income rider ($M) *	-	-	(0.06)	(0.04)	(0.09)	
Total RS1892 revenue (*excluding taxes*)	**1.22**	**1.61**	**3.07**	**3.54**	**1.76**	**11.21**

* Deferral Account Rate Rider : F2023 (2)%, F2024 (1)% , F2025 (2.5)% and Trade Income Rate Rider: F2025 (2.3)%

1.5 Ratepayer Impact

The Freshet Rate resulted in both benefits and costs for ratepayers from fiscal 2021 to fiscal 2025. Some years produced overall benefits, while others resulted in overall costs. These variations highlight the impact of market and system conditions on the Freshet Rate and its effects on ratepayers.

Participant Impact

Participants experienced cost reductions when the average RS 1892 unit price for electricity was lower than the average unit price for RS 1823 or RS 1830 electricity. During these times, the lower average unit price incentivized customers to purchase more electricity, reducing their overall average cost.

From fiscal 2021 to fiscal 2025, BC Hydro estimates total electricity cost reductions for participants ranged from $0.37 million to $13.8 million (see Table 2), based on the following two illustrative scenarios:

- Scenario 1: The cost reduction was estimated using the difference between the weighted average RS 1892 energy charge and the RS 1823 Tier 1 energy charge, resulting in savings of about $0.37 million; and

- Scenario 2: The cost reduction was estimated using the difference between the weighted average RS 1892 energy charge and the RS 1823 Tier 2 energy charge, resulting in savings of about $13.8 million.

Table 2 Illustrative Participant Impact

Fiscal Year:	F2021	F2022	F2023	F2024	F2025	Total
Number of participants:	25	23	21	15	12	
Estimated Energy unit cost difference						
Average RS 1892 energy charge (includes $3/MWh adder)	16.72	74.20	61.03	62.71	55.56	
RS 1823 Tier 1 energy charge	44.62	45.07	45.43	45.96	48.91	
Electricity price differential vs RS 1823 Tier 1 $/MWh	27.90	(29.13)	(15.60)	(16.75)	(6.65)	
Total RS 1892 energy volume (MWh)	73,218	21,752	51,372	56,978	33,304	
Estimated energy cost difference - Scenario 1 relative to RS 1823 Tier 1	2,042,848	(633,646)	(801,477)	(954,128)	(221,325)	**(567,728)**
RS 1823 Tier 2 energy charge	99.95	100.95	101.75	102.94	109.55	
Electricity price differential vs RS 1823 Tier 2 $/MWh	83.23	26.75	40.72	40.23	53.99	
Estimated energy cost difference - Scenario 2 relative to RS 1823 Tier 2	6,094,022	581,864	2,091,769	2,292,487	1,798,258	**12,858,400**
***** Some customers in F2025 were billed on RS 1830 (Energy charge A @ $ 48.11, B @$51.01 or C @ $53.74) - comparison in the table is to RS 1823 T1 & T2 Energy charges)***						
Estimated Demand difference						
Total RS 1892 energy sales (MWh)	73,218	21,752	51,372	56,978	33,304	
Total number of hours during Freshet Period (hrs)	2,208	2,208	2,208	2,208	2,208	
Average incremental demand at unity power factor (kVA)	33,161	9,852	23,266	25,805	15,084	
RS 1823 demand charge ($/kVA)	8.56	8.64	8.70	8.81	9.38	
Estimated demand cost difference ($M)	283,721	85,137	202,322	227,396	141,453	**940,030**
Estimated Total Cost Reduction						
Total estimated electricity cost reduction Scenario 1* ($M)	**2,326,569**	**(548,509)**	**(599,155)**	**(726,731)**	**(79,871)**	**372,302**
Total estimated electricity cost reduction Scenario 2* ($M)	**6,377,744**	**667,001**	**2,294,091**	**2,519,883**	**1,939,711**	**13,798,430**
** excludes rate rider charges and taxes*						
***** Some customers in F2025 were billed on RS 1830 (demand of 10.154 $/kVA) - comparison in the table is to RS 1823 demand of 9.378 $/kVA***						

1.6 Non-Participant Impact

For non-participants, the estimated impact is based on an economic analysis of various system conditions performed by BC Hydro. Daily generation operations were examined to determine the marginal resource used to serve incremental RS 1892 energy volumes during each day of the rate, in both High Load Hours (**HLH**) (on-peak hours) and Low Load Hours (**LLH**) (off-peak hours).

During typical inflow years, non-participants benefited from the Freshet Rate due to surplus energy and favourable market conditions, amounting to a revenue gain[11] of

[11] Revenue gains and losses in this report are net of the marginal cost of energy. BC Hydro uses “system marginal value” as its marginal cost of energy for incremental sales. The system marginal value represents the estimated marginal value of energy in the system. Please refer to section 3.1.1.2 for more detail regarding BC Hydro’s methodology used in this report.

$0.539 million from fiscal 2021 to fiscal 2023 (see Table 3). In years with drought conditions, reduced inflows led to increased costs, amounting to a revenue loss of $1.074 million from fiscal 2024 to fiscal 2025 (see Table 3).[12]

Table 3 Ratepayer Gain or (Loss) by System Condition ($000)

[redacted]

[12] In comparison, the Freshet Rate Pilot had revenue gains of $2.26 million in fiscal 2017, $2.19 million in fiscal 2018, $1.87 million in fiscal 2019, and a loss of $0.5 million in fiscal 2020 before accounting for verified costs. This resulted in an overall revenue gain of $5.825 million over the pilot period.

After adjusting for implementation and verified load-shifting costs, BC Hydro estimates an overall adjusted ratepayer revenue loss of $0.67 million from fiscal 2021 to fiscal 2025 (see Table 4 below).[13]

Table 4 Adjusted Ratepayer Revenue Gain or (Loss) by Year ($000)

	F2021	F2022	F2023	F2024	F2025	Total
Ratepayer revenue gain or (loss)[14]	176	161	202	(876)	(198)	(535)
Less implementation costs[15]	(125)	(1)	(1)	(1)	(1)	(130)
Less customer-reported load shift	-	-	-	-	-	0
Natural load increase	-	(4.5)	(0.1)	-	-	(4.6)
RS 1880 replacement service	-	-	-	-	-	0
Adjusted Ratepayer Revenue Gain or (Loss)	**51**	**155**	**201**	**(877)**	**(199)**	**(669)**

2 Evaluation Scope and Report Structure

BCUC Order G-17-16 directed BC Hydro to file the three evaluation reports as described in section 7.3.4.6 of the 2015 RDA. These three reports are described in Table 5 below.

On December 8, 2017, BC Hydro applied to extend the Freshet Rate Pilot to include a third year and also proposed to extend the timeline for filing the final evaluation report from spring 2018 to fall 2018. By Order No. G-45-18, the Commission

[13] In comparison, the Freshet Rate Pilot had an adjusted ratepayer revenue gain of $3.2 million over the four-year pilot period, after accounting for verified costs.

[14] For additional information on the calculation of ratepayer revenue gain or loss, refer to section 3.1.1.2.

[15] For additional information on the implementation costs associated with the rate, refer to section 3.1.6.

approved an extension to fall 2018 for filing of the final evaluation report, which included an evaluation of Year 3.

BC Hydro filed its first evaluation report (Report A - Year 1) on December 8, 2016.[16] The second evaluation report (Report B – Year 2) was filed on December 5, 2017. The final Evaluation Report (Report C), which includes Year 3 results, was filed on December 17, 2018.

Table 5 2015 RDA Evaluation Reports

Report	RDA Proposal
Preliminary Evaluation Report	• Report A: Fall 2016 – Report take-up of the pilot in Year 1 and identify total sales and revenue under the rate. • Report B: Fall 2017 – Report take-up of the pilot in Year 2 and identify total sales and revenue under the rate. Report the impact of shifting in Year 1, which BC Hydro can only do at the end of fiscal 2017.
Final Evaluation Report	• Report C: Spring 2018 – summary of take-up and shifting over the two-year pilot program.

On April 8, 2019, BC Hydro filed an application with the BCUC requesting approval for an extension of the previously approved RS 1892 – Transmission Service – Freshet Energy until December 31, 2019. This application was approved by BCUC Order G-106-19. This order also directed BC Hydro to submit an evaluation report for the Freshet Rate Pilot for 2019, on or before October 31, 2019, and to file an application for a permanent Freshet Rate on or before September 30, 2019. On August 23, 2019, BC Hydro sought approval for an extension to the filing date for its application for a permanent Freshet Rate to October 31, 2019, instead of September 30, 2019, as directed by the BCUC. This request was approved by BCUC Order G-224-19.

[16] Appendix D, “BC Hydro System Conditions during Freshet and Associated Management Strategies”, of the Report was filed with the Commission on January 27, 2017.

On October 31, 2019, BC Hydro filed the Transmission Service Market Reference-Priced Rates Application, which sought approval of the Freshet Rate to be made available on a permanent basis commencing April 1, 2020.

Appendix D of this Application includes BC Hydro's Freshet Rate Pilot Final Evaluation Report (December 2018), which covered the fiscal 2017 to fiscal 2018 Freshet Periods. Appendix E of this Application includes the Freshet Rate Evaluation Report for Year 2019 (October 2019).[17]

BCUC Order G-104-20 directed BC Hydro to file a full evaluation report of the Freshet Rate by December 31, 2024. In Appendix A to Order G-104-20, Reasons for Decision, the Panel provided the following guidance for the evaluation report content on page 22:

> "The format and contents of the evaluation report should be consistent with the evaluation reports prepared for the pilot period, coupled with a full assessment of implementation costs, load shifting, and the breakdown of the three system conditions by each year."

The concordance table shown in Table 6 below identifies the specific section where each of the evaluation criteria, as set forth in Order No. G-17-16 and section 7.3.4.6 of the 2015 RDA, has been addressed in the current evaluation report.

On April 29, 2024, BC Hydro filed a letter to inform the BCUC of billing errors that it recently discovered, which have resulted in customers being under-billed for demand under RS 1823 and RS 1828 when those customers also receive service under RS 1892 or RS 1893 (Transmission Service – Incremental Energy Rate). Directive 4 of Order No. G-175-24 ordered BC Hydro to include in this evaluation report an analysis of the impact, if any, of the application of demand charge ratchets

[17] Refer to https://docs.bcuc.com/documents/proceedings/2019/doc_56395_b-1-bch-application.pdf.

on the performance of the Freshet Energy rate. This directive is addressed in section 3.1.5.

Table 6 Evaluation Criteria Concordance

Evaluation Criteria	Section
Directive 4 of Commission Order No. G-17-16	
a) Analysis of the costs/benefits to non-participating customers, including the $0kWh floor price, and evaluating the appropriateness of sharing additional benefits with non-participating customers;	3.1.1.2
b) The Freshet Rate pilot wheeling charges as compared to those that would have been collected had FortisBC Inc.'s standby rate charges been applied;	3.1.2
c) The data, the calculations, the analysis and other considerations, if any, that went to determining each customer's baseline, each customer's Freshet Rate charges and each customer's RS 1823 charges;	3.1.3
d) Freshet rate engagement activities with commercial ratepayers and other ratepayer groups;	3.1.4
e) Detailed information as to the extent of the potential energy oversupply issue and BC Hydro's progress on other strategies it is pursuing to mitigate the issue;	3.2.1
f) All costs associated with the implementing the Freshet Rate pilot; and	3.1.6
g) An analysis of the impact of any load shifting including the actual monthly consumption for each pilot participant in comparison to the respective Customer Baseline Loads for each.	3.1.7
Directive 5 of Commission Order No. G-17-16 *Prior to filing the final evaluation report on the Freshet Rate pilot, BC Hydro is to consult with stakeholders on further process in the event there is a recommendation that the freshet pilot rate be made permanent.*	Not applicable
Directive 6 of Commission Order No. G-17-16	
BC Hydro is directed to provide more clarity in its evaluations and provide more clarity as to the magnitude of the energy surplus during freshet and provide an estimate of its potential value.	3.2.1
2015 RDA, section 7.3.4.6	
1. Did the rate provide RS 1823 customers with lower cost options?	3.3.1
2. Did the rate have positive or negative impacts on non-participating customers?	3.3.2
3. How many RS 1823 customers used the rate? What were the volumes of use?	3.3.3
4. How did customers use the rate?	3.3.4
5. To what extent did shifting contribute to higher freshet energy?	3.3.5
6. Was there any shifting within the Freshet Period from HLH to LLH?; and	3.3.6
7. Were there any issues with setting baselines, implementation, or billing?	3.3.7

Evaluation Criteria	Section
8. Did the pilot impact customer's conservation and efficiency measures?	3.3.8
9. How quickly did customers respond to changes in market prices?	3.3.9
10. Did customers with aggregated RS 1823 loads shift consumption between plants to take advantage of this rate?	3.3.10
11. Did BC Hydro curtail any customers under the non-firm provisions of the rate? If so, what led to the curtailments? If not, were there any financial impacts on BC Hydro from not curtailing customers during constrained periods?	3.3.11
12. Was there any impact on RS 1880 events? Did customers use the rate as a substitute for RS 1880?	3.3.12
Directive 4 of Commission Order No. G-175-24	
BC Hydro is directed to include in its evaluation report, directed by Order G-104-20, an analysis of the impact, if any, of the application of demand charge ratchets on the performance of the Freshet Energy rate.	3.1.5

The balance of this report is organized into two sections as set out below:

- Section 3: Evaluation Criteria; and
- Section 4: Customer and Stakeholder Engagement

3 Evaluation Criteria

3.1 Directive 4 of Commission Order No. G-17-16 and Directive 4 of Commission Order No. G-175-24

3.1.1.1 Participant Impact

Benefits to participants arise when the average unit price for RS 1892 electricity is lower than the average unit price for RS 1823 electricity. This lower price provides an incentive for participant customers to purchase incremental electricity thereby reducing their overall average unit cost of electricity.

BC Hydro provides an illustrative estimate of the total electricity cost reduction for participant customers of approximately $0.37 million (scenario 1) and $13.8 million (scenario 2) in Table 7 below.

For this illustrative estimate, BC Hydro used the difference between the weighted average RS 1892 unit energy price and the RS 1823 Tier 1 unit energy price to estimate the average unit cost reduction for incremental energy sales (scenario 1) and the weighted average RS 1892 unit energy price and the RS 1823 Tier 2 unit energy price to estimate the average unit cost reduction for incremental energy sales (scenario 2).

The participant benefit of not paying a demand charge under the Freshet Rate for incremental energy consumption was also included. For illustrative purposes, BC Hydro used a proxy estimate for the billing demand for the incremental energy consumption and used the RS 1823 demand charge to estimate the demand charge savings under the Freshet Rate.[18]

Actual results will differ on a customer-by-customer basis.[19] This analysis does not consider customer-specific benefits arising from the production and sale of incremental product.

[18] The avoided demand charge for an individual customer will be higher than our estimate, which assumes a 100% load factor, since a customer will have a load factor lower than 100%.

[19] Participant customers may each see a different energy price (i.e., an RS 1823 Tier 1 energy price, an RS 1823 Tier 2 energy price, an RS 1830 energy price (in fiscal 2025), or an RS 1880 energy price) for incremental load, depending on their unique circumstances.

Table 7 Illustrative Benefit for Participant Customers

	F2021	F2022	F2023	F2024	F2025	Total
Number of participants	**25**	**23**	**21**	**15**	**12**	
Estimated Energy unit cost difference						
Average RS 1892 energy charge (includes $3/MWh adder)	16.72	74.20	61.03	62.71	55.56	
RS 1823 Tier 1 energy charge	44.62	45.07	45.43	45.96	48.91	
Electricity price differential vs RS 1823 Tier 1 $/MWh	27.90	(29.13)	(15.60)	(16.75)	(6.65)	
Total RS 1892 energy volume (MWh)	73,218	21,752	51,372	56,978	33,304	
Estimated energy cost difference - Scenario 1 relative to RS 1823 Tier 1	2,042,848	(633,646)	(801,477)	(954,128)	(221,325)	**(567,728)**
RS 1823 Tier 2 energy charge	99.95	100.95	101.75	102.94	109.55	
Electricity price differential vs RS 1823 Tier 2 $/MWh	83.23	26.75	40.72	40.23	53.99	
Estimated energy cost difference - Scenario 2 relative to RS 1823 Tier 2	6,094,022	581,864	2,091,769	2,292,487	1,798,258	**12,858,400**
***** Some customers in F2025 were billed on RS 1830 (Energy charge A @ $ 48.11, B @$51.01 or C @ $53.74) - comparison in the table is to RS 1823 T1 & T2 Energy charges)***						
Estimated Demand difference						
Total RS 1892 energy sales (MWh)	73,218	21,752	51,372	56,978	33,304	
Total number of hours during Freshet Period (hrs)	2,208	2,208	2,208	2,208	2,208	
Average incremental demand at unity power factor (kVA)	33,161	9,852	23,266	25,805	15,084	
RS 1823 demand charge ($/kVA)	8.56	8.64	8.70	8.81	9.38	
Estimated demand cost difference ($M)	283,721	85,137	202,322	227,396	141,453	**940,030**
Estimated Total Cost Reduction						
Total estimated electricity cost reduction Scenario 1* ($M)	**2,326,569**	**(548,509)**	**(599,155)**	**(726,731)**	**(79,871)**	**372,302**
Total estimated electricity cost reduction Scenario 2* ($M)	**6,377,744**	**667,001**	**2,294,091**	**2,519,883**	**1,939,711**	**13,798,430**
** excludes rate rider charges and taxes*						
***** Some customers in F2025 were billed on RS 1830 (demand of 10.154 $/kVA) - comparison in the table is to RS 1823 demand of 9.378 $/kVA***						

3.1.1.2 Non-participant Impact

The estimated impact to non-participant ratepayers is based on an economic analysis performed by BC Hydro. Daily generation operations were examined to determine the marginal resource used to serve incremental RS 1892 energy volumes during each day of the rate, in both HLH (on-peak hours) and LLH (off-peak hours).[20] The marginal resource used to serve RS 1892 energy on any given day reflects one of the three conditions described below.

Condition 1: Minimum Generation with Exports

When BC Hydro is experiencing a minimum generation constraint, and there are net exports, incremental domestic sales under RS 1892 will reduce exports. Holding market price constant, BC Hydro will see a revenue increase equal to the sum of the CAD $3/MWh adder and applicable rate rider collected under RS 1892, plus the avoided applicable wheeling charge paid for energy transferred from the B.C. border

[20] On peak hours are 6 a.m. to 10 p.m., Monday through Saturday, excluding Sundays and US statutory holidays. Off peak hours are all other hours.

to the Mid-C market (converted to Canadian dollars daily) and applicable transmission losses for each MWh that was not exported.

Condition 2: Minimum Generation with Imports

When BC Hydro is experiencing a minimum generation constraint, with economic market imports, incremental domestic sales under RS 1892 will increase market imports. Holding market price constant, BC Hydro will see a revenue decrease equal to the difference between the CAD $3/MWh adder and applicable rate rider collected under RS 1892, and the applicable wheeling charge paid for energy delivery from the Mid-C market to the BC border (converted to Canadian dollars daily) plus applicable transmission losses.[21] On days where the market price is negative, the daily revenue loss is reduced by the difference between the actual market price and $0/MWh floor price under RS 1892.

Condition 3: Large Basin Generation on the Margin

Holding import/export volumes constant, the loading of BC Hydro's large basin generation will be increased to serve additional RS 1892 load. BC Hydro considers that the cost consequence (i.e., ratepayer revenue gain or loss) of this circumstance can be estimated by comparing the price of RS 1892 energy sales with the marginal value of the energy removed from storage to serve the additional load rather than being held in storage for later generation. The value of the incremental generation from the large basin that is operated to serve the load can be expressed as a daily System Marginal Price. For any day where basin energy was used to serve RS 1892 loads, the difference between the price of actual RS 1892 energy sales and BC Hydro's System Marginal Price is used to determine the revenue gain or loss on that day. This condition results in a revenue gain for BC Hydro when the price of the energy sold to RS 1892 customers is greater than the System Marginal Price. Like

[21] The wheeling charge for energy delivery from the Mid-C market ranged from $5.32 USD/MWH to $5.65 USD/MWh over fiscal 2021 to fiscal 2025, and transmission losses were 1.9% (see section 3.1.2 for more details).

Condition 1, where there might otherwise be an export of surplus energy into low-priced markets, a revenue gain arises from the avoidance of wheeling fee and losses to shape and deliver the energy to market in some future period.

Table 8 below shows the estimated ratepayer impact that was calculated for each system condition by month during each fiscal year of the Freshet Rate evaluation period. There are ratepayer revenue gains of $0.18 million in fiscal 2021, $0.16 million in fiscal 2022, and $0.20 million in fiscal 2023 and ratepayer revenue losses of $0.88 million and $0.20 million in fiscal 2024 and fiscal 2025, respectively.

Before accounting for verified costs, BC Hydro estimates a revenue loss of $0.535 million for non-participants over the five-year period. This estimate is based on taking the total sum of the revenue gains or losses each year shown in Table 8 below.[22]

[22] In comparison, the Freshet Rate pilot had revenue gains of $2.26 million in fiscal 2017, $2.19 million in fiscal 2018, $1.87 million in fiscal 2019, and a loss of $0.5 million in fiscal 2020 before accounting for verified costs. This resulted in an overall revenue gain of $5.825 million over the pilot period.

Table 8 Ratepayer Revenue Gain or (Loss) by System Condition ($000)

[redacted]

Note: Numbers may not precisely add due to rounding.

During typical inflow years, there was a positive impact on ratepayers.

The ratepayer revenue losses in fiscal years 2024 and 2025 occurred because of drought conditions that resulted in significantly below average system inflows. This reduced the freshet energy surplus and contributed to higher system marginal prices and higher market energy imports.[23]

[23] Fiscal 2024 Annual Report to the BCUC (August 30, 2024): https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/regulatory-filings/reports/2024-08-30-bch-f24-annual-report-to-bcuc.pdf

3.1.1.3 Adjusted Impact to Non-Participants

BC Hydro further adjusted the estimate in Table 8 above to include the impact of verified costs. These costs include: (1) implementation costs; and (2) verified load shifting costs, which includes customer-reported events of load-shifting, unexplained load variances, natural load growth, and use of RS 1892 as a replacement service for RS 1880 during events of forced generator outage.

Costs related to implementation and verified load-shifting impacts[24] have been used to adjust BC Hydro's operations estimate of ratepayer impact, as shown in Table 9 below. Total implementation costs over the five-year period are $0.13 million and the load-shifting impact is estimated to be $0.0046 million.

After adjusting for implementation and verified load-shifting costs, BC Hydro estimates an adjusted ratepayer revenue loss of $0.67 million from fiscal 2021 to fiscal 2025.[25]

Table 9 Adjusted Ratepayer Impact by Year ($000)

	F2021	F2022	F2023	F2024	F2025	Total
Ratepayer gain or (loss)[26]	176	161	202	(876)	(198)	(535)
Less implementation costs[27]	(125)	(1)	(1)	(1)	(1)	(129)
Less customer-reported load shift	-	-	-	-	-	0
Less Natural load growth impact	-	(4.5)	(0.1)	-	-	(4.7)
Less RS 1880 replacement service impact	-	-	-	-	-	0
Adjusted Ratepayer Gain or (Loss)	**51**	**155.5**	**201**	**(877)**	**(199)**	**(669)**

[24] As explained in section 3.1.7, BC Hydro only used fiscal 2023 for customer-reported load shift analysis and none was found.

[25] In comparison, the Freshet Rate Pilot had an adjusted ratepayer benefit of $3.2 million over the four-year pilot period, after accounting for verified costs.

[26] For additional information on the calculation of ratepayer gain and loss, refer to section 3.1.1.2.

[27] For additional information on the implementation costs associated with the rate, refer to section 3.1.6.

Please refer to section 3.1.6 for additional detail on the implementation costs and section 3.1.7.1 for more details on the load shifting analysis and results.

3.1.2 Appropriateness of the Energy Charge Adder

BC Hydro considers that the $3 energy adder has worked as intended. It functions as both a contribution to BC Hydro's fixed costs and reduces the financial risk associated with incremental load under a prolonged Condition 2 system operation.

In the final evaluation report for the Freshet Rate pilot, filed in December 2018,[28] BC Hydro considered that the $3 per MWh adder provided a sufficient margin to cover any residual revenue shortfalls that may arise for energy imports over the entire Freshet Period and across multiple Freshet Periods.

Over the fiscal 2021 to fiscal 2025 period there were significant periods of time operating under Condition 2 and Condition 3. As explained in section 3.1.1.2, RS 1892 load under Condition 2 operation incurs a small net loss to BC Hydro. RS 1892 load under Condition 3 typically results in a revenue gain for BC Hydro but can result in a loss when the basin price is significantly higher than the market, such as can happen under a severe drought. RS 1892 load under Condition 1 is favourable from a net cost perspective, however, the objective of RS 1892 is to reduce the volume of surplus energy forced to export markets under Condition 1.

The results above indicate that for the current evaluation period, from fiscal 2021 to fiscal 2025, the adder was not sufficient to offset the residual revenue shortfalls that arose for energy imports over the Freshet Periods during the fiscal 2024 and fiscal 2025 drought years. Once system conditions return to normal, keeping the adder at $3 would continue to encourage participation, and is expected to result in benefits to both participating and non-participating rate payers.

[28] Please see Appendix D of BC Hydro's Transmission Service Market Reference Priced Rates Application: https://docs.bcuc.com/documents/proceedings/2019/doc_56395_b-1-bch-application.pdf

3.1.3 Baseline Determination, Adjustment and Approval

For each period of the Freshet Rate and in accordance with Special Condition 2 of RS 1892, customers provided written notice to BC Hydro to take electricity under RS 1892 via an application form submitted by March 1st of the previous year. Following receipt of the application form, BC Hydro prepared RS 1892 Baseline Statements for each participating customer (i.e., HLH Baseline, LLH Baseline, and Reference Demand Baseline) determined in accordance with Special Condition 3 of RS 1892. The purpose of the customer specific electricity baselines is to separate incremental RS 1892 electricity purchases from RS 1823, RS 1828, or RS 1830 (as applicable) electricity purchases during the Freshet Period of each year of participation.

BC Hydro emailed the RS 1892 Baseline Statements to each participating customer and requested that the customer review the information to confirm that it was accurate (i.e., matched their invoices) and representative of expected RS 1823, RS 1828, or RS 1830 electricity usage during the Freshet Period. BC Hydro asked each participating customer to sign the RS 1892 Baseline Statement as confirmation of this review. BC Hydro staff made themselves available by email, telephone, in-person, and virtual meetings to review the RS 1892 Baseline Statement with participant customers, to discuss prospective actions and estimated take-up volumes, and to consider energy baseline and Reference Demand adjustments. Special Condition 4 of RS 1892 provides BC Hydro and the customer with the ability to determine alternative baselines or Reference Demand baselines, subject to Commission approval, where the parties consider 2015 Freshet Period data is not representative of expected RS 1823, RS 1828, or RS 1830 usage during the RS 1892 Freshet Period in fiscal years 2021, 2022, 2023, 2024, and 2025.

BC Hydro has filed several adjusted electricity baselines pursuant to Special Condition 4 as described below:

- In the fiscal 2021 Freshet Period, there were 25 participant customer sites that had baselines determined in accordance with RS 1892 using unadjusted fiscal 2015 data or previously adjusted baselines. Three of the participant sites had baselines that required adjustment pursuant to Special Condition 4 of RS 1892. These were filed with and approved by the BCUC;[29]
- In the fiscal 2022 Freshet Period, there were 23 participant customer sites that had baselines determined in accordance with RS 1892 using unadjusted fiscal 2015 data. No customer sites had baselines that required adjustment pursuant to Special Condition 4 of RS 1892;
- In the fiscal 2023 Freshet Period, there were 21 participant customer sites that had baselines determined in accordance with RS 1892 using unadjusted fiscal 2015 data or previously adjusted baselines. No customer sites had baselines that required adjustment pursuant to Special Condition 4 of RS 1892;
- In the fiscal 2024 Freshet Period, there were 15 participant customer sites that had baselines determined in accordance with RS 1892 using unadjusted fiscal 2015 data or previously adjusted baselines. One participant site had baselines that required adjustment pursuant to Special Condition 4 of RS 1892. This was filed with and approved by the BCUC;[30] and
- In the fiscal 2025 Freshet Period, there were 12 participant customer sites that had baselines determined in accordance with RS 1892 using unadjusted fiscal 2015 data or previously adjusted baselines. Two participant sites had baselines that required adjustment pursuant to Special Condition 4 of RS 1892. These were filed with and approved by the BCUC.[31]

[29] Refer to BCUC Order No. G-203-20 (fiscal 2021).
[30] Refer to BCUC Order No. G-119-23 (fiscal 2024).
[31] Refer to BCUC Order No. G-148-24 (fiscal 2025).

In each instance, the details of the specific adjustment were filed with the BCUC on a confidential basis to protect commercially sensitive customer information.

3.1.4 Freshet Rate Engagement with Commercial and other Ratepayers

BC Hydro is exploring more optional rates for residential, commercial, and industrial customers and plans to start engagement with various customer groups in 2025 and 2026 to understand they needs and preferences.

3.1.5 Impact of Incorrect Billing Demand Interpretation for Customers served under RS 1823 and RS 1828

This section addresses Directive 4 of Commission Order No. G-175-24, which directs BC Hydro to include in its evaluation report an analysis of the impact, if any, of the application of demand charge ratchets on the performance of the Freshet Energy rate. As outlined in section 2, BC Hydro discovered billing errors from fiscal 2017 through fiscal 2024 that resulted in customers being under-billed for demand under RS 1823 and RS 1828 when those customers also receive service under RS 1892 or RS 1893.

The correct formula for Billing Demand under RS 1823 for customers also receiving service under RS 1892 is the highest of the following:[32]

(a) The lesser of: (1) the Reference Demand (for customers also receiving service under RS 1892) or the Monthly Reference Demand (for customers also receiving service under RS 1893); or (2) the actual highest kVA Demand during the High Load Hours in the Billing Period; or

(b) 75% of the highest Billing Demand for the Customer's Plant in the immediately preceding period of November to February, both months included; or

[32] Refer to page 6 of BC Hydro's letter to BCUC, Rate Schedules 1823 and 1828 Billing Demand Interpretation for Customers Served under Rate Schedules 1892 and 1893 (dated April 29, 2024).

(c) 50% of the Contract Demand stated in the Electricity Supply Agreement for the Customer's Plant.

Between 2016 and 2020, an incorrect formula was programmed and subsequently used in BC Hydro's billing software to calculate Billing Demand under RS 1823 for customers also receiving service under RS 1892, as follows:[33]

> "The lesser of:
>
> - Reference demand
> - The greater of:
>   - the actual highest kVA Demand during the High Load Hours (HLH) in the Billing Period; or
>   - 75% of the highest Billing Demand for the Customer's Plant in the immediately preceding period of November to February, both months included; or
>   - 50% of the Contract Demand stated in the Electricity Supply Agreement for the Customer's Plant."

Between 2022 and 2024, the incorrect billing formula used to calculate Billing Demand under RS 1823 for customers also receiving service under RS 1892 was as follows:

> "The lesser of:
>
> - The Monthly Reference Demand
> - The actual highest kVA Demand during the High Load Hours (HLH) in the Billing Period."

This meant that the calculation of Billing Demand for these customers under RS 1823 and RS 1828 was based only on the lesser of Monthly Reference Demand and the highest kVA Demand during the HLH in the Billing Period.

In most cases, this incorrect formula would provide the same Billing Demand as intended, because, for most customers, their Reference Demand and actual demand

[33] Ibid. pages 6 and 7.

during the Freshet Period is higher than the demand ratchets such that Billing Demand is equal to Reference Demand, the same as under the correct formula. However, this incorrect formula would result in lower Billing Demand than intended if a customer's Reference Demand was lower than one or both demand ratchets. For most customers, the demand ratchets were not applicable.

BC Hydro calculated the difference between actual billed demand charge revenue and the demand charge revenue that BC Hydro would have collected from these customers assuming they would have continued to take service under RS 1892 and paid higher demand charges under the correct Billing Demand formula. The results of this analysis are shown in Table 10 below.

Table 10 Difference in Demand Charges by Site Status for Customers taking service under RS 1892

$ million	F2017	F2018	F2019	F2020	F2021	F2022	F2023	F2024	Total
(a) Normal Operations	0.07	0.03	0.14	0.12	0.07	0.00	0.11	0.03	0.57
(b) Temporarily Shut down / Curtailed							1.00		1.00
(c) Permanently Shut down / Curtailed									0.00
(d) Total (a)+(b)+(c)	0.07	0.03	0.14	0.12	0.07	0.00	1.11	0.03	1.57
(e) Potential Under - Recovery (a) +(b)	0.07	0.03	0.14	0.12	0.07	0.00	1.11	0.03	1.57

The last column of row (d) in Table 10 shows that the total billing discrepancy for the affected customer sites under RS 1892 from fiscal 2017 to fiscal 2024 is estimated to be $1.57 million and, of this total, $1.0 million was in relation to sites that were temporarily shut down or curtailed. Therefore, the Freshet Rate contributes $1.57 million of the $7.53 million total demand charge difference (including both

RS 1892 and RS 1893), after excluding sites that were shut down, which is reported in Table 1 in BC Hydro's April 29, 2024, letter to the BCUC.

By Order G-175-24, the BCUC approved BC Hydro's application to reduce the balance of the Load Variance Regulatory Account related to the estimated under-collected amount resulting from BC Hydro's error, in the total of $7,529,546, which reduced BC Hydro's net income by $7,529,546 in fiscal 2024. As a result, ratepayers did not bear the revenue loss that occurred due to the application of the incorrect billing demand formula which arose due to incorrect tariff interpretation.

On December 12, 2024, BC Hydro filed amendments to RS 1892 to clarify the place and use of demand charge ratchets in compliance with Directive 5 of BCUC Order No. G-175-24.

3.1.6 Implementation Costs

As of March 2023, BC Hydro incurred approximately $129,512 in incremental costs specific to the implementation and billing of the permanent Freshet Rate as shown in Table 11 below. Implementation costs included rate design and regulatory costs, including half of the costs relating to BCUC fees, Participant Assistance Cost Awards for intervener participation, and BC Hydro's external legal support associated with the Transmission Service Market Reference-Priced Rates Application,[34] as well as billing and customer and stakeholder engagement. All other staff and administration costs were funded under existing operating budgets.

[34] Costs related to the Freshet rate design, regulatory activities, and customer and stakeholder engagement shown under 2021 were incurred in fiscal 2020 and fiscal 2021.

Table 11 Implementation Costs by Fiscal Year

Implementation Cost Description	F2021	F2022	F2023	F2024	F2025	Totals
*Freshet rate design and regulatory approval	$ 108,832	$ -	$ -	$ -	$ -	$ 108,832
*Customer and stakeholder engagement	$ 15,000	$ -	$ -	$ -	$ -	$ 15,000
Billing	$ 1,545	$ 1,385	$ 1,060	$ 890	$ 800	$ 5,680
Evaluation report preparation	$ -	$ -	$ -	$ -	$ -	$ -
Total	**$ 125,377**	**$ 1,385**	**$ 1,060**	**$ 890**	**$ 800**	**$ 129,512**

**Costs related to the Freshet rate design, regulatory activities, and customer and stakeholder engagement costs shown in F2021 were incurred in F2020 and F2021*

3.1.7 Load Shifting Impacts

As noted in the Transmission Service Market Reference-Priced Rates Application, RS 1823 customers participating in the permanent Freshet Rate remained subject to the terms and conditions of Tariff Supplement No. 74 – Customer Baseline Load (**CBL**) Determination Guidelines, including Energy CBL resets, for annual RS 1823 energy purchases. For fiscal 2021 to fiscal 2024,[35] while some participating customers might have the capability to shift a portion of their load from RS 1823 to RS 1892, the prospect of an Energy CBL reset under TS 74 significantly mitigated this risk.[36] BC Hydro notes that no RS 1823 customers sites participating in the Freshet Rate faced an RS 1823 Energy CBL reset during the four years covered by this report, which suggests that RS 1823 consumption was maintained within a reasonable range of participating customer’s RS 1823 baselines (i.e., within 90% to 110% of their Energy CBL, after accounting for any applicable adjustments).

BCUC Order G-353-23 approved a new default rate schedule for BC Hydro’s transmission service customers, RS 1830, effective April 1, 2024. In the fiscal 2025 Freshet Period, nine Freshet Rate participants took service under RS 1830.

[35] Fiscal 2025 was the first year when some of the participant customers were billed under the new default flat rate for transmission service RS 1830.

[36] This is because an Energy CBL annual reset could result in a material change to the mix of RS 1823 Tier 1 and Tier 2 energy purchases for the Customer’s baseline load. All else being equal, this would increase the cost of RS 1823 energy for participant customers who have made prior investments in conservation and operational efficiency. Accordingly, the prospective financial consequence of an Energy CBL reset is a significant deterrent to load shifting.

BC Hydro is not able to determine if customers operated differently on RS 1830 relative to how they have historically operated on the RS 1823 Stepped Rate.

Customer-Reported Load Shifting

Analysis of potential load shifting between RS 1823 and RS 1892 was limited by the following:

- Fiscal 2021 and fiscal 2022 were COVID-19 years:
  - Due to the COVID-19 pandemic in fiscal 2021 and residual impact in fiscal 2022, overall customer annual consumption under RS 1823 was not comparable to calendar year 2015, which was the year used to determine RS 1892 baselines for most participants. There were operational changes across all customer sites as a result of the COVID-19 pandemic. Customers submitted RS 1823 adjustments in relation to these operational changes, which were reviewed and accounted for by BC Hydro.[37]
- Load-shifting analysis was not undertaken for fiscal 2024 and fiscal 2025, as the required CBL information was not available at the time of submitting this evaluation report.[38]
- As a result, BC Hydro determined that fiscal 2023 was the only suitable year for load-shifting analysis and none was found for that year.

[37] BC Hydro considers analysis of load shifting to be extremely complex as it requires a detailed understanding of the many dynamic factors that impact electrical load at each unique customer site. This can be difficult to identify, separate and verify with certainty during a typical year, let alone an abnormal consumption year such was the case following the COVID-19 pandemic.

[38] To complete an analysis of all the adjustments in Table 9, adjusted ratepayer impact for fiscal 2024 and fiscal 2025, BC Hydro would first need to complete its RS 1823 CBL annual review process for participant customers and verify the energy consumption impact of specific customer actions taken during the Freshet Period. This analysis is time consuming and resource intensive. Further, the required information was not available at the time of submitting this evaluation report.

Based on the available data, BC Hydro did not identify any load shifting from customers that resulted in lower consumption on RS 1823, RS 1830, or RS 1828 and corresponding higher consumption on RS 1892.

Natural Load Growth and Replacement of RS1880 Load

As noted above, BC Hydro also considered energy that the customer would have purchased anyway, such as for natural load growth and use of RS 1892 as a replacement service for RS 1880, in the assessment of load shifting:

- Natural load growth is defined as year-over-year growth in electrical load that has occurred over time at the customer site and which is independent of the Freshet Rate energy; and
- An event of RS 1880 replacement occurs when a customer’s self-generation plant experiences a forced outage. When the self-generation is forced out of service, and the customer plant remains operational, grid imports typically increase to serve plant load. This incremental take of energy would normally be served under RS 1880. Events of voluntary self generation curtailment are not relevant to this analysis because they reflect a direct customer action to increase load under RS 1892 (e.g., the desired outcome) as opposed to an event of generator outage that would have occurred anyway.

For any load shifting that was identified due to natural load growth or use of RS 1892 as a replacement for RS 1880, BC Hydro estimated the revenue impact of load shifting as the difference between the actual revenue collected under RS 1892 and the revenue that would have been collected if that volume of energy was purchased under RS 1823 or RS 1880 instead.

For fiscal 2021 to fiscal 2025, BC Hydro identified two customers with natural load growth and no customers who used RS1892 as a replacement service for RS1880.

The overall results of BC Hydro's assessment of load shifting for fiscal 2021 to fiscal 2025 are shown in Table 12 below. The revenue impact reflects the verified energy consumption impact of each event. Results include:

- No customer sites with a self-reported load shift;
- Two customer sites with natural load increase; and
- No customer site with forced generator outage that used RS 1892 as a replacement service for RS 1880.

Table 12 Load Shifting Results by Assessment Category ($000)

Load Shift Category	F2021	F2022	F2023	F2024	F2025	Totals
Customer-reported load shift	-	-	-	-	-	-
Natural load increase	-	(4.53)	(0.14)	-	-	(4.67)
RS 1880 replacement service	-	-	-	-	-	-
Total	**-**	**(4.53)**	**(0.14)**	**-**	**-**	**(4.67)**

3.1.7.1 Analysis Methodology

BC Hydro sought to identify and verify the energy consumption impact of any load shifting events by participant customers. As indicated in the previous section, there were limitations on the data available for the load shifting analysis.

To perform the analysis, a complete set of adjusted energy and RS 1823 Stepped Rate Energy CBL data is required. Accordingly, BC Hydro needed to first complete its CBL annual review process for participant customers. This review provides comprehensive customer site-specific information for events which have been reviewed and verified to increase or decrease energy consumption during the fiscal year. The Final CBLs for each customer are subsequently filed with the

Commission for approval.[39] Additionally, BC Hydro requires knowledge of specific customer actions taken during the Freshet Period.

BC Hydro's steps to assess load shifting impacts are described below.

Step 1: Identify Customer Actions

Survey RS 1892 participants to identify load-shifting actions during the Freshet Period such as:

- Moved plant maintenance outside Freshet Period;
- Experienced natural load growth; and
- Had self-generation outages (forced).

Step 2: Compile Data

Prepare a dataset for participant customers including baseline and actual energy consumption.

Step 3: Compare Energy Sales

Analyze differences between each fiscal year and fiscal 2016 energy sales to identify load shifts.[40]

Step 4: Review Lower Energy RS 1823 Sales

For customers with reduced RS 1823 purchases:

- Review CBL Statements and identify events causing reductions and discern any load shifts.

[39] Final fiscal 2021 CBLS were filed for approval on December 22, 2021, and approved by Commission Order G-88-22A issued on March 29, 2022. Final fiscal 2022 CBLs were filed for approval on November 21, 2022, and approved by Commission Order G-65-23 issued on March 28, 2023, and Final fiscal 2023 CBLs were filed for approval on December 7, 2023, and approved by Commission Order No. G-39-24 issued on February 15, 2024.

[40] BC Hydro used annual energy sales for the comparison since monthly energy consumption is too granular and subject to customer-specific variances which is not suitable for this type of analysis.

Step 5: Review Increased RS 1823 Sales

For customers with increased RS 1823 purchases:

- Review CBL Statements and identify drivers of increased consumption (e.g., capacity changes, demand-side management, or forced outages).

Step 6: Assess Financial Impacts

Evaluate the financial effects of load shifts:

- Compare RS 1892 revenue with revenue under RS 1823 or RS 1880; and
- Assess CBL annual reset impacts, if applicable and quantify energy volumes linked to load-shifting events.

3.2 Directive 6 of Commission Order No. G-17-16

3.2.1 Estimate of Magnitude and Value of Freshet Energy Surplus

In the BC Hydro system, energy over-supply is typically a seasonal condition during the Freshet Period months of May through July. It arises from significant inflows from snowmelt and rain, which results in high generation from BC Hydro non-flexible resources and increased IPP energy delivery volumes from take-and-pay[41] Electricity Purchase Agreements (**EPA**) combined with the need for energy. The sections below provide a brief discussion on the magnitude and value of the freshet energy surplus in recent years.

[41] The terms “must-take” and “take-or-pay” have been used in the past in reference to BC Hydro’s EPAs with IPP facilities. For clarity, BC Hydro has a number of EPAs where it has an obligation to “take and pay” for all energy delivered (with some limited exceptions) and will also pay an IPP where the IPP is capable of delivering its electricity to BC Hydro, but BC Hydro’s system is unable to accept the delivery of electricity. While a “must-take” or “take-or-pay” provision obligates the buyer in a sale of goods contract to either buy or take delivery of a minimum quantity of goods or to pay the seller for any shortfall, BC Hydro’s EPAs do not generally obligate BC Hydro to take delivery of a minimum quantity of electricity.

3.2.1.1 Magnitude of Freshet Energy Surplus

System Conditions and Operations

BC Hydro's estimates for Freshet surplus energy from fiscal 2021 to fiscal 2025 are detailed in Table 13 below. The surplus is affected by minimum system generation, IPP resource deliveries from EPAs, and system loads. Surpluses typically occur over May to July, but the timing varies; for example, the peak in calendar 2020 was in late July, and in calendar 2022 the peak was in June. Larger snowpacks generally lead to later and larger surpluses.

In recent years, the extent of surplus freshet energy has been lower. In fiscal 2021, BC Hydro had Freshet month surplus energy of approximately 2,209 GWh. Freshet surplus energy declined to 225 GWh in fiscal 2024 and zero in fiscal 2025, predominately due to a significant reduction in BC Hydro system inflow and IPP deliveries from severe drought conditions. Figure 4 below illustrates the daily surplus volume.

1 **Table 13 System Surplus Energy**

[redacted]

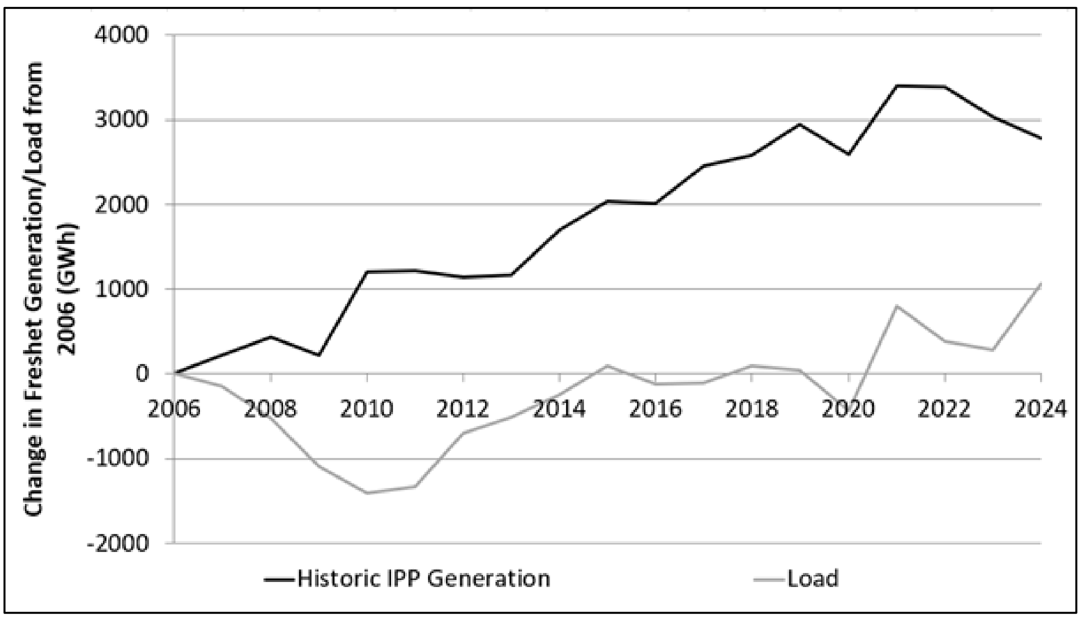
2 **Figure 4 Daily System Surplus Energy**

[redacted]

Figure 5 below provides an update to a graph that was included in the final Freshet Rate pilot evaluation report submitted in December 2018. The updated figure shows the annual change in May to July energy volumes for IPP resource deliveries and integrated system load[42] relative to a 2006 base level. While subject to year-over-year variability,[43] 2024 Freshet month IPP resource deliveries were about 2,800 GWh higher while domestic load was around 1,100 GWh higher.

Between 2021 and 2024, Freshet month IPP resource deliveries declined by around 600 GWh, with most of the drop in 2023 and 2024 as a result of drought conditions. At the same time, the total system load during the 2024 freshet months increased by around 800 GWh compared with 2023.

Figure 5 Change in May to July Energy Volumes from 2006 for EPA Purchases and May to July Integrated System Load



[42] Consistent with Figure 2 as presented in the December 2018 Freshet Rate pilot evaluation report, the Integrated System load includes FortisBC load because BC Hydro operates Fortis' plants and the energy contribution from these plants is included as generation.

[43] The decline in Freshet month IPP deliveries observed in calendar 2023 and 2024 is primarily the result of drought conditions affecting delivered energy from hydroelectric generation. BC Hydro currently expects delivered energy volumes from hydroelectric resources to return to normal conditions in future years.

Mitigation Strategies

BC Hydro implemented several actions to optimize the value of surplus freshet energy from its portfolio of resources. These mitigation strategies are generally designed to limit must-take or must-run energy and/or increase load during Freshet. In the last two years, these strategies were less applicable as drought conditions caused the system to be in a deficit position, resulting in net imports to meet load across the year.

Mitigation strategies are described below.

- **Large Reservoir Drafting:** The large reservoirs in the BC Hydro system are drafted across the winter to provide room to absorb freshet inflows. If must-take and/or must-run generation is forecast to increase, drafts at the large basins are adjusted to account for the increases in this energy and there is a reduction in the ability to take low-cost market imports. However, reservoirs are limited in their ability to capture all must-take energy on an hour-by-hour and daily basis due to real time operating constraints and minimum generation requirements;
- **IPP Time of Delivery Adjustments:** Many of BC Hydro's IPP EPAs include a provision that adjusts the IPP payment price for energy volumes delivered, depending on the month and time of day. The intent of this pricing scheme is to encourage IPPs to build and operate projects that deliver energy at times which better match system needs. BC Hydro utilizes time-of-delivery adjustments to reflect the lower value of freshet energy deliveries on the integrated system;
- **IPP Turn Down:** Some EPAs include a provision that provides BC Hydro with the right to request an IPP to turn down or reduce its generation output for a certain period of time, subject to the operating constraints of the generating facility. During a turn down, BC Hydro avoids the variable cost of generation. In the case of a gas-fired or biomass generating facility, a large portion of the variable cost of generation is associated with fuel. Under the EPA, these fuel cost savings are passed on to BC Hydro in the form of a lower unit energy price

for deemed delivery that is intended to cover only the IPP's fixed cost of generation during the period that the facility is turned down. By exercising its turn down right during Freshet, BC Hydro is able to realize cost savings and reduce the amount of must-take surplus energy; and

- **IPP Contract Terms**: Some biomass EPAs include terms where either energy deliveries are not permitted during freshet months or the price paid during those months is based on market prices, which are typically lower than the variable costs for biomass generators. Therefore, no or limited energy deliveries occur under those biomass EPAs unless market prices are relatively high during freshet months.

3.2.1.2 Value of Freshet Energy Surplus

Market Energy Prices

The primary electricity trading price hub in the Pacific Northwest is Mid-C, which represents a reasonable benchmark for the valuation of energy. Prices at Mid-C are generally at their lowest levels for the year in the Freshet Period. This is because the Pacific Northwest often has an electricity over-supply due to high generation from hydro-electric plants during the freshet, coupled with lower loads due to warm weather and long daylight days. However, this period is not necessarily without price spikes. For example, in calendar 2021, the highest HLH Intercontinental Exchange (**ICE**) Mid-C price was $583.04 USD/MWh. Figure 6 below shows historic daily Mid-C pre-schedule index prices from ICE in USD//MWh for the period January 2020 through December 2024. In general, Mid-C market prices are higher in on-peak hours than in off-peak hours, with no HLH index price on Sundays and North American Electric Reliability Corporation (**NERC**) holidays.

Figure 6 Daily Pre-Scheduled Mid-C Prices (January 2020 to December 2024)

[redacted]

Figure 7 below shows the daily pre-scheduled effective price of Mid-C electricity at the B.C. border, including wheeling charge converted to Canadian dollars daily plus applicable transmission losses, compared to RS 1823 energy charge B (Tier 1) and energy charge A (blended rate) price for energy during the Freshet Period. As shown below in fiscal years 2022, 2023, 2024, and 2025, the Mid-C prices for energy, which do not include the $3/MWh adder charge, were not competitive compared with RS 1823 Tier 1 and RS 1823 A energy prices.

Figure 7 Daily Pre-Scheduled Mid-C Prices at B.C. Border and RS 1823

[redacted]

Table 14 below shows the average Mid-C prices and the average B.C. Border prices (converted to Canadian dollars).

Table 14 Average Mid-C Prices and Average B.C. Border Prices

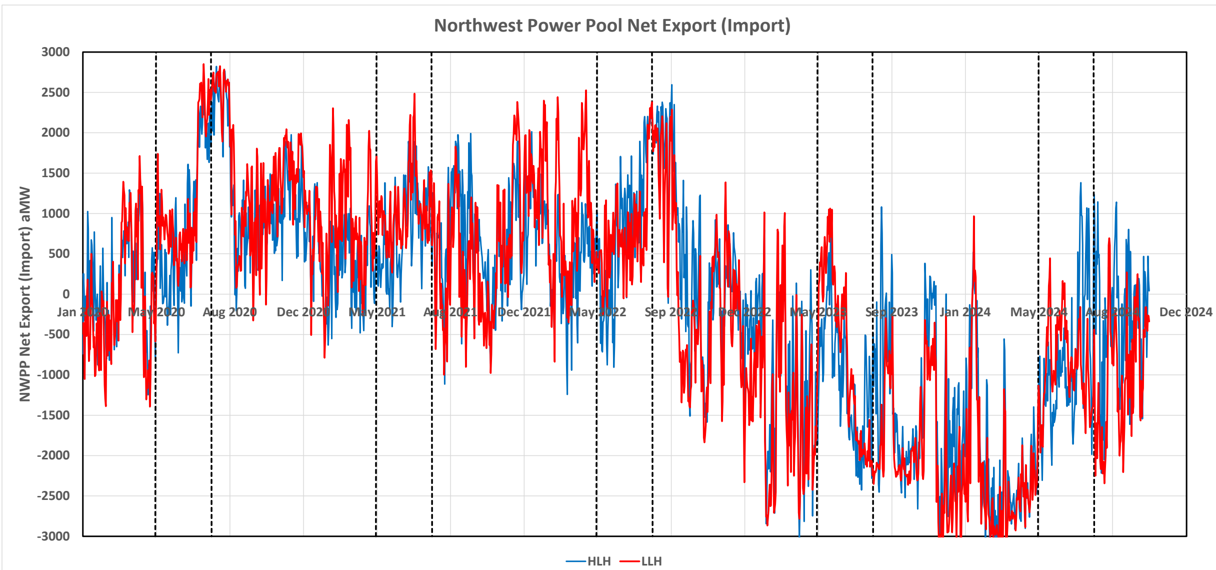
[redacted]

Electricity Trade Opportunities

From fiscal 2021 to fiscal 2023, BC Hydro was in a net export position during the Freshet Period due to surplus energy and suitable market conditions (transmission availability and market depth). However, due to severe drought conditions in fiscal 2024 and fiscal 2025, BC Hydro became a net importer of energy. This was required to meet load requirements during this period of reduced inflows and EPA supply.

Figure 8 and Table 15 below provide additional context regarding the magnitude of BC Hydro's actual Northwest Power Pool (NWPP)[44] import/export activity during the defined Freshet Period in each fiscal year.

Figure 8 BC Hydro's Northwest Power Pool 7 Imports/Exports: January 2020-December 2024



[44] The Northwest Power Pool is comprised of regional electrical power generation and transmission entities. BC Hydro's net NWPP imports/exports show the coordinated movement of energy from/into these regional markets, which include both the US and Alberta.

Table 15 BC Hydro's Northwest Power Pool Imports/Exports: F2020-F2024 Freshet Period

		Daily Average NWPP Import (Export) HLH (MW)	Daily Average NWPP Import (Export) LLH (MW)
Fiscal Year 2021	May-2020	236	835
	Jun-2020	482	565
	Jul-2020	1835	1989
		855	1136
Fiscal Year 2022	May-2021	367	881
	Jun-2021	882	1107
	Jul-2021	1090	1222
		778	1070
Fiscal Year 2023	May-2022	-104	474
	Jun-2022	924	652
	Jul-2022	1521	1121
		779	750
Fiscal Year 2024	May-2023	-449	367
	Jun-2023	-1107	-619
	Jul-2023	-1591	-1891
		-1048	-715
Fiscal Year 2025	May-2024	-1386	-966
	Jun-2024	-1035	-584
	Jul-2024	-92	-1034
		-836	-864

When BC Hydro has an hourly or daily surplus, and this surplus can't be managed by redispatch of its generation resources, then the surplus energy must either be exported or spilled:

- Surplus energy is exported when a net revenue gain would be realized (i.e., the Mid-C market price, net of wheeling and losses is > $0) and sufficient transmission capacity and market depth exists for physical export; or

- Surplus energy is spilled when the export is not economic and would result in a financial loss or there isn't sufficient transmission capacity or market depth.

Estimated Salvage Value

The estimated salvage value for the average volume of surplus energy can be considered as the product of estimated surplus volumes and the weighted average Mid-C price (accounting for wheeling and losses). Table 16 below provides an estimate of the salvage value of surplus energy across the Freshet Period from fiscal 2021 to fiscal 2025. Relative to other years, salvage value estimates for fiscal 2024 and fiscal 2025 are lower due to reduced energy surpluses caused by drought conditions.

Table 16 Estimated Average Value of Surplus Energy: F2021-F2025 Freshet Period

[redacted]

3.3 Section 7.3.4.6 of 2015 RDA

3.3.1 Did the Rate Provide RS 1823 Customers with Lower Cost Options?

BC Hydro considers that the Freshet Rate generally did not provide all RS 1823 customers with a lower-cost option for incremental load during the freshet months. This is reflected in the participants who opted out and who indicated that this decision was because of high Mid-C prices.

Average RS 1892 unit energy prices[45] for each month of the rate, are shown in Table 17 below. HLH and LLH prices were lower on average than RS 1823 Tier 1 prices for all freshet months in fiscal 2021, but this was generally not the case from fiscal 2022 to fiscal 2025.

However, there would be greater opportunity for cost savings for RS 1823 customers that pay for Tier 2 energy in the freshet months since the Tier 2 energy price was in the $100 per MWh price range. There are far fewer months where the average RS 1892 HLH and LLH prices were greater than $100 per MWh, and this occurred only for HLH prices (i.e., only July 2021, July 2023, and July 2024).

[45] Converted to $CAD using daily Bank of Canada Exchange rate and includes C$3.00 per MWh adder charge.

Table 17 Average RS 1892 Energy Price by Freshet Month in $CAD/MWh Compared to RS 1823 Tier 1 Energy Price

Freshet Month	Ave. RS 1892 HLH energy price C$/MWh	Ave. RS 1892 LLH energy price C$/MWh	RS 1823 Tier 1 energy price C$/MWh
May-20	$ 19.34	$ 11.80	$ 44.62
Jun-20	$ 17.04	$ 3.93	$ 44.62
Jul-20	$ 29.56	$ 12.87	$ 44.62
May-21	$ 47.15	$ 39.78	$ 45.07
Jun-21	$ 94.52	$ 37.57	$ 45.07
Jul-21	$ 160.74	$ 52.67	$ 45.07
May-22	$ 82.83	$ 68.80	$ 45.43
Jun-22	$ 48.65	$ 12.19	$ 45.43
Jul-22	$ 96.62	$ 46.25	$ 45.43
May-23	$ 30.67	$ 13.69	$ 45.96
Jun-23	$ 68.68	$ 51.79	$ 45.96
Jul-23	$ 134.85	$ 84.87	$ 45.96
May-24	$ 44.40	$ 40.04	$ 48.91
Jun-24	$ 51.58	$ 33.24	$ 48.91
Jul-24	$ 116.54	$ 57.48	$ 48.91

3.3.1.1 Stakeholder Request

The tables below are responsive to stakeholder requests in the October and November 2018 workshops. BC Hydro committed to provide information related to the number of days of negative Mid-C pricing and the number of days where Mid-C pricing was higher than the RS 1823 Tier 1 energy price. These prices do not include the $3/MWh adder charge.

Table 18 Number of Days of Negative Mid-C Market Pricing

F2021 Freshet (2020-05-01 to 2020-07-31)		F2022 Freshet (2021-05-01 to 2021-07-31)		F2023 Freshet (2022-05-01 to 2022-07-31)		F2024 Freshet (2023-05-01 to 2023-07-31)		F2025 Freshet (2024-05-01 to 2024-07-31)	
HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)
2	25	0	0	0	9	0	4	0	0

Table 19 Number of Days where the Mid-C Market Price Exceeded the RS 1823 Tier 1 Energy Price

F2021 Freshet		F2022 Freshet		F2023 Freshet		F2024 Freshet		F2025 Freshet	
(2020-05-01 to 2020-07-31)		(2021-05-01 to 2021-07-31)		(2022-05-01 to 2022-07-31)		(2023-05-01 to 2023-07-31)		(2024-05-01 to 2024-07-31)	
HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)	HLH (# of days)	LLH (# of days)
14	0	66	21	79	40	64	49	58	31

Stakeholders also requested that BC Hydro show Mid-C energy prices relative to RS 1823 energy prices. Figure 9 below compares actual ICE Index Mid-C market energy prices[46] in HLH and LLH for the three years of the rate with BC Hydro's RS 1823 Tier 1 and Part A energy charges. Mid-C prices have been converted to $CAD using the daily average Bank of Canada exchange rate. In general, when market prices are below the prevailing RS 1823 energy price, there is a price signal to increase electricity use.

Figure 9 Daily Pre-Schedule Mid-C Prices at B.C. Border and RS 1823

[redacted]

[46] Mid-C prices in $US/MWh based on the ICE Index were converted to $CAD/MWh on a daily basis.

3.3.2 Did the Rate have Positive or Negative Impacts on Non-Participating Customers?

In section 3.1.1.2, BC Hydro's analysis indicated that the Freshet Rate had a mixed impact on non-participating customers when considered on an annual basis. There were overall ratepayer revenue gains of $0.18 million in fiscal 2021, $0.16 million in fiscal 2022, and $0.20 million in fiscal 2023. In fiscal 2024 and fiscal 2025, there were ratepayer revenue losses of $0.88 million and $0.20 million, respectively, due to severe drought conditions. BC Hydro estimates that there is a net negative impact of $0.535 million on non-participants over the five-year period before accounting for verified costs.

In section 3.1.1.3, after adjusting for verified costs (i.e., implementation and verified load-shifting costs), BC Hydro estimates an adjusted ratepayer revenue loss of $0.67 million over the five-year period.

3.3.3 How many RS 1823 Customers used the Rate? What were the Volumes of Use?

Refer to section 1.3 for the number of RS 1823 customers that participated in the Freshet Rate and section 1.4 for the aggregate volumes of use for customers taking service under the Freshet Rate.

3.3.4 How did Customers use the Rate?

Customers took various actions to increase load during each of the fiscal 2021 to fiscal 2025 Freshet Periods including the following:

- Using idle production capacity (including higher utilization of operating plant, temporary re-start of existing equipment, addition of production shifts, manufacture of more energy intensive product grades, transfer of feedstock between facilities);
- Optimizing production to maximize output without the constraint of avoiding setting an HLH demand peak under RS 1823;

- Re-scheduling maintenance shutdowns into non-freshet months; and
- Turning down and curtailing self-generation (planned and unplanned).

3.3.5 To what Extent did Shifting Contribute to Higher Freshet Energy?

Table 20 below shows the verified energy volume impact of identified load-shifting events by category. Refer to section 3.1.7 for a detailed summary of BC Hydro's methodology.

Table 20 Load Shifting Results by Assessment Category ($000)

Load Shift Category	F2021	F2022	F2023	F2024	F2025	Totals
Customer-reported load shift	-	-	-	-	-	-
Natural load increase	-	(4.53)	(0.14)	-	-	(4.67)
RS 1880 replacement service	-	-	-	-	-	-
Total	**-**	**(4.53)**	**(0.14)**	**-**	**-**	**(4.67)**

3.3.6 Was there any Shifting within the Freshet Period from HLH to LLH?

BC Hydro is aware of one customer that considered modifying its operating hours with the intent to shift a portion of production from HLH to LLH. However, BC Hydro does not have sufficient information at this time to determine if the customer was able to implement the operating change.

3.3.7 Were there any Issues with Setting Baselines, Implementation or Billing?

As discussed in section 3.1.5 above, there was a misinterpretation of the billing demand definition, which resulted in customers being under-billed for demand under RS 1823 and RS 1828 when those customers also receive service under RS 1892 or RS 1893. That section addresses Directive 4 of BCUC Order G-175-24, which directs BC Hydro to include in this evaluation report an analysis of the impact, if any, of the application of demand charge ratchets on the performance of the Freshet Energy rate.

On December 12, 2024, BC Hydro filed amendments to RS 1892 to clarify the place and use of demand charge ratchets in compliance with Directive 5 of BCUC Order G-175-24.

There were no other issues with setting baselines, implementation, or billing the Freshet Rate.

- The baseline determination and adjustment process was well-understood and well-supported by customers. Specifically, customers provided feedback that the process was clear, and the baselines were fair. All adjusted customer baselines filed with the Commission were approved as filed. There were no baseline disputes;
- RS 1823 customers advised that the sign-up process for the rate was straightforward (per Special Condition 3 of RS 1892), and the opt-out provision of the rate (per Special Condition 6 of RS 1892) helped to de-risk their participation;
- For billing, participant customers were sent a daily email summary of Mid-C market prices for the following day(s). The summary included an estimate of the “all in” daily RS 1892 price for market reference-priced energy in HLH and LLH. Email alerts were also sent to advise customers of high-priced days. This provided customers with clear visibility to reference prices that would apply for incremental energy use; and
- Participant customers were billed for net RS 1892 electricity on a one-time basis in August of each year to allow for the seasonal reconciliation of HLH and LLH Net Freshet Energy over the entire Freshet Period. The monthly invoice for each of May, June, and July also included summary detail regarding “unbilled energy” in each of HLH and LLH. This provided customers with an estimate of the monthly volume of incremental RS 1892 energy for accrual.

3.3.8 Did the Pilot Impact Customer's Conservation and Efficiency Measures?

BC Hydro was not able to discern a measurable impact in customer conservation and efficiency measures arising from the Freshet Rate. That is, there was no evidence that the rate impacted the customer's views or decision-making in respect of such measures.

3.3.9 How Quickly did Customers Respond to Changes in Market Prices?

Participating RS 1892 customers had advance knowledge of day-ahead market prices for both HLH and LLH. This provided them with the discretion to increase electricity use for any of the 92 days in the Freshet Period when economic to do so. Participant customers typically operated their facilities to optimize electricity costs such that incremental electricity use was highest when market prices were low.

In terms of speed of customer response, some customers advised that they closely monitored daily market prices to make daily operating decisions. Others advised that daily pricing did not influence their operating decisions either because they: (a) were not actively monitoring daily market prices; or (b) had already made an advance commitment to higher operating levels and sales with an expectation of average lower prices over the period.

The following figures illustrate the different response of two customers to a sudden spike in Mid-C prices in the first seven days of July 2025. The price spike was associated with a heat wave in the Pacific Northwest whereby Mid-C prices in HLH increased from C$54/MWh to almost C$213/MWh.

Figure 10 Customer A Response to Mid-C Price

[redacted]

Figure 11 Customer B Response to Mid-C Price

[redacted]

- Customer A used a specific daily price target for incremental load. They reduced load to, or below, the energy baseline on high market-priced days; and
- Customer B continued operations despite the high market-priced event. This is because they lacked the ability to adjust their output in response to market price fluctuations.

3.3.10 Did Customers with Aggregated RS 1823 Loads Shift Consumption between Plants to take Advantage of this Rate?

BC Hydro was advised that certain customers with operations in other jurisdictions made the decision to consume incremental energy in B.C. under RS 1892 based on a lower marginal cost of production.

3.3.11 Did BC Hydro Curtail any Customers under the Non-firm Provisions of this Rate? If so, what Led to the Curtailments? If not, were there any Financial Impacts to BC Hydro?

No, BC Hydro did not curtail RS 1892 service during any year of the rate.

Special Condition 1 of RS 1892 states that, “BC Hydro agrees to provide Electricity under this Rate Schedule to the extent that it has energy and capacity to do so. BC Hydro may refuse Service under this Rate Schedule in circumstances where BC Hydro does not have sufficient energy or capacity”.

Therefore, service under RS 1892 is non-firm and subject to curtailment if BC Hydro's firm load is at risk due to a lack of energy or capacity. However, sufficient energy and capacity were always available to serve the RS 1892 incremental load from fiscal 2021 to fiscal 2025.

There are no provisions under RS 1892 that allows BC Hydro to interrupt the service for economic reasons.[47]

[47] Refer to Appendix A to BCUC Order G-104-20, section 3.3.1, Curtailment for Economic Reasons, pages 15 to 16 for further background on why curtailment for economic reasons was not included in the provisions under the rate.

3.3.12 Was there any Impact on RS 1880 Events? Did Customers use the Rate as a Substitute for RS 1880?

For each year of the rate, BC Hydro identified all participant customers with self-generation facilities to review any events of a forced outage. The purpose was to determine the nature of any reduction in self-generation that may have caused an increase in RS 1892 energy purchases. When the self-generation is forced out of service, and the customer plant remains operational, grid imports typically increase to serve plant load. This incremental take of energy would normally be served under RS 1880. BC Hydro considers that, during events of forced generator outage, incremental electricity would have been purchased under RS 1880, but for the existence of RS 1892. Accordingly, the Freshet Rate acted as a non-firm service alternative to RS 1880.

4 Customer and Stakeholder Engagement

4.1 Engagement Summary

Customers provided feedback to BC Hydro regarding certain aspects of the rate through a survey that was issued in fiscal 2025. BC Hydro contacted 19 customer representatives and received responses from 12. Each respondent represented at least one site, and some represented multiple sites.

BC Hydro engaged customers who participated in the rate from fiscal years 2021 to 2025, including those who withdrew early. The engagement aimed to:

- Assess the benefits and costs experienced by participants;
- Identify any challenges participants encountered;
- Evaluate the actions and results achieved by participants; and
- Understand whether customers are likely to continue participating.

Feedback on customer experience with the rate is described below.

4.1.1 Key Themes

The over-arching themes of written feedback received for the five-year period (fiscal 2021 to fiscal 2025) are as follows:

1. Most participants found the sign-up and registration process for the rate easy. They also generally felt that the energy and reference demand baselines for their plants were appropriate and representative of normal operations;
2. Some participants had specific action plans for their facilities to respond to the Freshet Rate, while many did not. Those participants who did have a specific plan reported that they intentionally adjusted operations to increase electricity load during the Freshet Period, particularly when market prices were low. However, none of the participants made investments in equipment, technology, or resources to take advantage of the rate;
3. Participants had mixed experiences when it came to communicating and training their operational staff with regards to the rate. Many participants had no difficulties, while others stated that they found it challenging to educate staff on the potential savings, impact on daily operations, and incentive to receive service under the rate;
4. Participants were varied on whether they used day-ahead Mid-C market prices to modify their plant's operations. While some did use the day-ahead prices, others reported relying solely on historic data or monthly averages. Additionally, some participants stated that due to the nature of their operations they do not have the ability to make short-term adjustments to their load in response to electricity market prices, whereas others reported increasing load or scheduling maintenance shutdowns in response to these prices;
5. Some customers felt that participating in the Freshet Rate did not provide any significant outcomes. However, other customers reported benefits such as cost savings, reduced dependence on fossil fuels, and demand charge stability;

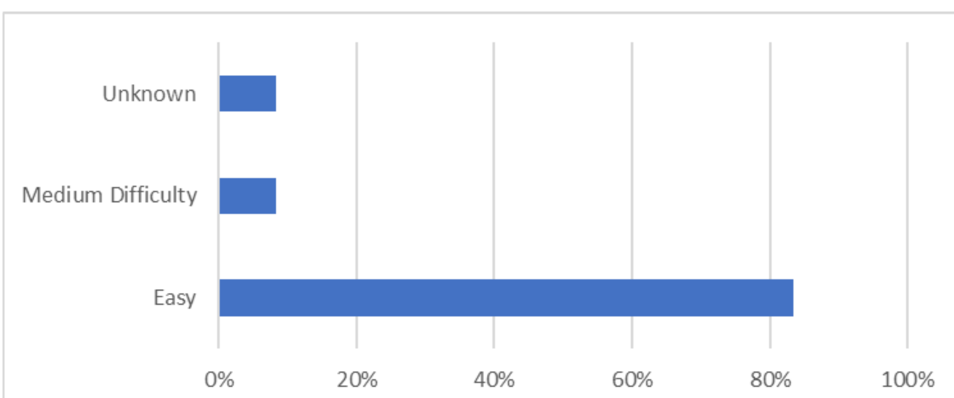
6. Of those participants who chose to leave the rate early, some did not give a specific reason; however, a few indicated that they left the rate due to high market prices. Almost none of the participants used the Freshet Rate as a substitute for RS 1880 – Standby and Maintenance Supply; and

7. Most participants replied no when asked whether the change in the default rate from RS 1823 to RS 1830 would affect their decision to participate in the Freshet Rate. Participants that felt the change may affect their decision expressed that savings under the Freshet Rate could be reduced with RS 1830 as the default rate.

4.1.2 Participant Customer Feedback

This section presents an overview of the questions given to survey participants, along with a summary of responses represented through bar graphs. Also provided is a sample of participant answers for each of the questions included in the survey. These responses are intended to be representative of the overall trends found in the responses. Precautions have been taken to only include responses which do not have any identifying or confidential information.

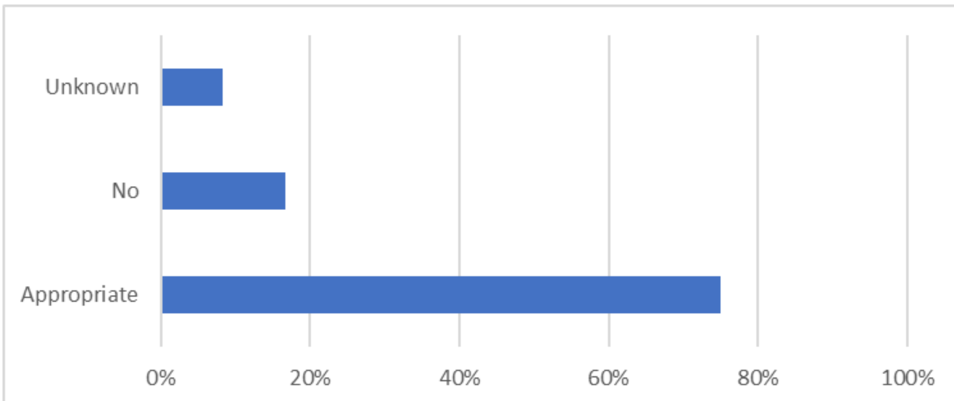
How did you find the sign-up / registration process for the rate? Was it easy or hard?



- *"Registration process was easy and straightforward."*

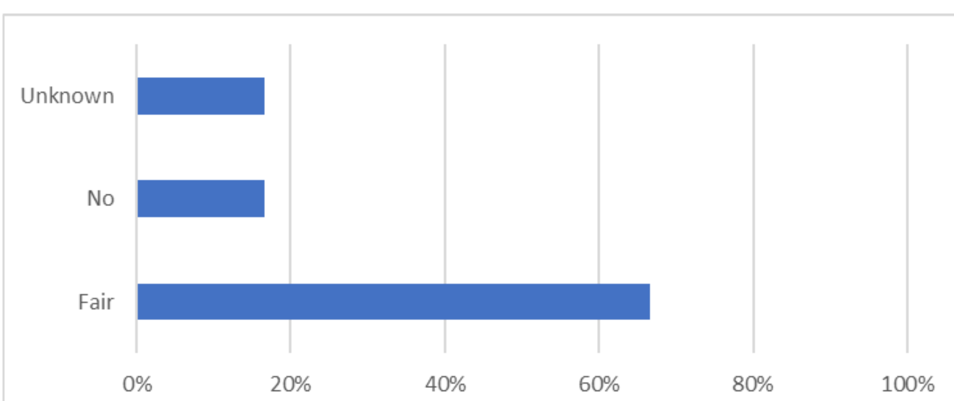
- *"Very easy. BC Hydro staff make the process very seamless."*

Do you think that the energy and reference demand baselines for your plant(s) were appropriate, and how was your experience with BC Hydro if adjustments were needed?



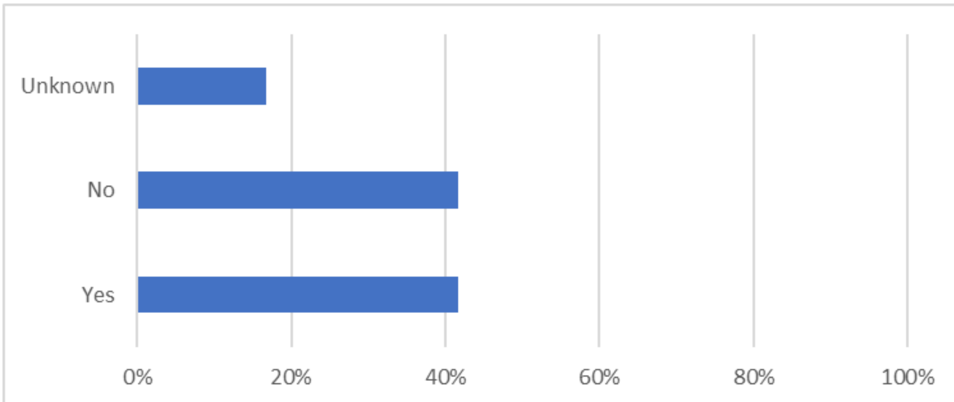
- *"I think the energy and reference demand baselines are appropriate. I have not requested any adjustments so I don't have any experience with it."*
- *"I didn't have access to detailed (internal) tracking of our power usage at the plant, so I had to rely on the information BC Hydro provided. The baselines seemed to be appropriate and working with the account rep and the person who was assisting with the Freshet rate information, I felt I had reliable numbers to work with."*

Do you think that the baselines fairly represented 'normal operations' for your plant(s), such that you had a clear benchmark against which incremental energy use could be determined?



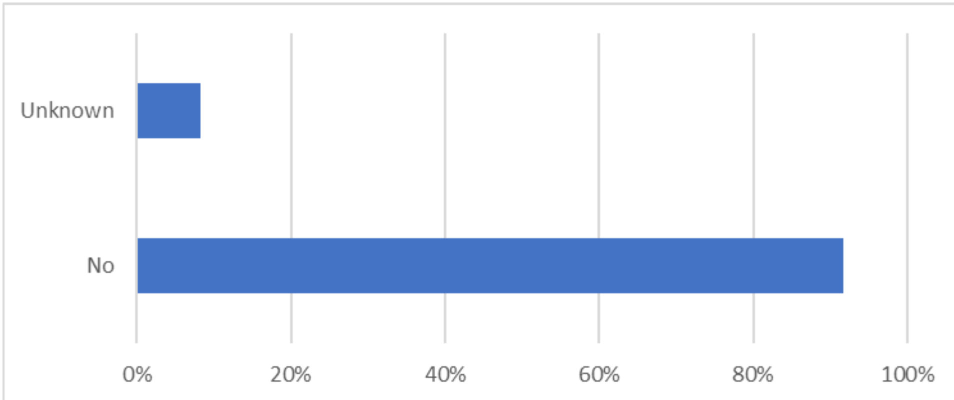
- *"Yes, they seemed fair."*
- "Yes appropriate, didn't have to adjust."

Did you have a specific action plan for your facility(s) to respond to the Freshet Rate? Did any specific actions or initiatives work better than others?



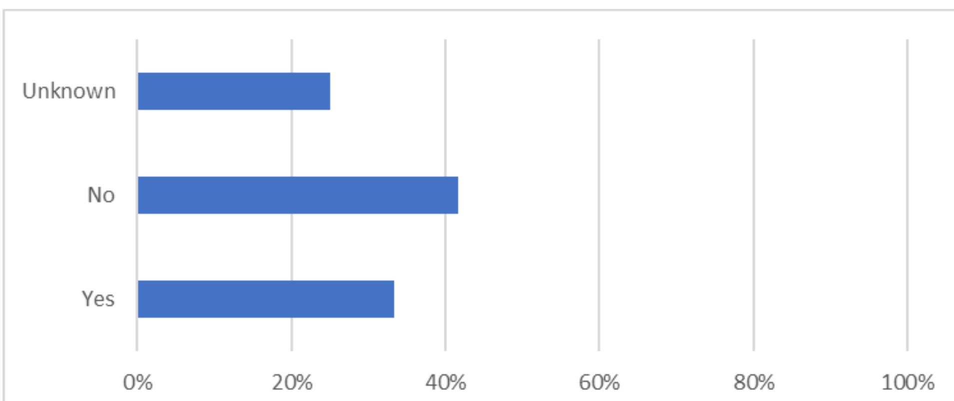
- *"Generally our plants have a seasonal performance boost that coincides with warmer spring weather, so there is not a specific and detailed plan each year to modify operations in response to the freshet rate."*
- *"Yes, try to run above baselines in May & June when Freshet prices are typically below the Tier 1 price."*
- *"We did not have a specific action plan."*
- *"We implemented an action plan focused on adjusting our production schedules to optimize energy use during freshet periods. When the Mid C energy prices were high, we shifted production to other low-cost plants; when they were low, we ratcheted up production…"*

Did you make any investments in equipment, technology, or resources to take advantage of the rate?



- *"No, we did not make any investments in equipment, technology to take advantage of the rate; however we did add more time to employees' workdays to monitor prices and track energy consumption."*

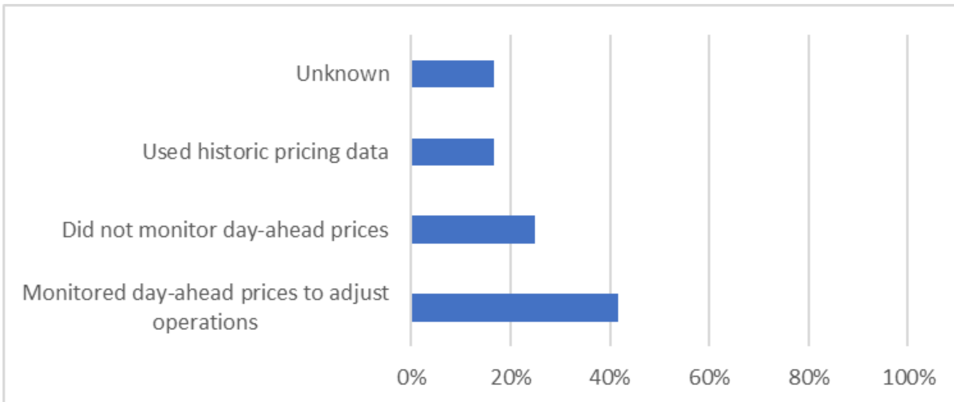
Were there any challenges in communicating and training your operational staff regarding the rate?



- *"No, we have done this for several years."*
- *"Some educational campaigns were required as invoice literacy was overly prevalent at the initial roll out of the freshet program participation."*
- *"Yes, initially there was some questions among staff about the rate's structure and how it impacted daily operations. Additional training and simplified communication helped*

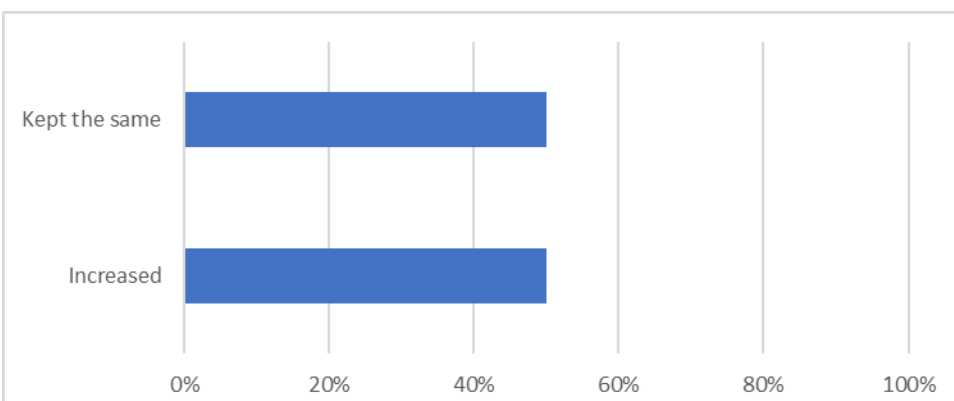
improve understanding, though ongoing education would still be helpful."

How did you use the day-ahead market pricing information provided by BC Hydro to modify your plant's operation?



- *"We used day-ahead pricing data to schedule production during times of lower cost."*
- *"I did not use it to modify plant's operation but used it to estimate the costs to decide if it makes sense to stay in or not."*
- *"Only used market price historical data to calculated estimated savings, day ahead market was not used."*

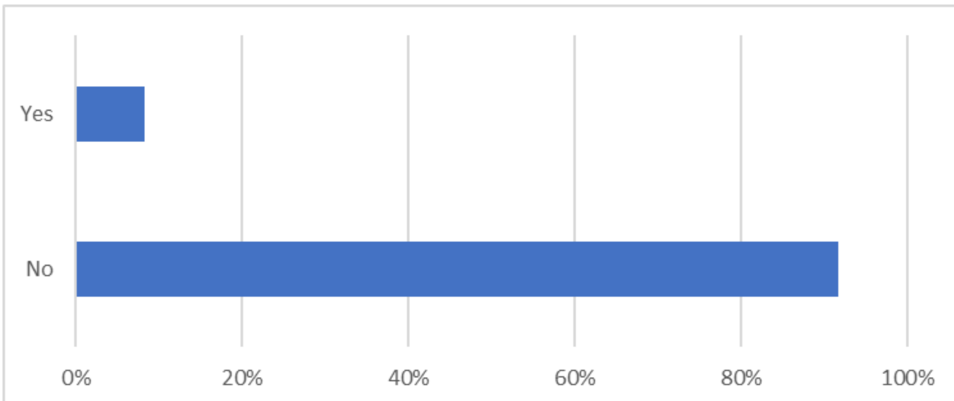
Did you increase your consumption during the Freshet Period or keep it the same?



- *"Same, but the freshet rate at the end of the period increase significantly and all estimated savings were lost."*

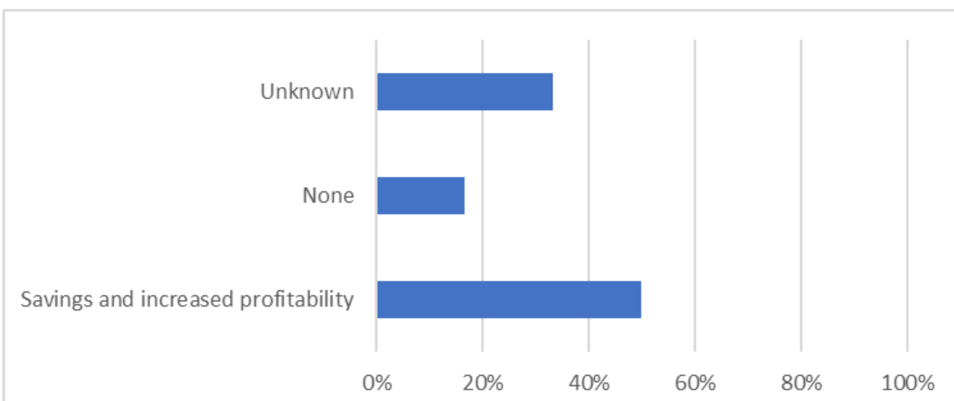
- *"We increased our energy consumption during the Freshet Period to take advantage of the lower rates to produce more high-energy-intensive products."*

Did you use the Freshet Rate as a substitute for RS 1880? If yes, could you please quantify the extent to which you used the Freshet Rate instead of RS 1880?



- *"We did not use Freshet as a substitute for 1880."*

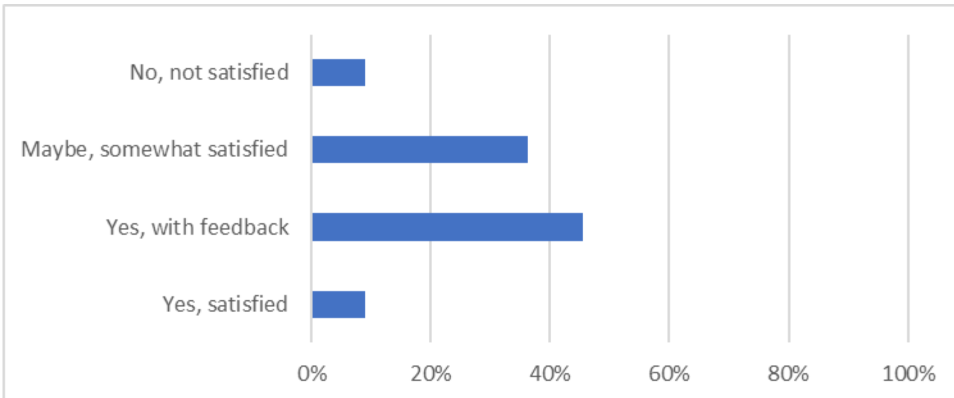
What specific results did you achieve in areas like operations, finance, production, or resources, and did you set and meet any specific targets?



- *"It provided stability on the monthly demand charges and minimized supplemental gas use to maintain generation."*
- *"F21 saw cost savings from increased production within operations. F22 saw a net financial loss in which early opt-out was required to ensure profitable operations."*

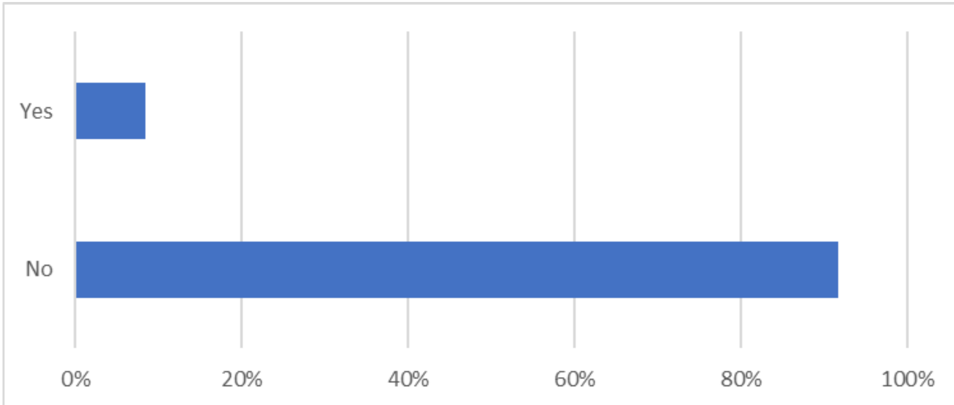
- *“We increased operating hours (during favourable market conditions) and increased production and profitability.”*
- *“We did not achieve any specific results.”*

Will you participate in the Freshet Rate in the future, and how satisfied are you with the rate? What changes or improvements would you like to see?



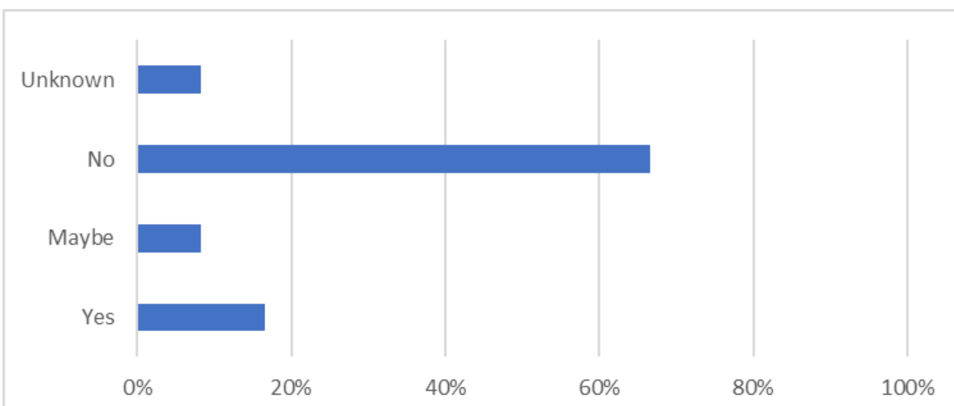
- *"Yes, this has been a good program for us and we would look to use it again. Market conditions would need to be sufficient and additional logs (inputs) available. It might be nice if the freshet period was longer, perhaps 4 months."*
- *"We plan to continue participating in the Freshet Rate as it aligns well with our energy needs and helps reduce costs. With climate change affecting the spring runoff, we would prefer that the seasonal period be adjusted from April to June rather than May through July."*
- *“Unless Mid-C pricing reduces to 2020 and earlier prices, it is unlikely to see our facilities participate in this rate structure.”*

Do you plan to make any specific investments in the future to benefit from the Freshet Rate?



- *“Currently no plans for investments related to this.”*
- *"We are considering investing in more advanced planning tools to better respond to product demand signals and price fluctuations. This would allow us to further optimize operations based on Freshet period rates."*

Did the change in the default rate from RS 1823 to RS 1830 in fiscal 2025 affect your decision to participate under the Freshet Rate in fiscal 2025? If you are still on RS 1823, will the switch to RS 1830 in fiscal 2027 affect your future participation?



- *"Yes it did, because the cost of purchased power is much lower now, which increases the likelihood of having the mid C price being above the energy charge price."*
- *"Our plants were forced onto 1830 in April 2024, so the main challenge was successive months with new billing elements*

> *that our operational accounts had to learn and adjust for. Otherwise, the decision to continue participating will be based on potential financial benefit at each site in each year."*