

Fred James

Chief Regulatory Officer

Phone: 604-623-4046

Fax: 604-623-4407

bchydroregulatorygroup@bchydro.com

October 31, 2019

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

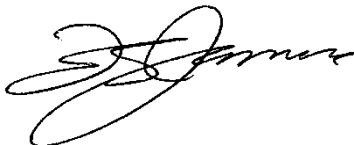
Dear Mr. Wruck:

**RE: British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Transmission Service Freshet Rate Pilot – Evaluation Report for Year 4**

BC Hydro writes pursuant to Commission Order Nos. G-106-19 and G-224-19 to enclose its Evaluation Report for Year 4.

For further information, please contact Anthea Jubb at 604-623-3545 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Fred James
Chief Regulatory Officer

ac/af

Transmission Service Freshet Rate Pilot
Compliance with
Commission Order Nos. G-106-19 and G-224-19

Evaluation Report for Year Four

Table of Contents

1	Year 4 Results.....	3
1.1	Customer Participation.....	3
1.2	Baseline Review and Adjustment.....	4
1.3	RS 1892 Energy Sales and Revenue.....	4
1.4	Mid-C Market Pricing.....	6
1.5	RS 1892 Energy Pricing.....	8
1.6	Customer Load Response	10
1.7	Service Considerations	12
1.7.1	Interruption	12
1.7.2	RS 1880 Replacement Service.....	12
1.8	Financial Considerations.....	12
1.8.1	Wheeling Rate	12
1.8.2	Incremental Costs.....	13
1.8.3	Ratepayer Impact Analysis	13
1.8.4	Discussion of 2019 Freshet Period Conditions	17
1.8.5	Implications for Permanent Freshet Rate	18

List of Figures

Figure 1	Customer Participation by Industry Sector (Year 4)	3
Figure 2	Electricity Market Prices: Mid-C.....	6
Figure 3	RS 1823 and RS 1892 energy prices (May to July 2019.....	8
Figure 4	Aggregate incremental RS 1892 load (May to July 2019)	11
Figure 5	Williston and Kinbasket Reservoir fill rates and levels for 01 Apr – 30 Sep 2019.....	17

List of Tables

Table 1	RS 1892 Energy Sales and Gross Revenue	5
Table 2	Comparison of RS 1892 Energy Sales and Gross Revenue Year 1, Year 2, Year 3 and Year 4	5
Table 3	Average monthly Mid-C energy prices in CAD\$/MWh for 2019 and 2018 Freshet Periods	7
Table 4	RS 1823 and RS 1892 energy prices (May to July 2019.....	9

Table 5	RS 1892 Monthly Ratepayer Impact by Marginal Resource for Years 1 - 4.....	16
---------	---	----

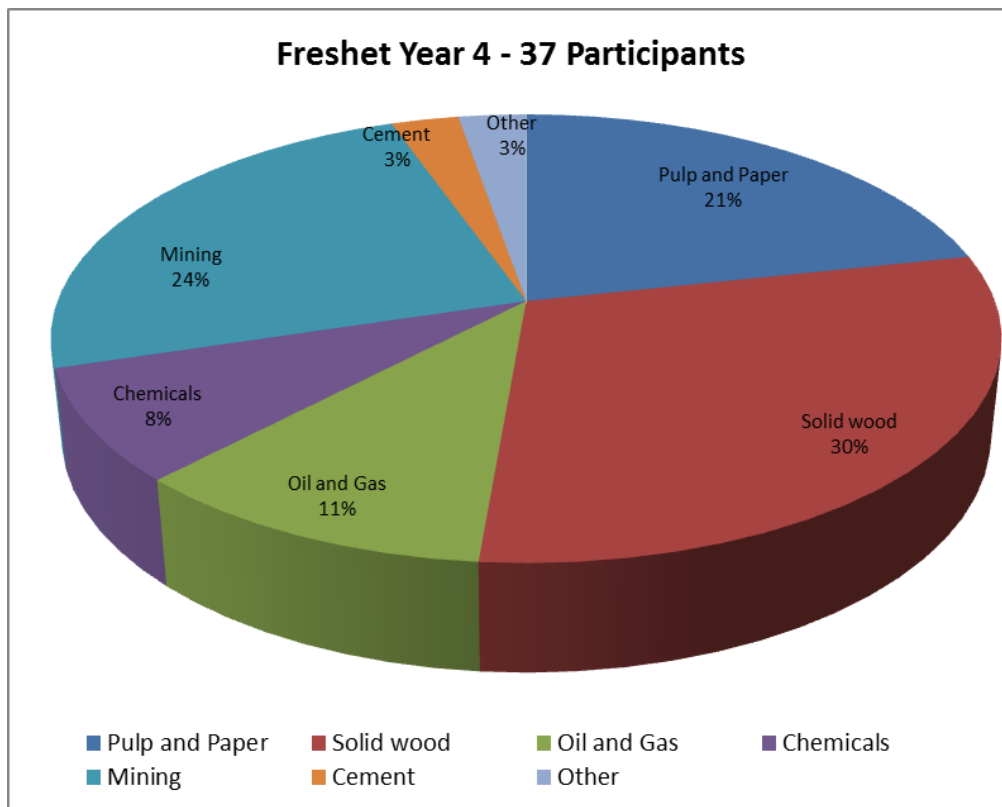
1 Year 4 Results

1.1 Customer Participation

Thirty eight unique transmission customer sites from across the province participated in Year 4 of the Pilot. One customer subsequently opted out of Year 4, reducing the total number of participant sites to 37. This reflects a decrease from 47 participating sites in Year 3. Ten sites which had participated in prior years did not participate in Year 4. There were no new customer participants.

Overall, this level of participation reflects approximately 25 per cent of eligible sites from the entire RS 1823 customer class. Customer participants represent a broad cross-section of industry sectors as shown in [Figure 1](#) below.

Figure 1 Customer Participation by Industry Sector (Year 4)



1 BC Hydro considers that customer participation for Year 4 was successful. Similar to
2 the feedback provided for Year 3, customer feedback for Year 4 indicated that the
3 sign up process for the Pilot was straight forward and that the 'opt out' provision of
4 the rate (i.e., ability to cancel supply at any time prior to July 31 in accordance with
5 Special Condition 6 of RS 1892) helped to de-risk their participation.

6 However, BC Hydro does consider that Year 4 participation was impacted, in part,
7 by the delay in seeking BCUC approval for the Year 4 extension. Subsequent to the
8 BCUC's interim approval on 15 April 2019, there was limited time for customers to
9 plan for their participation effective May 1st, 2019.

10 **1.2 Baseline Review and Adjustment**

11 Each of the 37 participant customer sites had electricity baselines (i.e., HLH
12 Baseline, LLH Baseline and Reference Demand) determined in accordance with
13 RS 1892. The purpose of the customer specific electricity baselines is to separate
14 incremental RS 1892 electricity purchases from RS 1823 electricity purchases
15 during the 2019 Freshet Period. For Year 4, no customer sites had baselines that
16 required adjustment pursuant to Special Condition 4 of RS 1892.

17 **1.3 RS 1892 Energy Sales and Revenue**

18 Of the 37 unique customer sites that participated in the 2019 Freshet Rate, only
19 20 of these sites purchased RS 1892 energy. The remaining 17 sites purchased less
20 energy than their RS 1892 energy baselines over the entire 2019 Freshet Period -
21 thus, all of the energy taken by these 17 customers was supplied under RS 1823.
22 For the 20 sites that purchased RS 1892 energy during the 2019 Freshet Period,
23 total RS 1892 energy sales and gross revenue are summarized in [Table 1](#) below.

1
2

Table 1 RS 1892 Energy Sales and Gross Revenue

Total RS 1892 Energy Volume	111,468 MWh
Average Incremental Load	50.5 MW ave.hr (for total of 2,208 hrs)
Total RS 1892 Energy Sales	\$2.7 million ¹
Total Wheeling Rate Charges	111,468 MWh x \$3.00/MWh = \$0.3 million
RS 1892 Gross Revenue ²	\$3.04 million (excluding taxes)

3 [Table 2](#) below provides a comparison of the RS 1892 energy sales and gross
4 revenue for each of Year 1 (2016), Year 2 (2017), Year 3 (2018) and Year 4 (2019).

5
6
7

Table 2 Comparison of RS 1892 Energy Sales and Gross Revenue Year 1, Year 2, Year 3 and Year 4

	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
Number of Participant Sites	39	44	45	37
RS 1892 energy sales (MWh)	139,064	168,399	150,383	111,468
Average incremental load ³ (MW/hr)	63.0	76.3	68.1	50.5
Average unit cost of market-priced energy ⁴ (\$/MWh)	\$21.88	\$19.50	\$23.81	\$24.27
RS 1892 energy revenue (\$ million)	3.0	3.3	3.6	2.7
Plus \$3/MWh wheeling rate x energy volume (\$ million)	0.4	0.5	0.4	0.3
Plus 5 per cent deferral account rate rider (\$ million)	0.2	0.2	0.2	0
Total RS 1892 gross revenue (\$ million)	3.6	4.0	4.2	3.0
Average total unit cost of market-priced energy including wheeling rate and rate rider, excluding taxes ⁵ (\$/MWh)	26.12	23.63	28.15	27.27

8 In Year 4, total RS 1892 energy sales were 111,468 MWh and total RS 1892 gross
9 revenue was \$3.0 million. Compared to Year 3, the volume of RS 1892 energy sales

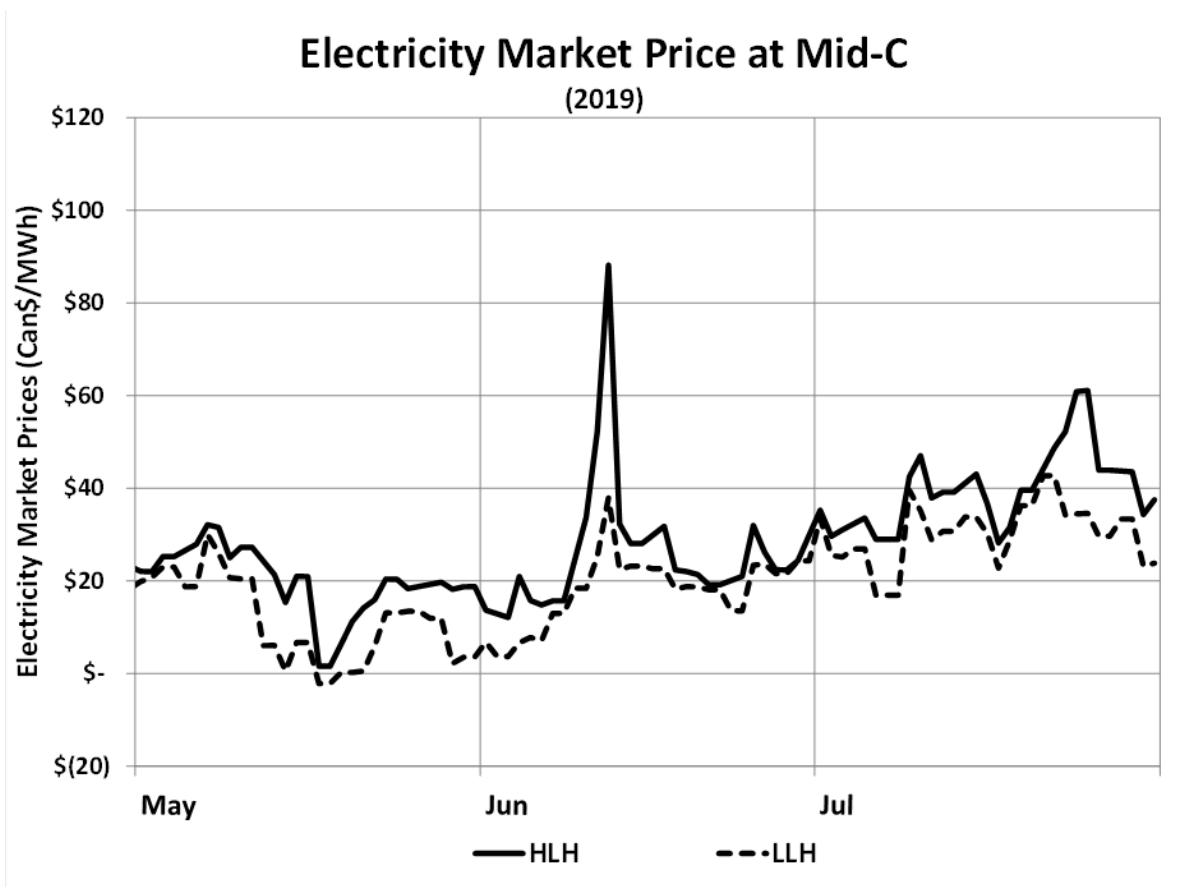
¹ Reflects an average Mid-C market energy price of CAD \$24.27/MWh, excluding wheeling rate.
² No deferral account rate rider was applicable to RS 1892 energy sales in the 2019 Freshet Period.
³ Total net RS1892 energy volume divided by 2208 freshet period hours.
⁴ RS 1892 energy revenue (excluding wheeling and rate rider) divided by RS 1892 energy sales volume.
⁵ RS 1892 energy revenue (after wheeling and rate rider) divided by RS 1892 energy sales volume.

1 in Year 4 was lower by 38,915 MWh (26 per cent) and the average unit cost of
 2 market-priced energy was higher by \$0.46/MWh (2 per cent). BC Hydro also notes
 3 that no rate rider charge on RS 1892 energy sales was applicable in Year 4.⁶

4 **1.4 Mid-C Market Pricing**

5 [Figure 2](#) below shows the average daily Mid-C market energy prices in both HLH
 6 and LLH for the 2019 Freshet Period, adjusted using the daily Bank of Canada
 7 exchange rate. Daily LLH market prices ranged from a low of CAD\$(2.21)/MWh to a
 8 high of CAD\$42.76/MWh. Daily HLH market prices ranged from a low of
 9 CAD\$0.24/MWh to a high of CAD\$88.16/MWh.

10 **Figure 2 Electricity Market Prices: Mid-C**



11

⁶ BCUC Order No. G-45-19 approved BC Hydro’s requested reduction of the DARR from 5 per cent to 0 per cent on an interim basis effective April 1, 2019.

1 [Table 3](#) below provides the weighted average Mid-C prices⁷ in HLH and LLH for
 2 each month of the 2019 Freshet Period compared to the 2018 Freshet Period.

3 **Table 3** **Average monthly Mid-C energy prices in**
 4 **CAD\$/MWh for 2019 and 2018 Freshet**
 5 **Periods**

AVERAGE MID-C PRICES IN FRESHET PERIOD	May	June	July
Low Load Hours (LLH)			
2019 Freshet Period LLH (C\$/MWh)	\$ 11.10	\$ 17.45	\$ 31.24
2018 Freshet Period LLH (C\$/MWh)	\$ (0.24)	\$ 5.89	\$ 41.52
<i>Difference (C\$/MWh)</i>	<i>\$ 11.34</i>	<i>\$ 11.56</i>	<i>\$ (10.28)</i>
High Load Hours (HLH)			
2019 Freshet Period HLH (C\$/MWh)	\$ 20.09	\$ 26.20	\$ 39.28
2018 Freshet Period HLH (C\$/MWh)	\$ 16.35	\$ 21.88	\$ 89.36
<i>Difference (C\$/MWh)</i>	<i>\$ 3.74</i>	<i>\$ 4.32</i>	<i>\$ (50.08)</i>

7 Across the May/June 2019 period, Mid-C market prices were generally higher than
 8 for 2018. This was primarily due to lower than average water inflows in the US
 9 Columbia river system. Overall average freshet inflows in the US Columbia river
 10 system were substantially below normal, at about 93 per cent (April – July) of
 11 average. Pend D’Oreille river system flows were also substantially below normal, at
 12 about 91 per cent (April – July) of average.

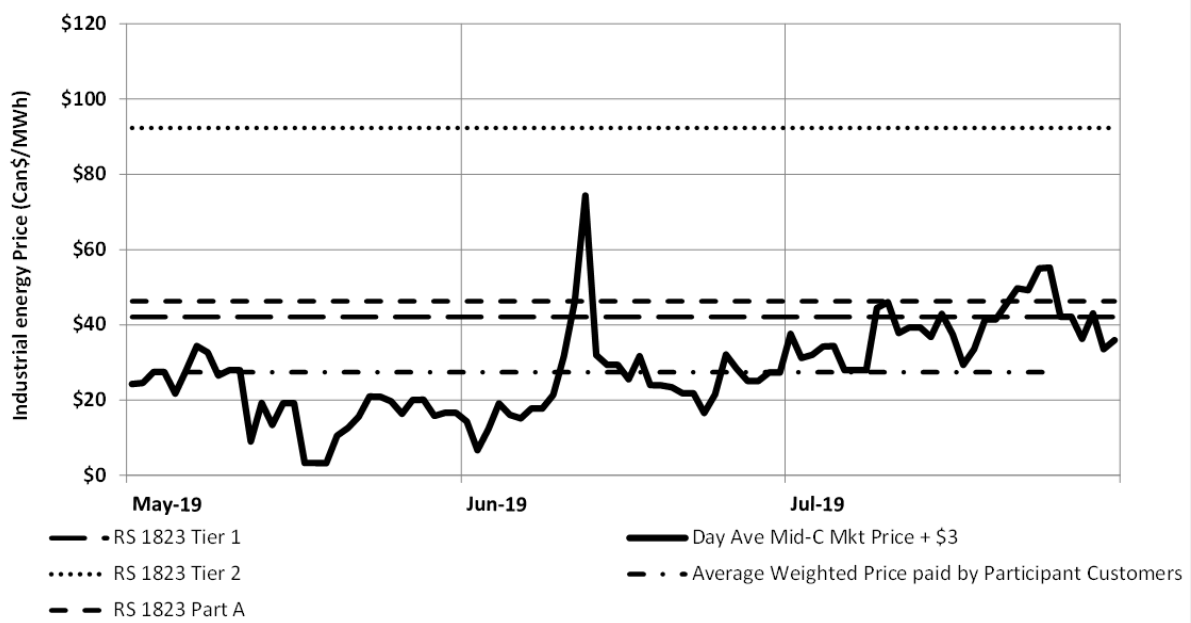
13 For BC Hydro, the lower than normal flow in the Pend D’Oreille system resulted in a
 14 decrease in must-run generation at BC Hydro’s Seven Mile and Waneta plants.
 15 Lower than average inflows across the BC Hydro system reduced must-run
 16 generation from non-storage BC Hydro and IPP resources. In combination, these
 17 factors resulted in a significant reduction in the prevalence of forced exports from the
 18 BC Hydro system in May and June. In contrast, for the July 2019 period, Mid-C
 19 market prices were generally lower than for 2018. This was primarily due to cooler
 20 early summer weather in 2019 and an associated lack of air conditioning load in the
 21 Pacific Northwest and California.

⁷ Average monthly energy prices are determined using an average of the daily exchange adjusted prices for each of HLH and LLH.

1.5 RS 1892 Energy Pricing

Figure 3 below shows the RS 1823 Tier 1, Tier 2 and RS 1823A energy prices compared to the average weighted daily RS 1892 energy price in HLH and LLH (including \$3/MWh adder) paid by participant customers during the 2019 Freshet Period.

Figure 3 RS 1823 and RS 1892 energy prices (May to July 2019)



For the 2019 Freshet Period, the average daily price for RS 1892 energy in HLH and LLH was usually below the otherwise applicable price(s) for RS 1823 energy. In summary, during the 2019 Freshet Period:

- There were two days where the market price of LLH energy was negative such that the energy charge floor price of \$0/MWh under RS 1892 was applied;
- There were no negative priced HLH days;
- There were two days when the net daily LLH market price (including \$3/MWh adder) was higher than the RS 1823 Tier 1 energy price of 45.35/MWh; and

- 1 • There were 13 days when the net daily HLH market price (including \$3/MWh
 2 adder) was higher than the RS 1823 Tier 1 energy price of 45.35/MWh.

3 As shown in [Table 4](#) below, the total average weighted price paid for RS 1892
 4 energy by participant customers was CAD\$27.27/MWh⁸ (includes \$3.00/MWh
 5 wheeling rate, excludes taxes). This compares to the RS 1823 Tier 1 energy price of
 6 \$45.35/MWh, the RS 1823 Tier 2 energy price of \$101.60/MWh and the RS 1823
 7 Part A energy price of \$50.98/MWh (all prices excluding taxes). For the 2019
 8 Freshet Period, the energy price differential between the average RS 1892 energy
 9 price and the RS 1823 Tier 1 energy price was \$18.08/MWh.

10 **Table 4 RS 1823 and RS 1892 energy prices**
 11 **(May to July 2019)**

Energy Prices by Rate Schedule	Year 4 (F2020)
	C\$/MWh
Average RS 1892 energy price (includes wheeling rate)	\$ 27.27
RS 1823 Tier 1 energy price	\$ 45.35
RS 1823 Tier 2 energy price	\$ 101.60
RS 1823 Energy Charge Part A price	\$ 50.98
Energy price differential vs RS 1823 Tier 1	\$ 18.08

12 Participating RS 1892 customers had advance knowledge of day-ahead market
 13 prices for both HLH and LLH and could choose to use energy under RS 1892 when
 14 day-ahead market prices were economic relative to RS 1823 energy prices.

15 Customers also realized RS 1823 demand savings in any Billing Period where actual
 16 metered demand in HLH was higher than their Reference Demand.

17 Accordingly, it is BC Hydro's view that the Freshet Rate provided customers with a
 18 lower cost option for incremental electricity use.

⁸ The actual price of RS 1892 energy paid by each specific customer was higher or lower than this weighted average to reflect their unique daily mix of HLH and LLH Net Freshet Energy.

1 **1.6 Customer Load Response**

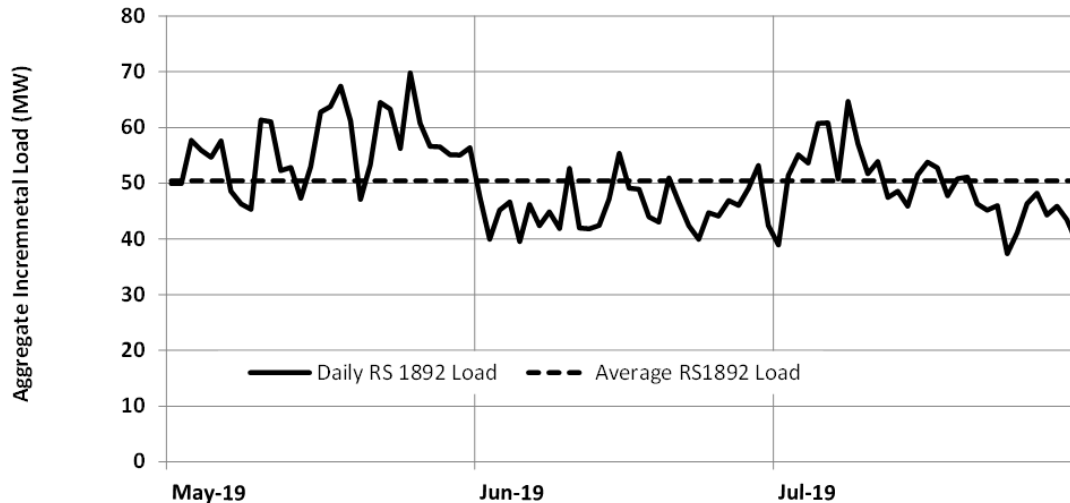
2 [Figure 4](#) below illustrates the aggregate customer response (load shape) to changes
3 in market prices. In May 2019, customers appeared to operate their facilities to
4 optimize electricity costs such that the aggregate load increase was highest when
5 market energy reference prices were lowest. In contrast, there is no observed
6 correlation between the June customer load response and market energy reference
7 prices. There is a weak positive correlation between the July customer load
8 response and market energy reference prices (e.g. higher load at lower prices, and
9 vice versa).

10 From the participant customer survey responses, BC Hydro understands that many
11 customer participants made plans to increase operations during May on the premise
12 (based on their experience from prior years) that market prices would be low. This
13 premise proved to be accurate.

14 However, customers were less certain that prices would remain low through the
15 June and July periods. Accordingly, some customers planned to reduce their take of
16 incremental energy in June and July to reduce the risk of a sudden market energy
17 price spike.

1
2

Figure 4 Aggregate incremental RS 1892 load (May to July 2019)



3

4 In terms of the speed of customer response, some customers advised that they were
5 closely monitoring daily market prices to make daily operating decisions. Refer to
6 sample of customer survey responses below for context:

7 “We compared the day-ahead market pricing information to our
8 “all in” Tier 1 pricing. If the day-ahead market price was below
9 such price, load was increased to maximize Freshet energy
10 purchases; if it’s above, we reduced load to baselines.”

11 “We reviewed day-ahead pricing daily and in the context of time
12 remaining to end of term (31 July). No hard threshold was set.”

13 “We watched prices closely to ensure our cumulative load
14 increases were economic. The (economic) threshold changes
15 based on achieved savings to date...”

16 Other customers advised that daily pricing did not influence their operating decisions
17 either because they were not actively monitoring daily market prices or had already
18 made an advance commitment to higher operating levels and sales with the
19 expectation of lower average market prices over the freshet period. Refer to sample
20 of customer survey responses below for context:

1 *“We just monitored pricing, but it didn’t affect our actions.”*

2 *“The (daily) pricing was not used to take specific actions. There*
3 *was a maximum price threshold set (for the freshet period).”*

4 *“We generally didn’t use day to day information, planning was*
5 *done at a monthly level.”*

6 **1.7 Service Considerations**

7 **1.7.1 Interruption**

8 BC Hydro did not curtail RS 1892 service to any customer during the 2019 Freshet
9 Period. Sufficient energy and capacity were available at all times to serve the
10 incremental load.

11 **1.7.2 RS 1880 Replacement Service**

12 Of the 37 customer participants, BC Hydro has determined that a total of five
13 customers with self-generation facilities took service under RS 1892 during Year 4.
14 Of these, only one customer site was verified to have used RS 1892 as a substitute
15 for RS 1880 during the 2019 Freshet Period. This was due to an extended event of
16 generator curtailment. BC Hydro considers that the customer would have normally
17 requested RS 1880 service during the period of generator curtailment, but for the
18 availability of RS 1892. Events of voluntary self-generation curtailment are not
19 relevant to this analysis because they reflect a direct customer action to increase
20 load under RS 1892 (e.g., the desired outcome) as opposed to an event of generator
21 outage that BC Hydro considers would have occurred anyway.

22 **1.8 Financial Considerations**

23 **1.8.1 Wheeling Rate**

24 Directive 4b of Commission Order No. G-17-16 directed BC Hydro as part of its
25 reporting to address and, where appropriate, evaluate the energy adder (wheeling
26 rate) under RS 1892 as compared to FortisBC Inc.’s standby rate. BC Hydro’s
27 RS 1892 energy adder (wheeling rate) is \$3.00/MWh and FortisBC Inc.’s standby

1 rate is \$4.00/MWh (as shown in Schedule 37 for Large Commercial Standby
2 Service).⁹ The difference is \$1.00/MWh. For Year 4, if the RS 1892 energy adder
3 (wheeling rate) had been \$4.00/MWh, this would have provided an additional
4 \$111,468 of revenue. This analysis assumes the same total RS 1892 energy volume
5 of 111,468 MWh (i.e., that the higher rate would have had no impact on customer
6 participation). As described in BC Hydro's Final Evaluation Report, BC Hydro
7 remains of the view that the \$3.00/MWh energy adder (wheeling rate) is appropriate.

8 **1.8.2 Incremental Costs**

9 As of September 2019, BC Hydro has incurred approximately \$50,000 in
10 incremental costs specific to implementation and billing of the Year 4 Pilot. All other
11 staff and administration costs were funded under existing operating budgets.

12 **1.8.3 Ratepayer Impact Analysis**

13 The following describes the process and approach that BC Hydro used to determine
14 the preliminary Year 4 impacts. BC Hydro's analysis methodology¹⁰ represents a
15 historical assessment of daily system conditions. System operations were examined
16 to determine the marginal resource that was deemed to serve incremental RS 1892
17 HLH and LLH energy volumes during each day of the 2019 Freshet Period. The
18 marginal resource is either market (Mid-C) during HLH or LLH or BC Hydro's large
19 basin system generation on a daily basis, as explained below.

20 **Condition 1: Minimum generation with forced export**

21 When BC Hydro is experiencing a minimum generation constraint, and net exports
22 are forced to avoid spill, incremental domestic sales under RS 1892 will reduce
23 forced exports. Holding market price constant, BC Hydro will see an approximate
24 revenue gain equal to the sum of the CAD \$3.00/MWh energy adder (wheeling rate)

⁹ Schedule 37 can be found in FortisBC Inc's Electric Tariff at
<https://www.fortisbc.com/About/RegulatoryAffairs/ElecUtility/Documents/FortisBCElectricTariff.pdf>.

¹⁰ Refer to BC Hydro's Final Evaluation Report for a more detailed description of the methodology.

1 collected under RS 1892 and the avoided USD \$5.16/MWh wheeling fee plus
2 1.9 per cent transmission loss charge for avoided energy delivery from the BC
3 border to the Mid-C market (converted to Canadian dollars). This gain is roughly
4 equal to \$10.00/MWh.

5 **Condition 2: Minimum generation with economic import**

6 When BC Hydro is experiencing a minimum generation constraint, while importing
7 on an economic basis, incremental domestic sales under RS 1892 are deemed to be
8 served from market imports. Holding market price constant, BC Hydro will see an
9 approximate revenue loss equal to the difference between the CAD \$3.00/MWh
10 energy adder (wheeling fee) collected under RS 1892 and the US \$5.16/MWh
11 wheeling fee and 1.9 per cent transmission losses charge converted to Canadian
12 dollars paid for energy delivery from the Mid-C market to the BC border. This loss is
13 roughly equal to \$4.00/MWh. On any days where the market price is negative, the
14 revenue loss from deemed market imports will be reduced by the difference between
15 the actual market price and the \$0/MWh floor price under RS 1892 (considered as
16 market floor price differential in the calculation above).

17 **Condition 3: Higher basin generation on the margin**

18 Holding import/export volumes constant, the loading of BC Hydro's large basin
19 generation will be increased to serve additional RS 1892 load. BC Hydro considers
20 that the cost consequence (revenue gain or loss) of this circumstance can be
21 estimated by comparing the actual revenue gained from RS 1892 energy sales with
22 the deemed value of the water/energy removed from the BC Hydro large basin to
23 serve the additional load rather than being held in storage. The value of the
24 incremental generation from the large basin that is operated to serve the load can be
25 expressed as a daily System Marginal Value. For the 2019 Freshet Period, a daily
26 System Marginal Value was determined for each of BC Hydro's Kinbasket and
27 Williston reservoirs in HLH and LLH:

-
- 1 • For Kinbasket reservoir, marginal values ranged from CAD \$47 to \$50/MWh.
2 This compares to CAD \$21 to \$35/MWh in 2018; and
- 3 • For Williston reservoir, marginal values ranged from CAD \$47 to \$49/MWh.
4 This compares to CAD \$22 to \$28/MWh in 2018.

5 For any day where basin energy was deemed to serve incremental RS 1892 loads,
6 the difference between the value of actual RS 1892 energy sales and BC Hydro's
7 System Marginal Value was used to determine the revenue gain or loss on that day.

8 [Table 5](#) below shows the estimated ratepayer impact by month for each of the three
9 marginal resource conditions across the entire four year period of the Freshet Rate
10 pilot. For Year 4, BC Hydro experienced a revenue loss of \$0.5M. This compares to
11 revenue gains of \$2.3M in Year 1, \$2.2M in Year 2 and \$1.9M in Year 3.

1
 2

Table 5 RS 1892 Monthly Ratepayer Impact by Marginal Resource for Years 1 - 4

Year 1 (2016)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 61	\$ (6)	\$ 481	\$ 536
June	\$ -	\$ -	\$ 806	\$ 806
July	\$ -	\$ -	\$ 917	\$ 917
	\$ 61	\$ (6)	\$ 2,204	\$ 2,259
Year 2 (2017)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 56	\$ (93)	\$ 424	\$ 387
June	\$ 117	\$ (55)	\$ 402	\$ 464
July	\$ 38	\$ -	\$ 1,305	\$ 1,343
	\$ 211	\$ (148)	\$ 2,131	\$ 2,194
Year 3 (2018)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 205	\$ (78)	\$ -	\$ 127
June	\$ 170	\$ (77)	\$ 50	\$ 143
July	\$ 65	\$ (4)	\$ 1,541	\$ 1,602
	\$ 440	\$ (159)	\$ 1,591	\$ 1,872
Year 4 (2019)	Forced Export	Market Import	System Basin	Revenue gain (loss)
May	\$ 45	\$ (107)	\$ (275)	\$ (337)
June	\$ 65	\$ (91)	\$ (55)	\$ (81)
July	\$ -	\$ (94)	\$ (31)	\$ (125)
	\$ 110	\$ (292)	\$ (361)	\$ (543)
Totals	\$ 822	\$ (605)	\$ 5,565	\$ 5,782

3 As shown in [Table 5](#) above, BC Hydro is reporting a revenue loss of approximately
 4 \$0.5 million for Year 4. This is due primarily to the higher marginal price of
 5 BC Hydro's system storage compared to the Mid-C marginal price used to price RS
 6 1892 energy purchases. BC Hydro anticipated this outcome in advance, given the
 7 adverse hydrology conditions that BC Hydro faced leading into the 2019 Freshet
 8 Period, combined with an expectation of below normal inflows.

9 Specifically, the combination of low storage prior to the 2019 Freshet Period and
 10 lower than average inflows during the 2019 Freshet Period resulted in a reduced

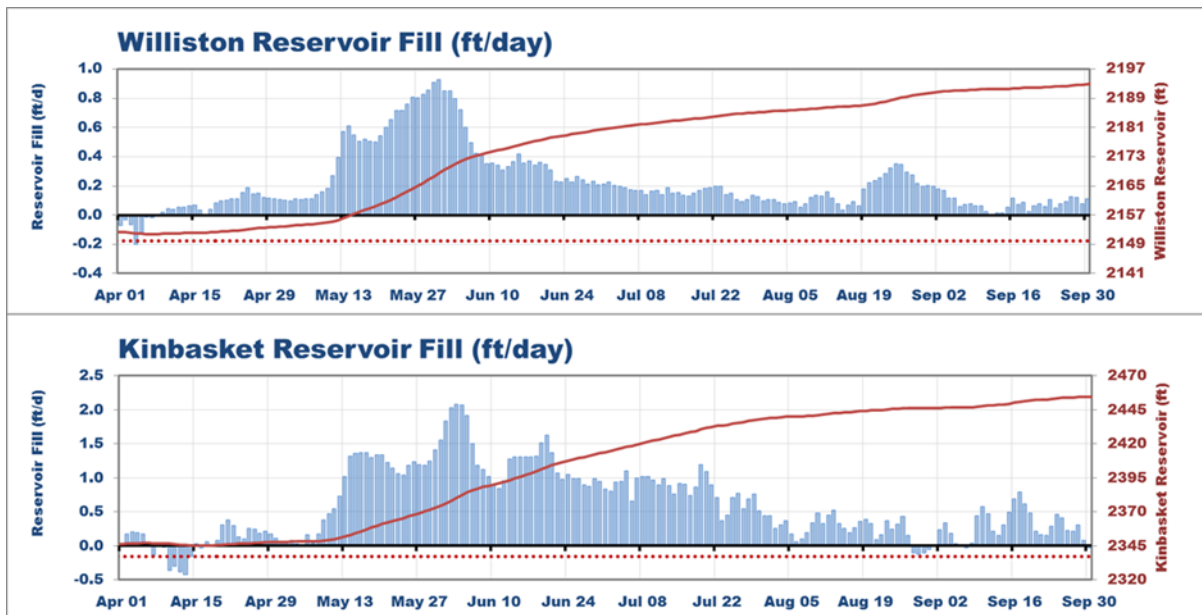
1 freshet surplus and greater physical capability to accept market energy imports.
 2 Further, the resultant high System Marginal Prices increased the economic
 3 motivation for market energy imports and reduced the economic value of
 4 incremental freshet period energy sales to domestic customers. These conditions
 5 are discussed in more detail below.

6 **1.8.4 Discussion of 2019 Freshet Period Conditions**

7 Entering into the 2019 Freshet Period, it was known to BC Hydro that conditions
 8 were different than in previous years. Across the winter of 2018/2019, low winter
 9 inflows into the BC Hydro system in combination with the Enbridge Gas Pipeline
 10 explosion (that impacted thermal generation) resulted in strong downward pressure
 11 on system storage. Williston and Kinbasket Reservoirs both approached record
 12 minimum storage levels. Williston reservoir levels dropped to 2,151 feet and
 13 Kinbasket reservoir levels dropped to 2,345 feet. Refer to [Figure 5](#) below.

14
15

Figure 5 Williston and Kinbasket Reservoir fill rates and levels for 01 Apr – 30 Sep 2019



1 In response to these low storage levels, coupled with anticipated low 2019 freshet
2 inflows, BC Hydro's System Marginal Price for storage at Williston and Kinbasket
3 was increased. For example, as described above, System Marginal Prices for the
4 2019 Freshet Period were significantly higher (e.g., approximately double) relative to
5 the 2018 Freshet Period.

6 In addition, the weak freshet in 2019 resulted in lower must-run hydro power
7 generation from non-storage BC Hydro and IPP facilities. Taken together, this led to
8 a significant reduction in BC Hydro's normal freshet surplus and opened room for
9 BC Hydro to purchase market energy across the majority of the May/June period.
10 The outcome during the 2019 Freshet Periods was a strong bias of overall system
11 operations towards market energy imports whereas the normal freshet period bias is
12 to energy exports. These factors motivated BC Hydro to import market energy to
13 support system storage levels.

- 14 • For example, in the 2019 Freshet Period, there were only 10 HLH days and
15 14 LLH days with net market energy exports. This compares to the 2018
16 Freshet Period (with 29 HLH and 32 LLH days of net market exports) and the
17 2017 Freshet Period (with 47 HLH and 12 LLH days of net market exports).

18 **1.8.5 Implications for Permanent Freshet Rate**

19 As described in the Final Evaluation Report, the Freshet Rate produced benefits for
20 participants and nonparticipant ratepayers over the initial three-year pilot term.

21 These benefits were expected to continue unless conditions substantially changed.

22 In this respect, BC Hydro notes that Year 4 of the Freshet Rate pilot did represent a
23 change in conditions compared to Years 1-3. As described above, conditions during
24 the May-July 2019 freshet period were characterized by low reservoir levels,
25 reduced thermal generation due to Enbridge pipeline explosion and below average
26 inflows. This reduced the freshet energy surplus and contributed to higher system
27 marginal prices and higher market energy imports. Even with these conditions, the

-
- 1 2019 Freshet Period revenue loss is modest when compared to the revenue gains
2 over the prior three freshet periods. For the entire Freshet Rate Pilot period, the total
3 revenue gain is \$5.8 million.
- 4 BC Hydro considers this result to demonstrate that the Freshet Rate design is robust
5 and, when assessed over multiple years, able to prudently and efficiently drive
6 incremental energy sales from participant customers while protecting the interests of
7 non-participant ratepayers.