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April 29, 2019

Mr. Patrick Wruck
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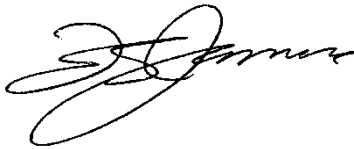
Dear Mr. Wruck:

RE: Project No. 1598958
British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Application to Amend Net Metering Service under Rate Schedule (RS) 1289

BC Hydro writes to provide the attached application to amend Net Metering Service under Rate Schedule **(RS) 1289 (Application)**, in accordance with BCUC Order No. G-3-19.

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

Yours sincerely,



Fred James
Chief Regulatory Officer

cs/ma

Enclosure (1)

Copy to: BCUC Project No. 3698662 (Application to Amend Rate Schedule 1289 for Net Metering Service) Registered Intervener Distribution List.
BCUC Project No. 1598958 (Application to Amend Net Metering Service under RS 1289) Registered Intervener Distribution List.
BCUC Project No. 1598976 (Extension Request to File the Net Metering Service under Rate Schedule 1289 Application) Registered Intervener Distribution List.

**Application to Amend Rate Schedule (RS) 1289 for
Net Metering Service**

April 29, 2019

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1 Introduction

BC Hydro files this application to request approval from the BCUC to amend Rate Schedule 1289 (**RS 1289**) which provides Net Metering Service to our residential and commercial customers (**Application**). A Draft Order is provided as Appendix A and Appendix B provides clean and black-lined copies of RS 1289, with the proposed amendments. If approved, BC Hydro requests that these amendments be made effective as of the first date of the month following the BCUC's Order.

The Application follows an application submitted by BC Hydro on April 20, 2018 (**2018 Amendment Application**) which is included as Appendix C. The 2018 Amendment Application proposed limited interim amendments to address an immediate concern regarding recent project applications where the customer's Generating Facility was sized to exceed the customer's estimated Annual Load (**Oversized Generating Facilities**). By Order No. G-100-18, the BCUC approved the amendments sought in the 2018 Amendment Application on an interim basis and directed BC Hydro to file the Application by December 15, 2018. By Order No. G-3-19, the BCUC extended this deadline to April 30, 2019.

The 2018 Amendment Application was an interim step to address Oversized Generating Facilities while BC Hydro conducted a broader review of the Net Metering Program (**Program**) and its requirements, including customer and stakeholder engagement.

Accordingly, to inform the Application, BC Hydro engaged with customers and stakeholders through two webinars (March 18, 2019 and April 1, 2019) and an online survey. There were a total of 301 participants in the webinars and BC Hydro received 706 survey responses. The engagement materials are provided as Appendix D. The survey and a summary of the responses received are provided as Appendix E (**Engagement Survey Results**).

1 In addition to the Engagement Survey Results, the Application has been informed by
2 the observations and conclusions in the Net Metering Evaluation Report No. 4,
3 submitted to the BCUC on April 26, 2017, which is provided as Appendix F
4 (**Evaluation Report**), a jurisdictional review conducted by BC Hydro, which is
5 provided as Appendix G (**Jurisdictional Review**), and comments BC Hydro has
6 received from customers and stakeholders since the 2018 Amendment Application.

7 **1.1 Net Metering Program Allows Customers to Offset Their** 8 **Supply from BC Hydro**

9 The Program is designed for customers who install a Generating Facility to generate
10 electricity for their own use.

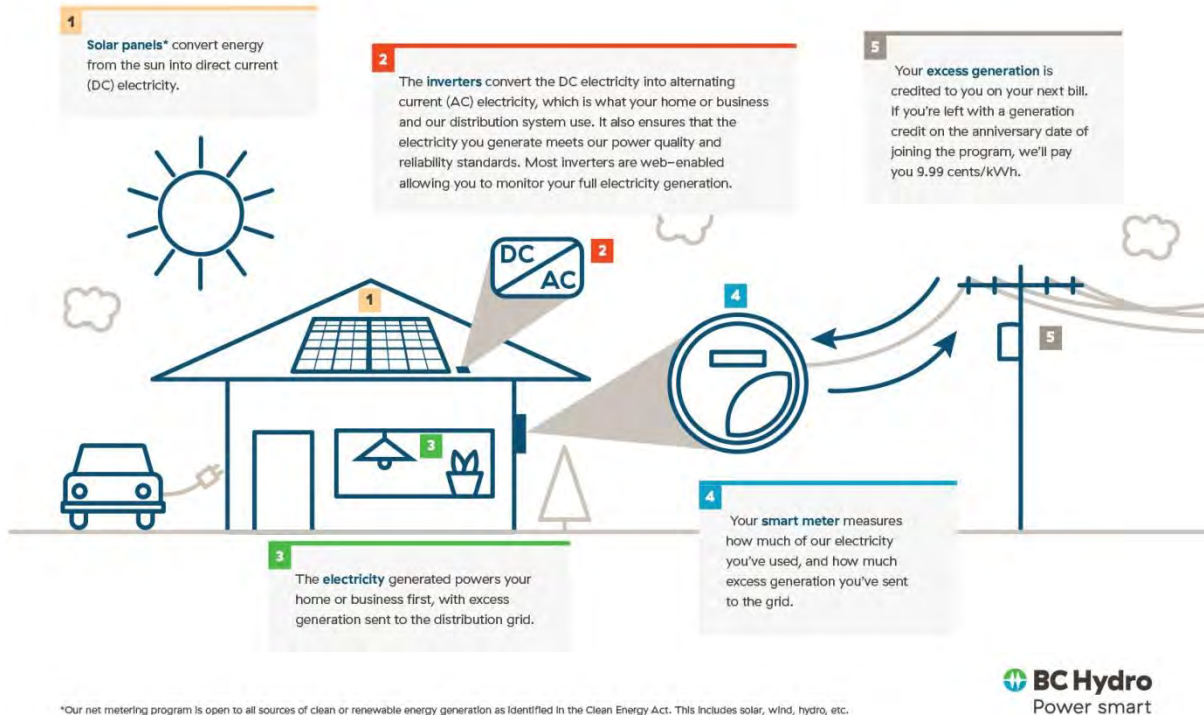
11 When customers don't generate enough electricity to meet their needs at a point in
12 time, they buy the remaining electricity they require from BC Hydro in accordance
13 with the Rate Schedule under which they are receiving service.

14 When customers generate more electricity than they need at a point in time, that
15 surplus electricity is banked in the Customer's Generation Account. The Generation
16 Account Balance is then applied as a credit to offset electricity consumption later,
17 when customers do not generate enough electricity to meet their needs and require
18 electricity from BC Hydro. Once every 12 months, if customers have credits
19 remaining at their Anniversary Date, they receive a payment from BC Hydro for
20 those remaining credits (**Surplus Energy Payment**) at the Energy Price. The
21 current Energy Price is 9.99 cents per kWh.

22 [Figure 1](#) below provides a visual summary of the Program.

1

Figure 1 BC Hydro's Net Metering Program



- 2 BC Hydro's objectives for the Program (**Objectives**) reflect the regulatory history of
- 3 the Program, as described in section [1.4](#) below, and are reflected in the Application.
- 4 Our objectives are to:
- 5 1. Maintain the Program as a load offset program so that customers can generate
 - 6 their own electricity to reduce their supply from BC Hydro;
 - 7 2. Allocate the benefits and costs of the Program fairly between participating and
 - 8 non-participating customers;
 - 9 3. Offer an accessible, streamlined and transparent process for participation; and
 - 10 4. Provide a safe process for program participants to connect to BC Hydro's
 - 11 system.

1.2 Proposed Amendments Reflect Customer Feedback and Will Maintain Program Intent, Fairness, Simplicity and Safety

To achieve these Objectives, BC Hydro is proposing to:

- Make the amendments sought in the 2018 Amendment Application ongoing, with adjustments to provide additional flexibility to meet the current and future needs of customers (refer to section [2](#));
- Assign all customers a default Anniversary Date of March 1 and to allow customers to choose their own Anniversary Date once (refer to section [3](#));
- Update the Energy Price from 9.99 cents per kWh to an amount that reflects the price BC Hydro can sell the electricity for on the regional wholesale market (refer to section [4](#)); and
- Make various minor amendments to improve the clarity, simplicity and safety of the Program and to reflect existing program practices (refer to section [5](#)); and
- Maintain the current Energy Price of 9.99 cents per kWh for all customers with accepted applications as of April 20, 2018, for a period of five years (refer to section [6](#)).

These amendments respond to the Engagement Survey Results, the Jurisdictional Review, the Evaluation Report and feedback received from customers and stakeholders since the 2018 Amendment Application. The amendments would maintain the intent of the Program while supporting simplicity and safety as well as improving fairness between participating and non-participating customers.

BC Hydro believes that the proposed amendments are fair and provide a balanced approach that avoids substantial costs to BC Hydro and non-participating customers while allowing for limited cost-shifting to support the Program. BC Hydro expects that the proposed amendments will have either a limited or beneficial impact on most

customers in the Program and that the overall financial impact of the proposed amendments will be minimal.

[Table 1](#) below provides an estimate of the overall financial impact of the proposed amendments, applied to fiscal 2018 data. It is important to recognize that:

- The overall financial impact of the Program on non-participating customers is broader than the impacts shown below. Further discussion on the broader costs of the Program is provided in section [7.3](#); and
- The information presented below is an indicative estimate only. The actual financial impact of the proposed changes will vary depending on participation in the Program and customer responses to the changes. BC Hydro will monitor the impact of the changes and propose further amendments as appropriate.

Table 1 Estimated Financial Impact - Proposed Amendments Applied to Fiscal 2018 Data

	Estimated Incremental Generation Account Balance Applied Against Consumption (kWh)	Estimated Incremental Decrease to Domestic Revenue From Application of Generation Account Balance (\$)	Total Electricity Purchased Through Surplus Energy Payments (kWh)	Total Surplus Energy Payments (\$)
Current RS 1289			3,246,827	324,358
With Anniversary Date Amendments and Energy Price Update	145,585 ¹	15,039 ²	3,101,242 ³	89,625 ⁴
Combined Net Impact	15,039		234,732	
	219,693			

Note 1: To calculate this number, BC Hydro examined fiscal 2018 data for the 256 customers in the Program who received a Surplus Energy Payment in fiscal 2018 (see [Table 5](#) for further information). For each customer, BC Hydro subtracted the customer's Generation Account Balance as of their current Anniversary Date from their Net Energy Purchased from BC Hydro during the period between their current Anniversary Date and March 1. This approach provides an indicative estimate of the impact of the proposed Anniversary Date amendments because with a March 1 Anniversary Date, these customers would have been able to apply their Generation Account Balance to reduce their Net Energy Purchased from BC Hydro during the period between their current Anniversary Date and March 1.

Note 2: To calculate the estimated incremental decrease to domestic revenue from the application of the Generation Account Balance, BC Hydro multiplied the estimated incremental Generation Account Balance applied against consumption as a result of the proposed Anniversary Date amendments by a blended rate of 10.33 cents per kWh.

Note 3: To calculate this number, BC Hydro subtracted the incremental Generation Account Balance applied against consumption as a result of the proposed Anniversary Date amendments from the total electricity purchased through Surplus Energy Payments in fiscal 2018.

Note 4: To calculate this number, BC Hydro the total electricity purchased through Surplus Energy Payments, adjusted for the impact of the proposed Anniversary Date amendments, by an Energy Price of 2.89 cents per kWh (the calendar year 2017 price as shown in [Figure 7](#)). It is important to note that the financial impact of the update to the Energy Price would not be immediate due to the proposed transitional Energy Price, discussed further in section [6](#).

BC Hydro recognizes that the success of these proposed amendments depends, in part, on customer awareness and understanding. Accordingly, BC Hydro is committed to conducting outreach and engagement, as required, to help customers understand the changes. Specifically, BC Hydro intends to provide information webinars, regular updates to the Program web site, information on customer bills and outreach through conferences and events.

1.2.1 Amendments Will Prevent Oversized Generating Facilities and Support Program Intent, Fairness and Flexibility

BC Hydro is proposing to make the amendments sought in the 2018 Amendment Application ongoing, with adjustments to provide additional flexibility to meet the current and future needs of customers. These amendments would prevent additional Oversized Generating Facilities, maintain the intent of the Program as a way for customers to offset their electricity consumption and would support fairness and flexibility. The amendments would apply only to future applicants to the Program and would have no impact on existing customers in the Program.

Further information on these proposed amendments is provided in section [2](#).

1.2.2 Amendments Will Provide Customers with Increased Opportunities and Flexibility to Reduce Their Supply from BC Hydro

BC Hydro is proposing to assign all customers a default Anniversary Date of March 1 and to allow customers to choose their own Anniversary Date once. This would provide all customers in the Program with increased opportunities and flexibility to apply their Generation Account Balance to reduce their supply from BC Hydro.

Further information on these proposed amendments is provided in section [3](#).

1.2.3 Amendments Will Improve Fairness Between Participating and Non-Participating Customers

BC Hydro is proposing to update the Energy Price paid for the Generation Account Balance remaining in the Customer's Generation Account at their Anniversary Date from 9.99 cents per kWh to an amount that reflects the price BC Hydro can sell the electricity for on the regional wholesale market. This amount would be determined every January 1st based on the daily average Mid-Columbia prices for the previous calendar year, converted to Canadian dollars using the average annual exchange rate from the Bank of Canada for that year.

The amendment would improve fairness between participating and non-participating customers because the Energy Price used to determine Surplus Energy Payments would provide compensation to customers in the Program, at a price that reflects the value of the energy to non-participating customers. This amendment is not expected to have a material impact on the vast majority of customers in the Program.¹

Further information on this proposed amendment is provided in section [4](#).

1.2.4 Minor Amendments Will Support Clarity, Simplicity and Safety and Reflect Existing Program Practices

BC Hydro is proposing various minor amendments to RS 1289 to improve the clarity, simplicity and safety of the Program and to reflect existing program practices.

Further information on these proposed amendments is provided in section [5](#).

1.2.5 Proposed Transitional Energy Price Mitigates Impact to Existing Customers

BC Hydro is proposing to maintain the current Energy Price of 9.99 cents per kWh for all customers with accepted applications as of April 20, 2018, for a period of

¹ Refer to section [6.1](#) for further discussion.

1 five years. During this period, BC Hydro will monitor the impact of the proposed
2 changes to determine if further measures are required.

3 Further information is provided in section [6](#).

4 **1.3 BCUC Has Determined that Energy Objectives Support a** 5 **Focus on Economic Efficiency**

6 As explained in section [1](#), in the Application, BC Hydro is requesting approval from
7 the BCUC to amend RS 1289 which provides Net Metering Service to BC Hydro's
8 residential and commercial customers.

9 Sections 59 to 61 of the *Utilities Commission Act* set out the rate setting functions of
10 the BCUC and provide the BCUC with the authority to approve the amendments
11 sought in the Application. These sections reflect standard regulatory principles that
12 must be respected, while still providing the BCUC with discretion in setting rates.

13 Section 2 of the *Clean Energy Act* sets out British Columbia's energy objectives,
14 which include:

- 15 • To use and foster the development in British Columbia of innovative
16 technologies that support energy conservation and efficiency and the use of
17 clean or renewable resources; and
- 18 • To ensure [BC Hydro's] rates remain among the most competitive of rates
19 charged by public utilities in North America.

20 On page 9 of Appendix A to Order No. G-57-12 – Reasons for Decision, the BCUC
21 referenced these two energy objectives and stated:

22 "In the Panel's view, this supports a focus on economic
23 efficiency criteria in the design of the Net Metering rate and a
24 reduction of any unnecessary economic barriers to the
25 program."

1.4 Regulatory History of the Net Metering Program

The following provides a brief summary of the regulatory history of the Program, with an emphasis on matters most relevant to the Objectives in the Application.

1.4.1 2002 Energy Plan Initiated Development of Net Metering Program

In November 2002, the Government of B.C. released the 2002 Energy Plan: Energy for our Future: A Plan for BC. Policy Action No. 20 stated, in part, that BC Hydro, amongst others, would develop policies such as net metering, to support a voluntary goal of acquiring 50 per cent of new electricity supply from clean sources in British Columbia, over the next ten years.

In December 2002, citing Policy Action No. 20, an application to the BCUC sought to change BC Hydro's standard metering practices to include a limited and simple form of net metering.

In January 2003, in response to the December 2002 application, the BCUC issued Letter No. L-3-03, requesting that BC Hydro prepare, in consultation with customer groups and other utilities, a report to assess the merits of a net metering policy. In June 2003, BC Hydro submitted its report to the BCUC.

In July 2003, the BCUC issued Letter No. L-37-03, directing BC Hydro to prepare an application for a simple net metering tariff, stating:

"In the current pricing environment, the Commission expects that net metering in B.C. would not impose any material costs on non-participating ratepayers. The Commission recommends the development and implementation of a net metering tariff. However, given that a small amount of energy will likely be involved, the Commission's support for a net metering tariff is conditional on development and implementation that does not incur any substantial cost on the utility, and that does not impose any inordinate barrier to ratepayers seeking to net meter."

1 Accordingly, the BCUC provided the following minimum parameters for BC Hydro's
2 net metering tariff:

- 3 • It should be available to the residential and commercial customer classes;
- 4 • It should be applicable only to clean energy projects, as defined in the
5 Government of B.C.'s Energy Policy;
- 6 • It should be applicable to generation of 50 kW or less;
- 7 • Interconnection must be safe, but the rules governing interconnection should
8 not be extensive, nor burdensome in administrative process;
- 9 • BC Hydro should consult with other agencies and interest groups as
10 appropriate; and
- 11 • Customer generation should be limited to own use only at the registered
12 location of the net metering installation. In determining consumption charges,
13 net excess generation may be banked as a credit to the customer's account to
14 be applied against future net consumption.

15 **1.4.2 March 2004 Decision on November 2003 Application Established**
16 **Net Metering Program**

17 In November 2003, BC Hydro submitted an application to the BCUC to establish the
18 Program through RS 1289. In March 2004, by Order No. G-26-04, the BCUC
19 approved RS 1289, including the following provisions:

- 20 • A nameplate capacity limit for a Generating Facility of 50 kW;
- 21 • A 12-month period between Surplus Energy Payments; and
- 22 • An Energy Price of 5.40 cents per kWh, reflecting the weighted average energy
23 cost of BC Hydro's most recent comparable Call for Tender for green power
24 generation.

1 The BCUC also made a number of determinations with regards to cost-shifting and
2 the appropriate balance of fairness between participating and non-participating
3 customers. The BCUC stated:

4 “The Commission believed that the potential for cost-shifting
5 would be limited by the low expected participation and the 50
6 kW limit on generation capacity. However, given the expected
7 low uptake and a 50 kW limit, the Commission believed it was a
8 fair and acceptable trade-off against potential cost-shifting for
9 BC Hydro to propose a rate for purchase of net excess
10 generation at an anniversary date of net metering service
11 interconnection. The Commission considered that it would be
12 fair if net metering customers were compensated for the value
13 BC Hydro receives from net excess generation.”

14 The BCUC further stated:

15 “A 50 kW system size is consistent with the intent of net
16 metering to allow individual customers to meet all or part of their
17 electricity demand...Further, and more importantly to a net
18 metering tariff design from a regulatory perspective, limits to
19 system size are intended to reduce the potential magnitude of
20 cost-shifting to non-participating customers.”

21 Lastly, the BCUC stated:

22 “The Commission Panel believes that limited cost-shifting to
23 non-participating customers is warranted to support the
24 implementation of net metering for distributed renewable
25 generation.”

26 Order No. G-26-04 directed BC Hydro to file an evaluation report of the Program one
27 year after the final net metering tariff was approved and to submit any proposed
28 revisions to the net metering tariff based on its evaluation. In June 2005, BC Hydro
29 filed its first evaluation report of the Program, recommending amendments to the
30 criteria to determine when a site acceptance verification was required. These
31 amendments had the effect of reducing the number of cases that required a site

1 acceptance verification. By Order No. G-90-05, the BCUC approved these
2 amendments.

3 **1.4.3 2007 Energy Plan and Subsequent Applications Increased Energy** 4 **Price**

5 In February 2007, the Government of B.C. released the 2007 Energy Plan: The
6 BC Energy Plan: A Vision for Clean Energy Leadership. Policy Action No. 11 stated
7 that BC Hydro would be directed to establish a Standing Offer Program (**SOP**) to
8 purchase electricity from small, clean power projects at a set price, based on the
9 prices paid in BC Hydro's most recent energy call. It further stated that the Energy
10 Price should be generally consistent with the SOP price. Accordingly:

- 11 • In October 2008, BC Hydro submitted an application to the BCUC to increase
12 the Energy Price from 5.40 to 8.16 cents per kWh. In January 2009, by
13 Order No. G-4-09, the BCUC approved the proposed increase to the Energy
14 Price; and
- 15 • In September 2011, BC Hydro submitted an application to the BCUC to
16 increase the Energy Price from 8.16 to 9.99 cents per kWh. In May 2012, by
17 Order No. G-57-12, the BCUC approved the proposed increase to the Energy
18 Price.

19 **1.4.4 July 2014 Decision on February 2014 Application Increased** 20 **Generation Capacity Size Limit**

21 By Order No. G-57-12, the BCUC also directed BC Hydro to consider and consult on
22 the nameplate capacity limit for a Generating Facility (**Capacity Limit**) and provide a
23 report in Net Metering Evaluation Report No. 3.

24 In April 2013, BC Hydro submitted Net Metering Evaluation Report No. 3 to the
25 BCUC and in February 2014, BC Hydro submitted an application to the BCUC to
26 increase the Capacity Limit from 50 kW to 100 kW. In July 2014, by

Order No. G-104-14, the BCUC approved the proposed increase to the Capacity Limit.

1.4.5 BCUC Decision Encouraged June 2015 Application to Grant Program Eligibility to Lessees

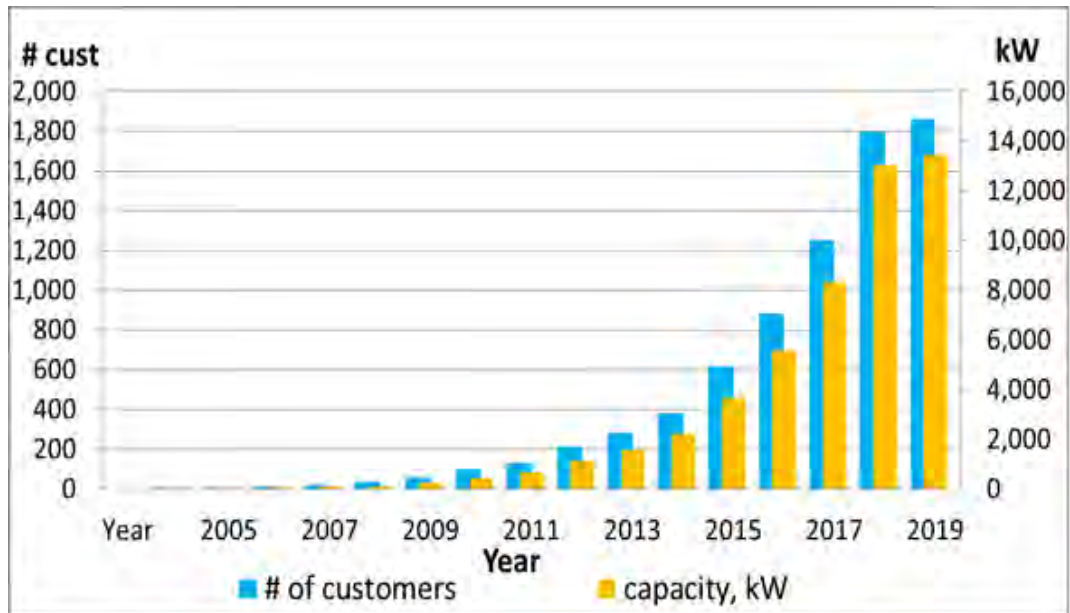
In January 2015, in response to an application from the Vancouver Renewable Energy Cooperative and with the advance approval of the Lieutenant Governor in Council, the BCUC issued Order No. G-7-15 which exempted from regulation under Part 3 and section 71 of the *Utilities Commission Act*, a person not otherwise a public utility, who offers lease agreements or energy supply contracts which provide lessees or buyers with electricity from either solar or wind energy systems or facilities, valued up to \$500,000. In Order No. G-7-15, the BCUC noted that RS 1289 may be amended to foster increased participation in the Program by granting eligibility to lessees.

Accordingly, in June 2015, BC Hydro applied to amend RS 1289 to allow customers in the Program to own or lease clean or renewable generating facilities. By Order No. G-116-15, the BCUC approved these amendments.

1.5 Net Metering Program Growing at a More Significant Rate in Recent Years

The Program was established in 2004 and experienced relatively modest increases in participation over the first ten years. By 2014, the number of participants totaled approximately 400 with an installed capacity of approximately 2.5 MW. Since 2015, the Program has experienced more significant increases in participation. As of March 1, 2019, approximately 1850 customers were participating in the Program, representing an installed capacity of approximately 13 MW. [Figure 2](#) below shows the annual growth in participants and installed capacity by calendar year, from 2004 to 2019.

Figure 2 Net Metering Program Growth (2004 to 2019)



[Table 2](#) below provides a summary of the current participants in the Program by generation type.

Table 2 Net Metering Program Customers by Generation Type (March 1, 2019)

Generation Type	Number of Customers	% of Customers
Solar photovoltaic	1,817	98.16
Hydro	16	0.86
Wind	9	0.49
Wind and photovoltaic	6	0.32
Hydro and photovoltaic	2	0.11
Biogas	1	0.05
Total	1,851	100

[Table 3](#) below provides a summary of the current participants in the Program by the nameplate capacity of the Generating Facility.

Table 3 Net Metering Program Customers by Generating Facility Size (March 1, 2019)

Nameplate Capacity	Number of Customers	% of Customers
≤ 5 kW	955	51.59
> 5 kW, ≤ 10 kW	657	35.49
> 10 kW, ≤ 25 kW	189	10.21
> 25 kW, ≤ 50 kW	34	1.84
> 50 kW	16	0.86
Total Participants	1,851	100
Total Capacity (MW)	13.39 MW	

1.6 Proposed Regulatory Review Process

[Table 4](#) below sets out a proposed regulatory review process for the Application that includes a round of information requests, followed by an argument phase. We believe that this proposed process is efficient and is fair to all parties.

Table 4 Proposed Regulatory Review Process

Process	Date
Registration of Interveners and Interested Parties	May 21, 2019
BCUC Information Request No. 1 to BC Hydro	June 18, 2019
Intervener Information Request No. 1 to BC Hydro	June 26, 2019
BC Hydro responds to BCUC and Intervener Information Request No. 1	July 25, 2019
Argument Phase	TBD

2 Amendments Will Prevent Oversized Generating Facilities and Support Program Intent, Fairness and Flexibility

The following section provides the background and rationale for amendments that BC Hydro is proposing to make the amendments sought in the 2018 Amendment Application ongoing, with adjustments to provide additional flexibility to meet the current and future needs of customers. These amendments would prevent Oversized Generating Facilities, maintain the intent of the Program as a way for customers to offset their electricity consumption and would support fairness and flexibility. The amendments would apply only to future applicants to the Program and would have no impact on existing customers in the Program.

2.1 Regulatory History Demonstrates that the Program Was Intended to Help Customers Offset Their Own Supply With Balanced Approach to Program Costs

Section [1.4](#) above reviews the regulatory history of the Program, including the following statements by the BCUC (emphasis added):

- The Commission's support for a net metering tariff is conditional on development and implementation that does not incur any substantial cost on the utility.
- Customer generation should be limited to own use only at the registered location of the net metering installation.
- The Commission considered that it would be fair if net metering customers were compensated for the value BC Hydro receives from net excess generation.
- A 50 kW system size is consistent with the intent of net metering to allow individual customers to meet all or part of their electricity demand.

- The Commission Panel believes that limited cost-shifting to non-participating customers is warranted to support the implementation of net metering for distributed renewable generation.

In summary, the BCUC has previously stated that the intent of the Program is to allow individual customers to meet all or part of their electricity demand, that customer generation should be limited to own use only, that customers should be compensated for the value BC Hydro receives from net excess generation and that while limited cost-shifting to non-participating customers is warranted, the Program should not incur any substantial cost on the utility.

2.2 In Fiscal 2018, Five Customers Received 75 per cent of Total Surplus Energy Payments

Within the context set out in section [2.1](#) above, BC Hydro provides [Table 5](#) below which provides the Surplus Energy Payments under the Program for fiscal 2018.

Table 5 Surplus Energy Payments (Fiscal 2018)

Amount Range (\$)	Number of Customers	% of Overall Participants	Total Amount in Range (\$)	% of Total Surplus Energy Payments
0	1,044	80.31	0	0
≤ 100	103	7.92	3,949	1
>100, < 500	112	8.62	27,789	9
≥ 500, ≤ 1,000	21	1.62	13,396	4
> 1,000, ≤ 6,000	15	1.15	35,652	11
28,000 – 74,000	5	0.38	243,573	75
Total	1,300	100	324,358	100

As shown in [Table 5](#) above, in fiscal 2018, five customers received approximately 75 per cent of the total Surplus Energy Payments, with payment amounts ranging from \$28,000 to \$74,000. The vast majority of customers (1,044 or 80 per cent) received no Surplus Energy Payment. Of the 256 customers who received a Surplus Energy Payment, 215 or 84 per cent received a payment of less than \$500.

1 The median Surplus Energy Payment in fiscal 2018 was \$139.96 and the average
2 Surplus Energy Payment, excluding the five customers that received amounts
3 ranging from \$28,000 to \$74,000, was \$321.85.

4 [Table 5](#) above demonstrates the financial impact to customers of Oversized
5 Generating Facilities. BC Hydro believes that Oversized Generating Facilities are
6 similar to an IPP and are not consistent with the intent of the Program to allow
7 individual customers to meet all or part of their electricity demand, with generation
8 limited to their own use. Further, BC Hydro believes that Surplus Energy Payments
9 ranging from \$28,000 to \$74,000 are unfair to non-participating customers, go far
10 beyond any limited cost-shifting that may be warranted to support the Program and
11 over time, if not addressed, could represent a substantial cost to BC Hydro and to all
12 customers.

13 **2.3 Customer and Stakeholder Engagement Indicated Need to** 14 **Increase Flexibility of Interim Amendments**

15 BC Hydro submitted the 2018 Amendment Application in April 2018. The
16 2018 Amendment Application sought to amend RS 1289 so that customers could not
17 bypass an existing load on their premises or size their Generating Facility to have an
18 estimated Annual Energy Output that was greater than their estimated Annual Load.
19 The 2018 Amendment Application was an interim step to address Oversized
20 Generating Facilities while BC Hydro conducted a broader review of the Program
21 and its requirements, including customer and stakeholder engagement.

22 By Order No. G-100-18, the BCUC approved the amendments sought in the
23 2018 Amendment Application on an interim basis. On page 3 of Appendix A to
24 Order No. G-100-18 – Reasons for Decision, the BCUC stated:

25 “The Panel recognizes the importance of the Net Metering
26 Program as a means to allow customers the opportunity to
27 offset part or all of their load requirements. However, we also
28 share BC Hydro’s concern that there may be a potential cost to

1 non-participating ratepayers if the amount of energy surplus
2 payout continues to increase through the further approval of
3 oversized generating facilities. The Panel therefore agrees with
4 BC Hydro that its proposed amendments to restrict RS 1289 to
5 those customers whose annual load meets or exceeds the
6 generating facility's annual energy output is a potential solution
7 to the problem."

8 Through comments received from customers and stakeholders since the
9 2018 Amendment Application, BC Hydro became aware of the need to provide
10 increased flexibility with regards to the size of a Customer's Generating Facility. For
11 example:

- 12 • Customers with premises built to the Passive House building standard may face
13 barriers to participating in the Program due to their relatively low Annual Load;
- 14 • Customers expecting to purchase an electric vehicle would not have that
15 incremental load reflected in the historical load used to estimate their Annual
16 Load; and
- 17 • Over time, energy use and behaviours may change, leading to an increase or
18 decrease in Annual Load.

19 **2.4 Options to Address Oversized Generating Facilities**

20 In the Engagement Survey, BC Hydro presented the following options to address
21 Oversized Generating Facilities while providing flexibility to address customer needs.

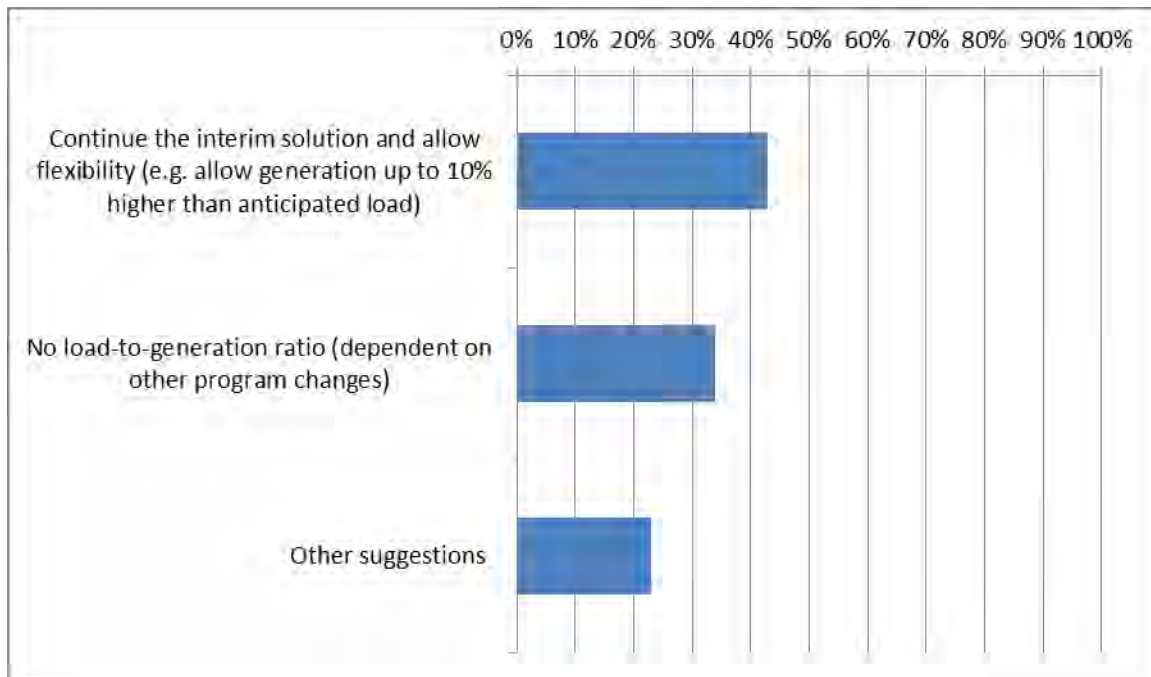
- 22 • Make the amendments proposed in the 2018 Amendment Application ongoing,
23 with adjustments to provide greater flexibility to customers. In the Engagement
24 Survey, the example provided for this option was to allow customers to size
25 their Generating Facility to have an estimated Annual Energy Output up to
26 110 per cent of their estimated Annual Load;
- 27 • No requirement regarding the size of a customer's Generating Facility and a
28 reduction to the Energy Price; and

- Other Suggestions (participants were able to provide written comments with this option).

2.5 Engagement Survey Results Indicate Support for Interim Amendments With Increased Flexibility

As shown in [Figure 3](#) below, the Engagement Survey Results indicate that 43 per cent of participants support making the amendments proposed in the 2018 Amendment Application ongoing, with adjustments to provide greater flexibility to customers. The option of no requirement for the size of a customer's Generating Facility and a reduction to the Energy Price was supported by 34 per cent of participants and 23 per cent had other suggestions.

Figure 3 Engagement Survey Results - Addressing Oversized Generating Facilities



As shown in [Figure 3](#) above, 23 per cent of participants selected the Other Suggestions option. 42 per cent of those responses provided comments that

1 indicated potential support for making the 2018 Amendment Application
2 amendments ongoing, with suggestions to provide additional flexibility to meet
3 customer needs. Specifically, these responses suggested that additional flexibility be
4 considered to allow for future increases to Annual Load, particularly as a result of
5 purchasing an electric vehicle.

6 **2.6 Jurisdictional Review Indicates Most Utilities Surveyed Have** 7 **Requirements Regarding the Size of a Customer's Generating** 8 **Facility**

9 BC Hydro's Jurisdictional Review of eight utilities found that the following six utilities
10 have requirements regarding the size of a customer's Generating Facility.

- 11 • Three utilities require Annual Energy Output to match Annual Load (EPCOR
12 and Hydro Quebec have a formal requirement while FortisBC Inc. requires that
13 customers only intend to partially or fully offset their own load on an annual
14 basis, which functions as an informal requirement to match Annual Energy
15 Output to Annual Load).
- 16 • Three utilities allow Annual Energy Output up to a certain per cent of Annual
17 Load (Newfoundland Power and Nova Scotia Power allow up to 110 per cent
18 and Xcel Energy allows up to 120 per cent).

19 Two utilities – SaskPower and Hydro One - previously had similar requirements with
20 regards to the size of a customer's Generating Facility; however, these utilities have
21 since removed these requirements as they no longer provide Surplus Energy
22 Payments to customers, which has removed the incentive for customers to oversize
23 their Generating Facility.

24 By Order No. G-199-16, the BCUC approved FortisBC Inc.'s current requirements
25 regarding the size of a customer's Generating Facility. On page 11 of Appendix A to
26 Order No. G-199-16 – Reasons for Decision, the BCUC stated:

1 “The intent of the Program is for customers to generate a portion
2 or all of their own consumption so it is appropriate that [FortisBC
3 Inc.] has the right to include only those customers who make a
4 reasonable attempt, at the outset, to limit their generation
5 capacity to their expected annual consumption.”

6 **2.7 Proposed Amendments Would Prevent Oversized Generating** 7 **Facilities and Support Program Intent, Fairness and Flexibility**

8 BC Hydro has considered the Engagement Survey Results and the Jurisdictional
9 Review and is requesting BCUC approval to make the amendments proposed in the
10 2018 Amendment Application ongoing, with adjustments to provide additional
11 flexibility to meet the current and future needs of customers. These amendments
12 would apply only to future applicants to the Program and would have no impact on
13 existing customers in the Program. The amendments would:

- 14 • Allow customers to size their Generating Facility to have an estimated Annual
15 Energy Output up to 110 per cent of their estimated Annual Load, based on
16 historical load data or other information acceptable to BC Hydro;
- 17 • Clarify that customers may increase the size of their Generating Facility at any
18 time, as their historical load data allows;
- 19 • Allow customers who purchase new equipment, such as an electric vehicle, to
20 increase the size of their Generating Facility by an amount determined by
21 BC Hydro, without requiring additional historical load data; and
- 22 • Exempt Generating Facilities with a capacity size of 5 kW or less from the
23 requirement to have an estimated Annual Energy Output no greater than
24 110 per cent of the customer’s estimated Annual Load.²

² It is important to note that BC Hydro is only proposing this exemption on the premise that the change to the Energy Price, discussed further in section [1.2.3](#) and section [4](#) below, is approved. If this change is not approved, the financial impact of this exemption to non-participating ratepayers is potentially greater and BC Hydro would need to reconsider whether it is appropriate.

1 BC Hydro believes that these proposed amendments should be approved. The
2 amendments:

- 3 • Support the Objectives by:
 - 4 ▶ Continuing to make the Program available to customers who intend to
5 generate electricity to offset part or all of their Annual Load while preventing
6 customers from installing an Oversized Generating Facility with the intent to
7 sell energy to BC Hydro on a consistent basis, similar to an IPP; and
 - 8 ▶ Maintaining the simplicity and accessibility of the Program.
- 9 • Respond to the Engagement Survey Results by adjusting the amendments
10 proposed by BC Hydro in the 2018 Amendment Application to provide greater
11 flexibility to customers.
 - 12 ▶ 43 per cent of Engagement Survey participants supported the proposal of
13 maintaining the amendments included in the 2018 Amendment Application,
14 with additional changes to provide greater flexibility, compared to the
15 alternative proposal of having no requirement regarding the size of a
16 customer's Generating Facility and a reduction to the Energy Price.
 - 17 ▶ 23 per cent of Engagement Survey participants provided other suggestions.
18 42 per cent of those responses indicated potential support for making the
19 2018 Amendment Application amendments ongoing, with suggestions to
20 provide additional flexibility to meet customer needs. BC Hydro has
21 considered these suggestions and reflected some of those suggestions in
22 our proposal.
- 23 • Are consistent with the results of BC Hydro's Jurisdictional Review which
24 indicates that six of the eight utilities surveyed have requirements regarding the
25 size of a customer's Generating Facility and that the two utilities surveyed

without such a requirement do not provide Surplus Energy Payments to customers.

3 Amendments Will Provide Customers With Increased Opportunities and Flexibility to Reduce Their Supply From BC Hydro

The following section provides the background and rationale for amendments that BC Hydro is proposing to assign all customers a default Anniversary Date of March 1 and to allow customers to choose their own Anniversary Date once. These amendments would provide all customers in the Program with increased opportunities and flexibility to apply their Generation Account Balance to reduce their supply from BC Hydro.

3.1 Current Anniversary Date is Based on Connection Date Which Limits Ability of Some Customers to Reduce Their Supply From BC Hydro

As explained in section [1.1](#), when customers generate more electricity than they need at a point in time, that electricity is banked in the customer's Generation Account. The Generation Account Balance in the customer's Generation Account is applied as a credit to offset electricity consumption later, when the customer does not generate enough electricity to meet their needs and requires electricity from BC Hydro. Once every 12 months, if customers have credits remaining at their Anniversary Date, they receive a Surplus Energy Payment at the Energy Price.

As shown in [Table 2](#), approximately 98 per cent of customers in the Program have a solar photovoltaic Generating Facility. These customers generate more energy in the summer months than the winter months. A typical residential customer would consume more energy in the winter months than the summer months. This mismatch between generation and consumption is why the timing of a customer's Anniversary Date is important.

1 A customer's Anniversary Date is the end of the sixth (or twelfth) billing period
2 following the date the customer commences taking service under RS 1289.

3 Customers with an Anniversary Date in the summer and early fall months could
4 receive a Surplus Energy Payment during or shortly after the period where their
5 generation is relatively high and their consumption is relatively low. This means that
6 any accumulated Generation Account Balance would be cleared through a Surplus
7 Energy Payment, before those customers have the opportunity to apply that balance
8 to reduce their supply from BC Hydro during the winter months, when their
9 consumption is relatively high and their generation is relatively low. Conversely,
10 customers with an Anniversary Date in the spring months could receive a Surplus
11 Energy Payment after the winter months, when consumption is relatively high and
12 where they would have had the opportunity to reduce their supply from BC Hydro by
13 applying any accumulated Generation Account Balance from the summer months in
14 the prior year.

15 [Table 6](#) below provides illustrative examples that demonstrate the benefits of an
16 Anniversary Date that is optimized for customers in the Program. In the first
17 example, with an Anniversary Date of September 1, the customer accumulates a
18 Generation Account Balance of 600 kWh during the July/August billing period which
19 is then paid out during the September/October billing period, before the customer
20 can apply it to reduce the amount of energy they purchase from BC Hydro in a
21 particular billing period (**Net Energy Purchased**). In the second example, with an
22 optimized Anniversary Date of March 1, the customer accumulates the same
23 Generation Account Balance of 600 kWh during the July/August billing period but is
24 able to apply it to reduce their Net Energy Purchased during the
25 November/December billing period.

Table 6 Illustrative Example of Benefits From Optimized Anniversary Date

Billing Period (All units in kWh)	Inflow	Outflow	Generation Account Balance	Net Energy Purchased by Customer	Surplus Energy Payment
Anniversary Date of September 1					
January/February	2,400	1,200	0	1,200	0
March/April	2,200	1,600	0	600	0
May/June	2,000	2,000	0	0	0
July/August	1,800	2,400	600	0	0
September/October	2,000	2,000	0	0	600
November/December	2,200	1,600	0	600	0
Total	12,600	10,800	-	2,400	600
Anniversary Date of March 1					
January/February	2,400	1,200	0	1,200	0
March/April	2,200	1,600	0	600	0
May/June	2,000	2,000	0	0	0
July/August	1,800	2,400	600	0	0
September/October	2,000	2,000	600	0	0
November/December	2,200	1,600	0	0	0
Total	12,600	10,800	-	1,800	0

As shown above, with an Anniversary Date of September 1, the Net Energy Purchased over the year is 2,400 kWh and the customer receives a Surplus Energy Payment for 600 kWh. With an optimized Anniversary Date of March 1, the Net Energy Purchased over the year is 1,800 kWh. The customer receives no Surplus Energy Payment but is able to apply their Generation Account Balance to reduce their Net Energy Purchased from BC Hydro by 600 kWh.

Currently, Surplus Energy Payments are made every 12 months. An extension of the period of time between Surplus Energy Payments (e.g., from the current 12 months to 24 months) would also provide customers with increased opportunities and flexibility to apply their Generation Account Balance to reduce their Net Energy Purchased from BC Hydro. However, this would mean that customers would receive Surplus Energy Payments less frequently.

3.2 Options to Provide Customers With Increased Opportunities and Flexibility to Offset Their Supply From BC Hydro

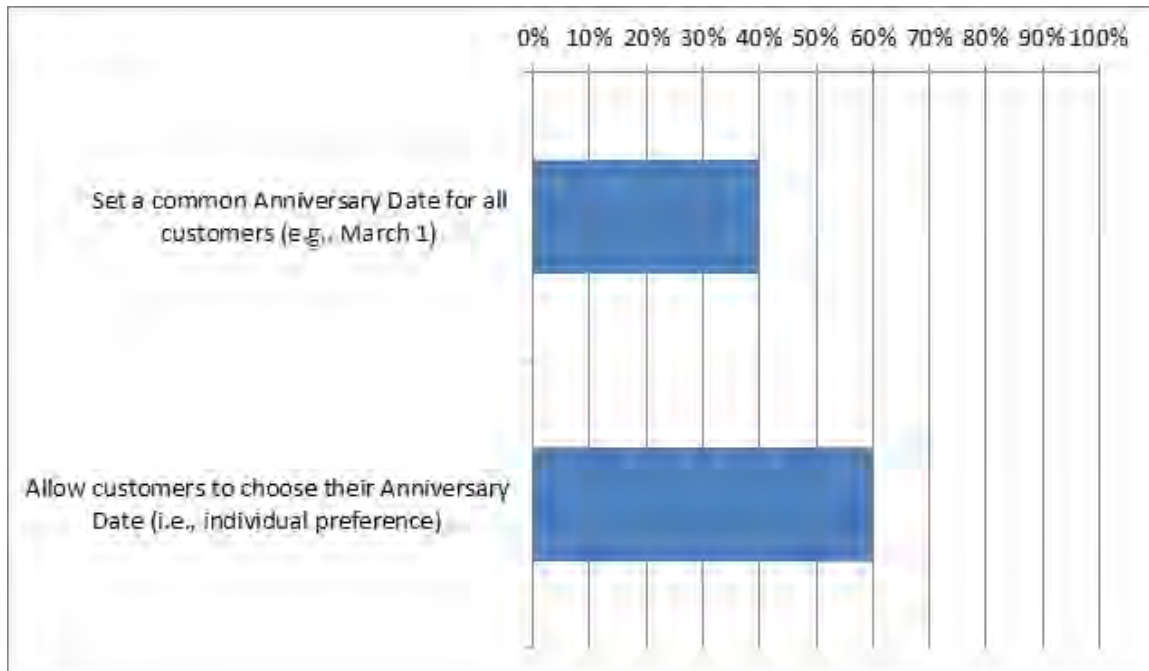
In the Engagement Survey, BC Hydro presented the following options to provide customers with increased opportunities and flexibility to offset their supply from BC Hydro.

- Anniversary Date
 - ▶ Set a common Anniversary Date for all customers (e.g., March 1).
 - ▶ Allow customers to choose their Anniversary Date (i.e., individual preference).
- Period Between Surplus Energy Payments
 - ▶ Continue the current 12-month true-up period.
 - ▶ Extend the true-up period from the current 12 months to 24 months or longer.

3.3 Engagement Survey Results Indicate Support for Anniversary Date Flexibility with Participants Split on Extending Period Between Surplus Energy Payments

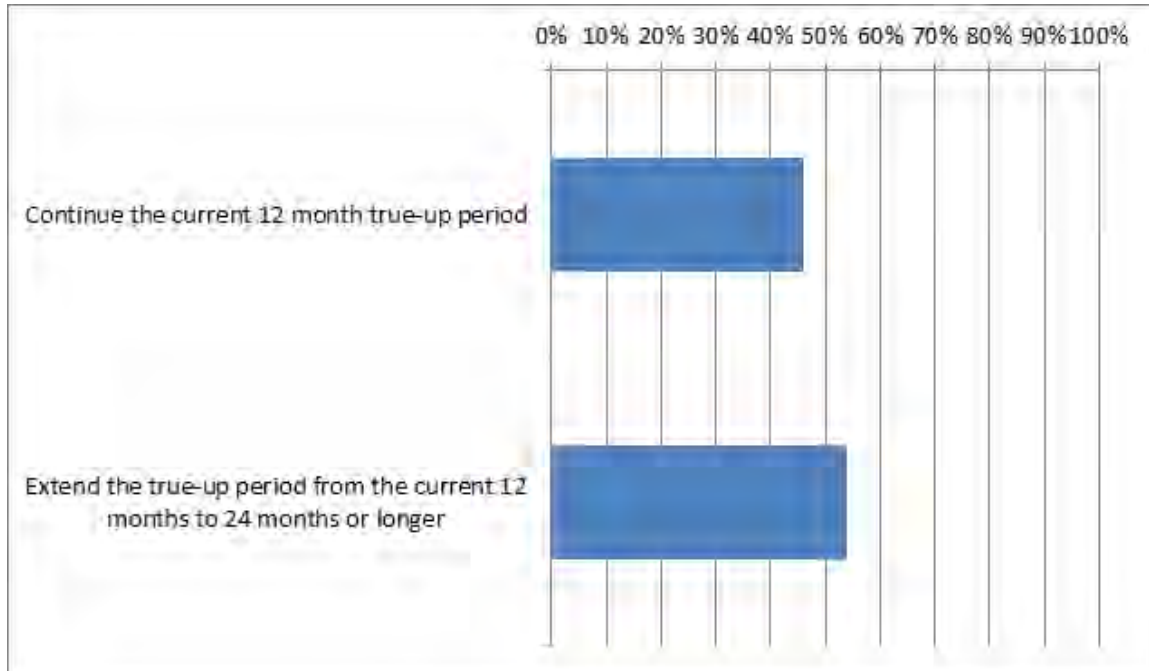
As shown in [Figure 4](#) below, the Engagement Survey Results indicate that 60 per cent of participants support allowing customers to choose their Anniversary Date.

Figure 4 Engagement Survey Results – Anniversary Date



As shown in [Figure 5](#) below, the Engagement Survey Results indicate that participants did not have a strong preference with regards to whether the period of time to accumulate and apply a Generation Account Balance between Surplus Energy Payments should be extended with 46 per cent supporting no change and 54 per cent supporting an extension.

Figure 5 Engagement Survey Results – Extending the Period Between Surplus Energy Payments



3.4 Jurisdictional Review Indicates Anniversary Date Choice and 12-Month Period Between Surplus Energy Payments is Common

BC Hydro's Jurisdictional Review of eight utilities found that the following four utilities either allow customers to select their Anniversary Date or have Anniversary Dates that are optimized for customers in the Program:

- Three utilities - Hydro Quebec, SaskPower and Nova Scotia Power - allow customers to select their Anniversary Date. Hydro Quebec and SaskPower also assign default Anniversary Dates that are optimized for customers in the Program; and
- FortisBC Inc. sets the Anniversary Date for all customers at March 31, which is an Anniversary Date that is optimized for the vast majority of their net metering customers.

1 Hydro One sets the Anniversary Date based on the month that the Generation
2 Account Balance accumulates (i.e., any remaining credits generated in July expire in
3 July of the following year).

4 Two utilities – Newfoundland Power and Xcel Energy – set the Anniversary Date
5 based on when the customer joins their Net Metering Program. EPCOR does not
6 have an Anniversary Date as Surplus Energy Payments are provided each month, at
7 the retail rate.

8 In addition, BC Hydro's Jurisdictional Review found that while three of the utilities
9 surveyed provide customers with a longer period of time to apply their Generation
10 Account Balance to reduce their Net Energy Purchased, those utilities either do not
11 provide Surplus Energy Payments to customers or provide Surplus Energy
12 Payments at an Energy Price that reflect its short-run value. Specifically:

- 13 • SaskPower has a 36-month period to accumulate a Generation Account
14 Balance. After this period, the balance expires on the Anniversary Date – there
15 is no Surplus Energy Payment;
- 16 • Hydro Quebec has a 24-month period to accumulate a Generation Account
17 Balance. After this period, the balance expires on the Anniversary Date – there
18 is no Surplus Energy Payment; and
- 19 • Xcel Energy allows customers to either accumulate a Generation Account
20 Balance in perpetuity or receive a Surplus Energy Payment every 12 months,
21 on the Anniversary Date, at the utility's average hourly incremental cost.

22 Further discussion with regards to setting the Energy Price based on the short-run
23 value of the energy is provided in section [4.2](#) below.

24 Four of the utilities surveyed – FortisBC Inc., Hydro One, Newfoundland Power and
25 Nova Scotia Power - have a 12-month period to accumulate a Generation Account

Balance. As mentioned above, EPCOR provides Surplus Energy Payments each month.

3.5 Evaluation Report Indicates Support for Optimal and Flexible Anniversary Date

The Evaluation Report explains that customers with an Anniversary Date in the summer or early fall may have their Generation Account Balance converted to a Surplus Energy Payment before having the opportunity to apply their Generation Account Balance to the fall and winter months, when consumption is typically highest.

The Evaluation Report notes that customers value the ability to use their Generation Account Balance to reduce their supply from BC Hydro and that BC Hydro has received suggestions to either set an optimal Anniversary Date or allow customers to choose their own Anniversary Date.

3.6 Proposed Amendments Would Provide Customers With Increased Opportunities and Flexibility to Reduce Their Supply From BC Hydro

BC Hydro has considered the Engagement Survey Results, the Jurisdictional Review and the Evaluation Report and is requesting BCUC approval to:

- Assign all customers an Anniversary Date of March 1, an optimized Anniversary Date for customers with solar photovoltaic Generating Facilities, which is the type of Generating Facility installed by 98 per cent of current customers in the Program; and
- Allow customers to choose their Anniversary Date once.

These amendments would allow customers to choose the Anniversary Date that is best for them while also setting a default Anniversary Date that is optimized for the vast majority of customers in the Program. This dual approach would provide

1 customers with flexibility while also setting a default option that provides benefits to
2 those customers who are unaware of their option to choose their Anniversary Date
3 or feel they do not have enough information to make an informed choice. As the
4 Canadian Solar Industries Association explained in their written submission to
5 BC Hydro:

6 “The customer should be given the option to specify an
7 anniversary date on their application or be given the default of
8 March 1st. A default date ensures existing customers who have
9 not made chosen a date utilize their net metering system at
10 maximum profitability.”

11 Given the Engagement Survey Results which indicated that participants did not have
12 a strong preference with regards to whether the period of time to accumulate and
13 apply a Generation Account Balance between Surplus Energy Payments should be
14 extended, BC Hydro is not requesting BCUC approval for any amendments with
15 regards to this provision, in the Application.

16 BC Hydro believes that these proposed amendments should be approved. The
17 amendments:

- 18 • Support the Objectives and reflect the Engagement Survey Results. In the
19 Engagement Survey, a majority (60 per cent) of participants supported the
20 option to choose their own Anniversary Date once, compared to the alternative
21 of setting a common Anniversary Date for all customers. Setting a default
22 Anniversary Date as well as allowing customers to choose their own
23 Anniversary Date reflects to the Engagement Survey results while also
24 providing a default option that is optimized for the vast majority of customers in
25 the Program;
- 26 • Are consistent with the results of BC Hydro’s Jurisdictional Review which
27 indicates that allowing customers to choose their own Anniversary Date and

1 providing a default Anniversary Date that is optimized for net metering
2 customers is a common approach; and

- 3 • Respond to the Evaluation Report which noted that customers value the ability
4 to use their Generation Account Balance to reduce their supply from BC Hydro
5 and that BC Hydro had received suggestions to either set an optimal
6 Anniversary Date or allow customers to choose their own Anniversary Date.
7 These amendments do both.

8 **4 Amendments Will Improve Fairness Between** 9 **Participating and Non-Participating Customers**

10 The following section provides the background and rationale for an amendment that
11 BC Hydro is proposing to update the Energy Price paid for the Generation Account
12 Balance remaining in the Customer's Generation Account at their Anniversary Date
13 from 9.99 cents per kWh to an amount that reflects the price BC Hydro can sell the
14 electricity for on the regional wholesale market. This amount would be determined
15 by calculating the average of the daily average Mid-Columbia market prices over the
16 previous calendar year.

17 This amendment would improve fairness between participating and non-participating
18 customers because the Energy Price used to determine Surplus Energy Payments
19 would provide compensation to customers in the Program, at a price that reflects the
20 value of the energy to non-participating customers. This amendment is not expected
21 to have a material impact on the vast majority of customers in the Program.³

22 **4.1 BCUC Has Previously Determined that Energy Price Should** 23 **Reflect the Value BC Hydro Receives for the Energy**

24 As discussed in section [1.1](#), when customers generate more electricity than they
25 need at a point in time, that electricity is banked in the customer's Generation

³ Refer to section [6.1](#) for further discussion.

1 Account. The Generation Account Balance in the customer's Generation Account is
2 applied as a credit to offset electricity consumption later, when the customer does
3 not generate enough electricity to meet their needs and requires electricity from
4 BC Hydro. Once every 12 months, if customers have credits remaining at their
5 Anniversary Date, they receive a Surplus Energy Payment from BC Hydro for those
6 remaining credits at the Energy Price.

7 As discussed in section [2.1](#), in Order No. G-26-04, the BCUC made a number of
8 determinations with regards to cost-shifting and the appropriate balance of fairness
9 between participating and non-participating customers. The BCUC stated (emphasis
10 added):

11 "The Commission believed that the potential for cost-shifting
12 would be limited by the low expected participation and the 50
13 kW limit on generation capacity. However, given the expected
14 low uptake and a 50 kW limit, the Commission believed it was a
15 fair and acceptable trade-off against potential cost-shifting for
16 BC Hydro to propose a rate for purchase of net excess
17 generation at an anniversary date of net metering service
18 interconnection. The Commission considered that it would be
19 fair if net metering customers were compensated for the value
20 BC Hydro receives from net excess generation."

21 **4.2 To Reflect Value Received, Energy Price Should Reflect the** 22 **Short-Run Price, Not the Long-Run Price**

23 The current Energy Price of 9.99 cents per kWh is generally consistent with the price
24 paid under BC Hydro's SOP. As discussed further in section [4.6](#) below, BC Hydro
25 indefinitely suspended the SOP in February 2019.

26 The link between the SOP price and the Energy Price is based on the premise that
27 the Energy Price should reflect a long-run value instead of a short-run value.
28 BC Hydro believes that this premise is incorrect and should be re-considered.

29 RS 1289 does not impose any delivery obligations on customers in the Program.

30 This means that customers in the Program are not obligated to send any energy to

1 BC Hydro and consequently, BC Hydro is unable to consider generation from the
2 Program as part of its supply side resources. This means that energy from the
3 Program does not have a long-run value because it cannot be used to displace or
4 reduce BC Hydro's need to acquire new generation resources, over the long-term.

5 If energy from the Program cannot be valued at a long-run price, then it must be
6 valued at a short-run price that reflects its value at the point in time that it is
7 received. The short-run value of energy received by BC Hydro is determined by the
8 regional wholesale energy market as this is primarily where BC Hydro sells or
9 acquires energy on a short-run basis.

10 It is important to recognize that the current design of the Program, which allows
11 customers to apply a Generation Account Balance towards future consumption,
12 means that energy received from the Program is valued at both the retail rate and
13 the Energy Price.

14 While valuing energy received from the Program at the retail rate is not economic
15 and does not reflect its actual value as a short-run resource, BC Hydro believes that
16 this approach is necessary to support the intent of the Program and is consistent
17 BCUC's determination that limited cost-shifting is warranted to support the
18 implementation of net metering, given the relatively small size of the Program at this
19 time. However, setting the Energy Price on a long-run basis, when the energy
20 received only has a short-run value, goes beyond limited cost-shifting and does not
21 represent a fair value to non-participating customers.

22 **4.3 Options to Update Energy Price to Improve Fairness Between** 23 **Participating and Non-Participating Customers**

24 In the Engagement Survey, BC Hydro presented the following options to update the
25 Energy Price to improve fairness between participating and non-participating
26 customers:

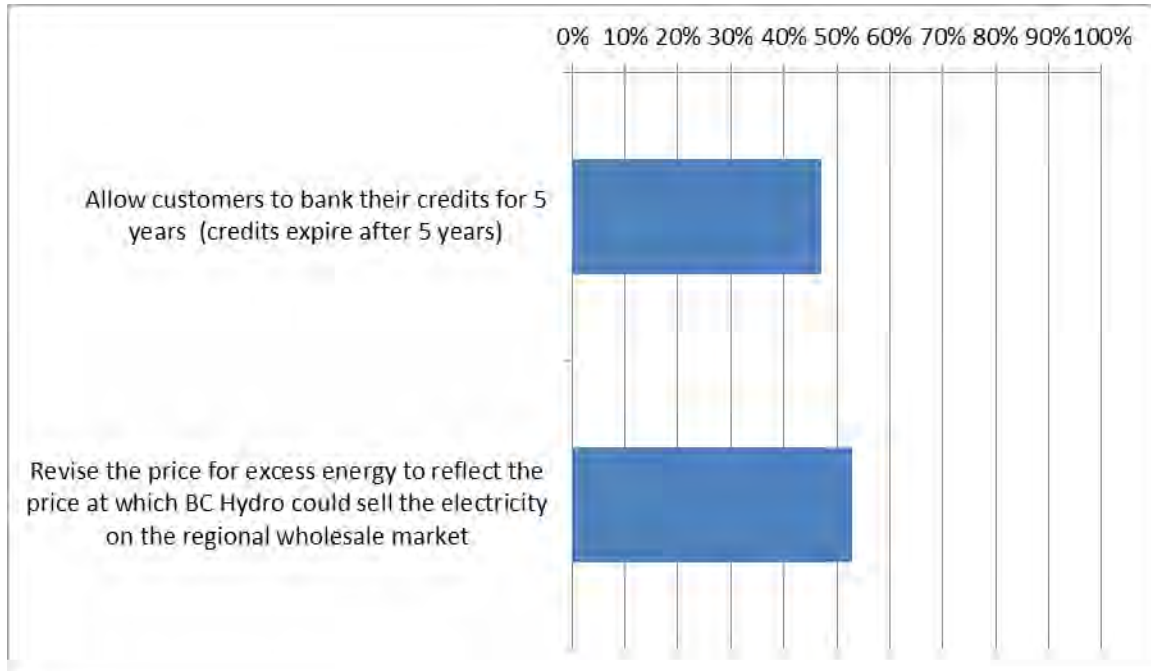
-
- 1 • Allow customers to bank their credits for five years (credits expire after
 - 2 five years); and
 - 3 • Revise the price for excess energy to reflect the price at which BC Hydro could
 - 4 sell the electricity on the regional wholesale market.

5 While the first option would eliminate Surplus Energy Payments and the need for an
6 Energy Price, it would also provide customers with increased opportunities to apply
7 their net excess generation towards their future consumption and receive
8 compensation for that energy at the retail rate.

9 **4.4 Engagement Survey Results Indicate Slight Majority Support** 10 **Revised Energy Price Compared to Option of Having** 11 **Generation Account Balance Expire After An Extended Period**

12 As shown in [Figure 6](#) below, the Engagement Survey Results indicate that a slight
13 majority (53 per cent) of participants support revising the Energy Price to reflect the
14 price at which BC Hydro could sell the electricity on the regional wholesale market
15 compared to an alternative of extending the period of time that customers are able to
16 accumulate and apply their Generation Account Balance against their consumption
17 to five years, after which any remaining Generation Account Balance would expire.

Figure 6 Engagement Survey Results – Energy Price



4.5 Jurisdictional Review Indicates that Most Utilities Surveyed Either Do Not Provide Surplus Energy Payments or Have An Energy Price Equal to Their Short Run Cost

BC Hydro's Jurisdictional Review of eight utilities found that three utilities – Hydro Quebec, Hydro One, and SaskPower – do not provide Surplus Energy Payment to customers. Instead, a customer's Generation Account Balance is only applied against their consumption.

Of the five utilities surveyed that provide a Surplus Energy Payment, three utilities have an Energy Price that reflects its short-run value. Specifically:

- Newfoundland Power's Energy Price is based on retail rates which reflect its marginal cost as they are based on current gas market prices.
- Xcel Energy's Energy Price is based on its average hourly incremental cost.

-
- FortisBC Inc.'s Energy Price is based on its short-run cost to acquire additional energy supply from BC Hydro, as established by the RS 3808 Tranche 1 rate, which is currently 5.098 cents per kWh. On page 11 of Appendix A to Order No. G-63-18 – Reasons for Decision, the BCUC stated:

“The Panel finds that the RS 3808 Tranche 1 rate is a reasonable proxy for the cost of [FortisBC Inc.'s] energy supply alternatives; it reflects the non-firm nature of the energy generated; and it sends a pricing signal that is more closely aligned with the design of the [Net Metering] program to offset own consumption.”

- EPCOR and Nova Scotia Power have an Energy Price that is equal to the retail rate, although it is worth noting that EPCOR's retail rate is updated monthly and is similar to a marginal cost rate.

4.6 Evaluation Report Committed to Updating Energy Price

In the Evaluation Report, BC Hydro indicated that the Energy Price would be reviewed, based on the results of the SOP pricing review, to ensure alignment with changing technological advancements and changing system needs.

Section 15 of the *Clean Energy Act* states that BC Hydro must establish and maintain a standing offer program to acquire electricity from eligible facilities, except in the prescribed circumstances. In February 2019, following the Comprehensive Review of BC Hydro (**Comprehensive Review**), which updated the prescribed circumstances, BC Hydro indefinitely suspended the SOP.

4.7 Proposed Amendments Would Provide Customers With Increased Opportunities and Flexibility to Reduce Their Supply From BC Hydro

BC Hydro has considered the Engagement Survey Results, the Jurisdictional Review and the Evaluation Report and is requesting BCUC approval to:

-
- Update the Energy Price from 9.99 cents per kWh to an amount determined every January 1st based on the daily average Mid-Columbia prices for the previous calendar year, converted to Canadian dollars using the average annual exchange rate from the Bank of Canada for that year.

As discussed in section [4.2](#), BC Hydro believes that it is appropriate to set the Energy Price on a short-run value, as determined by the regional wholesale energy market.

The Mid-Columbia market is the most representative of the prices received on the regional wholesale energy market due to its depth and the availability of transmission access.

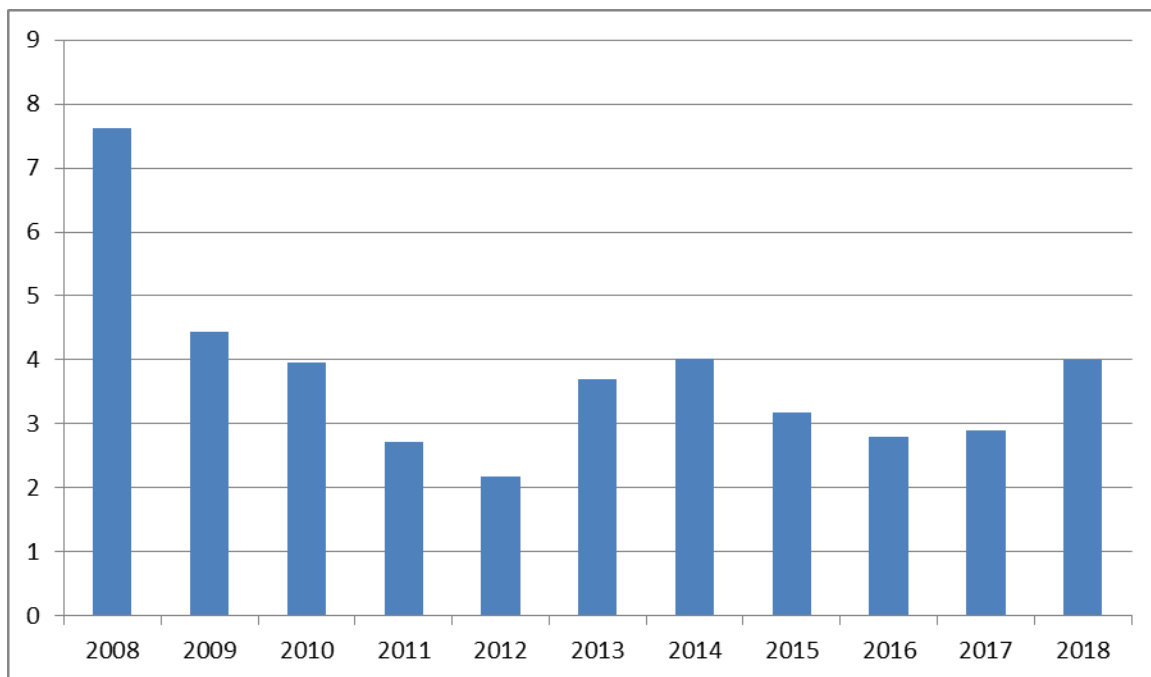
The Mid-Columbia market price fluctuates constantly based on a number of factors such as the availability of supply resources, the demand for electricity, weather conditions, gas market prices and exchange rates. The most accurate way to determine and update the Energy Price would be to adopt a dynamic price that reflects these real-time price signals. While this may be possible over time, BC Hydro recognizes that changing the basis of the Energy Price from a long-run to a short-run value, is, in itself, a significant change and that adopting a dynamic pricing approach would require additional education and engagement. Therefore, BC Hydro proposes a simple approach where the Energy Price would be updated every January 1st based on the daily average Mid-Columbia prices for the previous calendar year, converted to Canadian dollars using the average annual exchange rate from the Bank of Canada for that year.

To sell electricity into the Mid-Columbia market, BC Hydro incurs costs to deliver the electricity, such as line losses and wheeling charges. However, to maintain a simple approach and to recognize the BCUC's previous determination that limited cost-shifting is warranted to support the implementation of net metering, BC Hydro does not believe that Energy Price should be adjusted to account for these costs.

BC Hydro subscribes to a data service for daily end-of-day transaction reports from ICE Data Services (see: <https://www.theice.com/market-data/end-of-day-reports>). Applying the above approach to this data, the Energy Price would be 3.99 cents per kWh based on calendar year 2018.

[Figure 7](#) below shows Energy Price values from applying this approach, by calendar year from 2008 to 2018.

Figure 7 Historical Energy Price by Calendar Year
Using BC Hydro's Proposed Approach
(cents per kWh)



It is important to note if this approach was applied to calendar year 2019 to-date (as of April 9, 2019), the Energy Price would be 8.65 cents per kWh. However, the actual result for the full 2019 calendar year is uncertain as the to-date number reflects only a partial year and does not include the freshet period when market prices are typically lowest.

1 BC Hydro believes that the proposed amendment should be approved. The
2 amendment:

- 3 • Supports the Objectives because the Energy Price would reflect the value of
4 the electricity to non-participating customers and because the proposed
5 process for establishing the Energy Price is relatively simple and transparent;
- 6 • Responds to the Engagement Survey Results where a slight majority
7 (53 per cent) of participants indicated that they would prefer revising the Energy
8 Price to reflect the price at which BC Hydro could sell the electricity on the
9 regional wholesale market compared to an alternative of extending the period of
10 time that a customer's Generation Account Balance can be applied against their
11 consumption from 12 months to five years, after which any remaining
12 Generation Account Balance would expire;
- 13 • Is consistent with the results of BC Hydro's Jurisdictional Review which
14 indicates that most utilities surveyed that provide a Surplus Energy Payment,
15 have an Energy Price that reflects its short-run value; and
- 16 • Responds to the Evaluation Report which indicated that the Energy Price would
17 be reviewed to ensure alignment with changing technological advancements
18 and changing system needs.

19 **5 Miscellaneous Tariff Changes**

20 The following section provides the background and rationale for various minor
21 amendments that BC Hydro is proposing to improve the clarity, simplicity and safety
22 of the Program and to reflect existing program practices.

23 **5.1 Clarification Would Help Prevent Unsafe Connections**

24 As explained in section 9.1.6 of the Evaluation Report, some BC Hydro customers
25 have installed generation at their residences or businesses without BC Hydro's

1 knowledge or approval. This unauthorized generation may pose a safety hazard to
2 BC Hydro employees and other customers, and can negatively impact power quality
3 and reliability.

4 To help address this issue, BC Hydro is proposing an amendment to clarify that
5 generation connections are not permitted except through an interconnection
6 agreement or through the Program.

7 This amendment responds to the Evaluation Report and would support the
8 Objectives by preventing unsafe generation connections. BC Hydro will monitor the
9 impact of this proposed amendment to determine if further measures are required to
10 prevent unsafe generation connections.

11 **5.2 Proposed Amendments to Metering Provision Would Provide** 12 **Clarity Regarding Smart Meter Requirement**

13 Currently, RS 1289 requires that customers in the Program have a meter able to
14 measure bi-directional flows of electricity. However, as discussed in section 12.1 of
15 the Evaluation Report, some customers have been unsure about the types of meters
16 that are consistent with this requirement. Therefore, BC Hydro is proposing an
17 amendment to update the Metering provision of RS 1289 to clarify that the Program
18 is only available to customers with a Smart Meter (including a radio off smart meter).
19 This amendment responds to the Evaluation Report and reflects existing program
20 practices.

21 **5.3 Proposed Amendments Allowing Termination and Rejection of** 22 **Certain Applications Would Provide Clarity and Support** 23 **Safety and Simplicity**

24 As explained in section 9.1.3 of the Evaluation Report, certain areas of the BC Hydro
25 electrical grid are becoming constrained due to the number and size of generators
26 injecting energy back into the grid. Additional generation at these locations, even

1 from small projects in the Program, could require the replacement of substation
2 transformers.

3 BC Hydro currently reviews Program applications on a case by case basis and
4 where required, undertakes a technical assessment of applications from constrained
5 areas to determine available generation capacity and whether the application can be
6 accommodated within existing system constraints.

7 As explained in section 9.1.4 of the Evaluation Report, all Program applications
8 received from customers in Non-Integrated Areas receive a technical review
9 because Non-Integrated Area systems are balancing a small regional load against a
10 variety of generation resources.

11 While all applications to the Program require acceptance from BC Hydro to proceed,
12 BC Hydro is proposing an amendment to clarify that BC Hydro has the ability to
13 reject applications if the applicant is within a service area with existing or expected
14 system constraints. This amendment responds to the Evaluation Report and would
15 support the Objectives by preventing connections that cannot be accommodated by
16 BC Hydro's system, that would trigger substantial costs not recoverable under
17 RS 1289, or that may create safety or other risks.

18 In addition, BC Hydro has noticed that some accepted applications to the Program
19 have remained inactive for one year or longer and the customers responsible for
20 those applications have not proceeded to connect a Generating Facility to
21 BC Hydro's system. When an application is inactive for a prolonged period of time,
22 the data provided and assessed by BC Hydro will likely become outdated. Therefore,
23 BC Hydro is proposing an amendment so that applications expire 18 months after
24 BC Hydro's acceptance, if the customer has not received BC Hydro approval to
25 connect their Generating Facility to BC Hydro's system. Customers with expired
26 applications would be able to re-apply to the Program. This amendment would
27 ensure that BC Hydro has current information on a customer's estimated Annual

1 Load, proposed Generating Facility and system requirements. This amendment also
2 supports the Objectives by streamlining administration of the Program.

3 **5.4 Other Miscellaneous Tariff Changes**

4 In the Application, BC Hydro has also proposed minor updates to the language and
5 organization of RS 1289 to reflect current practice and to improve its clarity and
6 readability. Examples of these proposed amendments include the addition of a
7 definition section, clarifying the Program application process and re-organizing some
8 paragraphs. The proposed amendments to RS 1289 are shown in detail in
9 Appendix B.

10 **6 Proposed Transitional Energy Price Mitigates Impact** 11 **to Existing Customers**

12 The following section provides the background and rationale for a transitional Energy
13 Price that would maintain the current Energy Price of 9.99 cents per kWh for all
14 customers with accepted applications as of April 20, 2018, for a period of five years.⁴
15 During this five-year period, BC Hydro will monitor the impact of the proposed
16 changes to determine if further measures are required.

17 BC Hydro recognizes that the proposed amendment to update the Energy Price from
18 9.99 cents per kWh to an amount that reflects the price BC Hydro can sell the
19 electricity for on the regional wholesale market, may have a material impact on the
20 Surplus Energy Payments some existing customers receive.

21 The proposed amendment to the Energy Price was supported by a slight majority
22 (53 per cent) of customers compared to the alternative option. It also supports the
23 Objectives because the Energy Price would reflect the value of the electricity to
24 non-participating customers. However, supporting the Objectives also means that

⁴ Provided those applications have not expired per the proposed amendments discussed in section [5.3](#).

the process for implementing this proposed amendment should be fair to existing customers in the Program.

6.1 Vast Majority of Customers in the Program Are Not Materially Impacted by Proposed Energy Price Update

As shown in [Table 5](#) of section [2.2](#), in fiscal 2018, the vast majority of customers in the Program (1,044 or 80 per cent) received no Surplus Energy Payment and of the 256 customers who received a Surplus Energy Payment, 215 or 84 per cent received a payment of less than \$500.

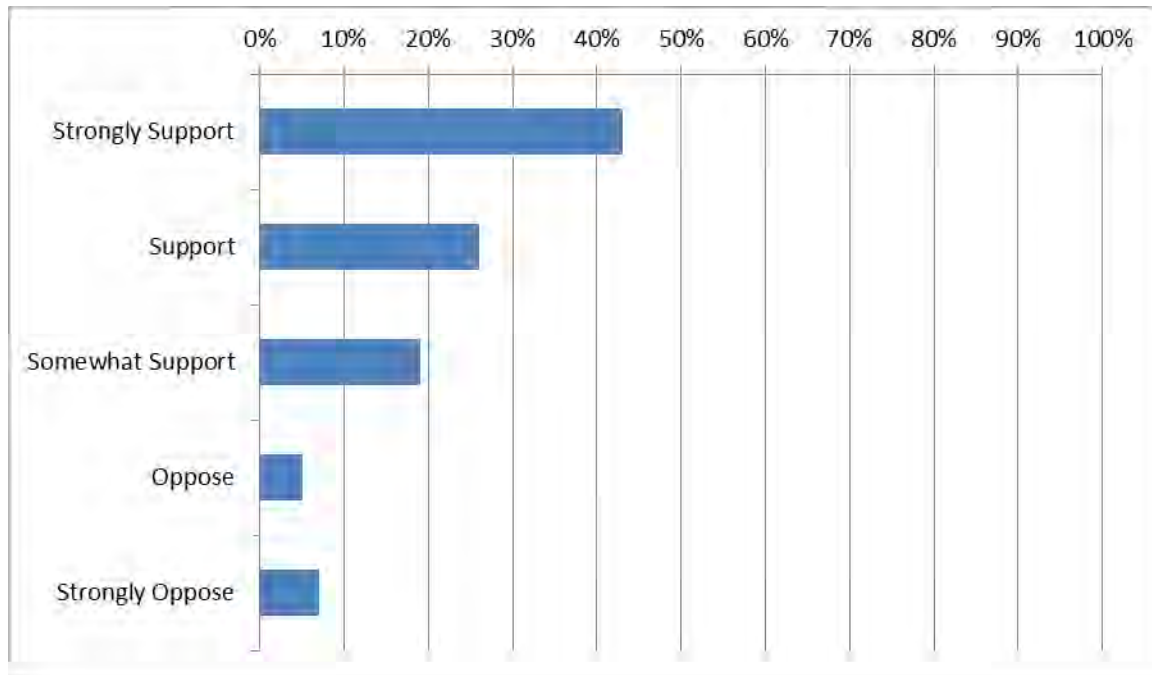
While BC Hydro does not have fiscal 2018 data for customers who entered the Program in fiscal 2019, these customers are likely to have minimal Surplus Energy Payments going forward. This is because the amendments approved in the 2018 Amendment Application were designed so that customers could not bypass an existing load on their premises or size their Generating Facility to have an estimated Annual Energy Output that was greater than their estimated Annual Load.

Overall, this means that the vast majority of customers are not materially impacted by an update to the Energy Price as they are likely to either not receive Surplus Energy Payments or receive minimal Surplus Energy Payments.

6.2 Engagement Survey Indicates Strong Support for a Transitional Energy Price

As shown in [Figure 8](#) below, 69 per cent of Engagement Survey participants expressed clear support for a provision that would maintain the current Energy Price for existing customers in the Program for a period of up to five years, with a commitment for further review after the term expires.

Figure 8 Engagement Survey Results – Support for Transitional Energy Price for Existing Customers for a Period of up to Five Years with a Commitment to Review After the Term Expires



Participants were provided with an opportunity to provide additional comments or suggestions with regards to a transitional Energy Price for existing customers. Of the 252 responses received:

- Approximately 45 per cent either indicated concern about the ability of existing customers to recover their initial investment or suggested the current Energy Price be maintained for existing customers for a longer or indefinite period;
- Approximately 7 per cent indicated general support for the transitional Energy Price proposal;
- Approximately 7 per cent either opposed a transitional Energy Price for all existing customers or opposed a transitional Energy Price for those existing customers who had received significant Surplus Energy Payments; and

-
- The remaining responses were either neutral or not specifically related to providing a transitional Energy Price.

6.3 Proposed Transitional Energy Price Mitigates Impact to Existing Customers

BC Hydro is proposing to maintain the current Energy Price of 9.99 cents per kWh for all existing customers as of April 20, 2018, for a period of five years. During this period, BC Hydro will monitor the impact of the proposed changes to determine if further measures are required.

As discussed above, customers who joined the Program after April 20, 2018, are likely to have minimal Surplus Energy Payments going forward. Therefore, BC Hydro does not believe that it is necessary to provide a transitional Energy Price for these customers.

While many survey responses advocated to maintain the current Energy Price for existing customers for an indefinite or longer period, BC Hydro notes that it has no obligation to maintain the current Energy Price and that when the BCUC approved changes to FortisBC Inc.'s Energy Price by Order No. G-63-18, transitional provisions were not provided to existing customers.

In this particular case, BC Hydro believes that providing a transitional Energy Price for a five-year period strikes a fair balance between existing customers and other ratepayers, recognizing that existing customers in the Program have incurred significant capital investments and that changing the basis of the Energy Price from a long-run to a short-run value, is a significant change. However, for any future changes to the Program, BC Hydro does not intend to propose any transitional provisions.

7 Issues to be Considered for a Future Application

BC Hydro limited the scope of the Application to allow for adequate engagement with stakeholders and customers on the topics in the Application while meeting the requirement to file the Application by April 30, 2019.

The Engagement Survey Results and the Evaluation Report raise additional important issues with regards to the Program and the upcoming Phase Two of the Comprehensive Review of BC Hydro is likely to include topics that are relevant to the Program. BC Hydro intends to consider all of these issues for a future application.

7.1 Leasing Solar Equipment

As discussed in section 9.1.1 of the Evaluation Report, the upfront costs associated with the purchase of solar photovoltaic or wind equipment remains high for the majority of BC Hydro's customers. Leasing solar equipment allows customers to equalize their capital costs over the lifetime of the equipment.

As discussed in section [1.4.5](#), by Order No. G-116-15, the BCUC approved amendments to RS 1289 to grant eligibility to lessees.

At this time, BC Hydro is only aware of one customer in the Program that has taken advantage of the option to lease equipment.

BC Hydro will consider potential additional measures to support leasing opportunities for a future application.

7.2 Virtual Net Metering

As discussed in section 9.1.5 of the Evaluation Report, Virtual Net Metering refers to a system that allows bill crediting across multiple customers for a shared net metering project by allocating credits to each subscriber's electric bill for excess energy produced by their share of the net metering project.

1 BC Hydro's current billing process requires a bill to be associated with a single
2 customer premise. While BC Hydro has received several requests to support Virtual
3 Net Metering, including through the Engagement Survey Results, enabling
4 customers to share credits would require significant modifications to our billing
5 process.

6 In the meantime, BC Hydro has suggested that one customer "own" the net metering
7 installation and perform the administrative task of allocating credits between the
8 participating customers.

9 BC Hydro will consider potential additional measures to support virtual net metering
10 for a future application.

11 **7.3 Broader Costs and Benefits of the Program**

12 As discussed in section 9.1.2 of the Evaluation Report, the majority of BC Hydro's
13 costs are recovered through a variable energy rate. This type of rate design will
14 become more problematic as the Program grows because customers in the Program
15 still require energy from BC Hydro on demand but consume less energy compared
16 to non-participants. This means that while both participating and non-participating
17 customers depend on BC Hydro's ability to supply them with the electricity they
18 require at any point in time, non-participating customers pay relatively more for this
19 service, compared to Program participants.⁵

20 Allowing customers to apply their Generation Account Balance as a credit towards
21 future consumption also has the potential to cause material cost-shifting between
22 participating and non-participating customers. At a point in time, customers in the
23 Program may send energy to BC Hydro or may receive energy from BC Hydro.
24 However, the value of this energy is different depending on the time of year or time

⁵ In his paper *Are electric utilities aboard the "train to Ithaca"?*, Dr. Dennis Weisman defines this issue as an uncompensated carrier-of-last resort obligation and provides further discussion (see: <https://www.sciencedirect.com/science/article/pii/S1040619017300787>).

1 of day. For example, a customer in the Program with a solar photo voltaic
2 Generating Facility may send excess energy to BC Hydro during the day, when
3 market prices are low and then receive energy from BC Hydro in the evening, when
4 market prices are higher. However, the Customer would be able to bank the excess
5 energy sent to BC Hydro and apply it towards the energy they received from
6 BC Hydro as though the energy was of equal value. This means that a Customer in
7 the Program is able to net their energy use over the course of a day or billing period
8 to zero while still imposing costs on BC Hydro and non-participating customers.
9 Given the installed capacity and volume of the energy generated by customer
10 Generating Facilities in the Program at this time, the cost-shifting between
11 participating and non-participating customers is not material. However, over time, as
12 the Program grows, the cost-shifting could become material.

13 As discussed in section 8.1 of the Evaluation Report, at this time, the installed
14 capacity and volume of energy generated by customer Generating Facilities in the
15 Program is too small to result in any appreciable avoided cost benefits to BC Hydro
16 and non-participating customers. However, over time, as participation in the
17 Program increases, BC Hydro may be able to recognize certain additional benefits
18 from the Program. For example, Austin Energy has a “value of solar” tariff that
19 recognizes benefits such as loss savings, energy savings, generation capacity
20 savings, fuel price hedge value, transmission and distribution capacity savings and
21 environmental benefits.⁶

22 BC Hydro will consider potential amendments to improve cost recovery from
23 Program participants and to reflect potential benefits from the Program, as
24 necessary, for a future application.

⁶ Refer to: http://www.cleanpower.com/wp-content/uploads/090_DesigningAustinEnergySolarTariff.pdf.

7.4 Comprehensive Review – Phase Two

The Government of B.C. is currently developing the Terms of Reference for Phase Two of the Comprehensive Review of BC Hydro. BC Hydro expects that, among other things, this review will consider the potential application of Marginal Cost Pricing.

Marginal Cost Pricing provides a potential opportunity to align the interests of Program participants and non-participants. Under this approach, customers in the Program would buy and sell energy at its marginal cost (i.e., the price of energy on the regional wholesale electricity market) and would pay a fixed system access charge to recover the fixed costs associated with their electricity service from BC Hydro.

In the Application, BC Hydro has proposed to update the Energy Price to reflect the value received for that energy on the regional wholesale electricity market. This proposal allows customers to sell electricity to BC Hydro at its marginal cost and is consistent with the application of Marginal Cost Pricing.

Through Phase Two of the Comprehensive Review, BC Hydro and the Government of B.C. intend to explore the potential application of Marginal Cost Pricing, including its potential application to the Program. Specifically, Phase Two of the Comprehensive Review may consider whether customers in the Program should be able to buy electricity at its marginal cost while paying a fixed system access charge and whether the marginal cost for buying and selling electricity should be more reflective of real-time price signals.

BC Hydro will consider the outcomes of Phase Two of the Comprehensive Review for a future application.

8 Conclusion

In the Application, BC Hydro is proposing to:

- Make the amendments sought in the 2018 Amendment Application ongoing, with adjustments to provide additional flexibility to meet the current and future needs of customers;
- Assign all customers a default Anniversary Date of March 1 and to allow customers to choose their own Anniversary Date once;
- Update the Energy Price from 9.99 cents per kWh to an amount that reflects the price BC Hydro can sell the electricity for on the regional wholesale market;
- Make various minor amendments to improve the clarity, simplicity and safety of the Program and to reflect existing program practices; and
- Maintain the current Energy Price of 9.99 cents per kWh for all customers with accepted applications as of April 20, 2018, for a period of five years.

BC Hydro believes that these proposed amendments should be approved. The amendments:

- Respond to the Engagement Survey Results, the Jurisdictional Review, the Evaluation Report and feedback received from customers and stakeholders since the 2018 Amendment Application;
- Maintain the intent of the Program while supporting simplicity and safety as well as improving fairness between participating and non-participating customers;
- Are fair and provide a balanced approach that avoids substantial costs to BC Hydro and non-participating customers while allowing for limited cost-shifting to support the Program; and
- Are expected to have either a limited or beneficial impact on most customers in the Program with a minimal overall financial impact.

Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

Appendix A

Draft Order

ORDER NUMBER

G-xx-xx

IN THE MATTER OF

the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Hydro and Power Authority (BC Hydro)
Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

BEFORE:

Commissioner
Commissioner
Commissioner

on Date

ORDER

WHEREAS:

- A. On April 29, 2019, British Columbia Hydro and Power Authority (BC Hydro) filed an application to seek approval from the British Columbia Utilities Commission (BCUC) to, among other things, amend the Availability, Billing and Rate provisions Rate Schedule (RS) 1289.
- B. By BCUC letter L-37-03 dated July 22, 2003, the BCUC recommended the development and implementation of a net metering tariff, and directed BC Hydro to prepare an application for a simple net metering tariff with at minimum a number of listed parameters.
- C. BC Hydro's Net Metering Tariff was subsequently amended by Orders G-90-05, G-4-09, G-57-12, G-104-14 and G-116-15.
- D. On April 20, 2018, BC Hydro filed an application to seek approval from the BCUC to amend RS 1289 so that RS 1289 was no longer available to customers proposing a generating facility with an estimated annual energy output that is greater than their estimated annual load (2018 Amendment Application).
- E. BC Hydro sought to have the 2018 Amendment Application approved on an interim basis while BC Hydro undertook a broader review of the Net Metering Program and its requirements.
- F. On June 1, 2018, by Order G-100-18, the BCUC approved the 2018 Amendment Application on an interim basis and directed BC Hydro to file its Net Metering application by December 15, 2018.
- G. On October 10, 2018, BC Hydro filed an application requesting an extension (Extension Request) to the filing date of its Net Metering application to no later than July 31, 2019.

- H. On January 7, 2019, by Order G-3-19, the BCUC directed BC Hydro to file its Net Metering application by no later than April 30, 2019.
- I. BC Hydro conducted customer and stakeholder engagement to inform the Application including an webinars on March 18, 2019 and April 1, 2019 and an engagement survey distributed to all RS 1289 customers and interested parties.
- J. The BCUC has reviewed the Application and has determined that the amendments to RS 1289 in the Application are in the public interest.

NOW THEREFORE the Commission orders as follows:

1. The tariff amendments proposed in Appendix B of the Application are approved effective _____.
2. BC Hydro is directed to file the revised RS 1289 tariff with the BCUC for endorsement within 60 days from the date of this order.

DATED at the City of Vancouver, in the Province of British Columbia, this (XX) day of (Month Year).

BY ORDER

(X. X. last name)
Commissioner

Attachment Options

**Application to Amend Rate Schedule (RS) 1289 for
Net Metering Service**

Appendix B

**Revised Tariff Pages
Clean and Black-lined**

6. OTHER

RATE SCHEDULE 1289 – NET METERING SERVICE

Availability	<p>For any Residential Service Customer and for any General Service Customer who:</p> <ol style="list-style-type: none"> 1. installs a Generating Facility to generate electricity to serve all or part of their Electricity requirements on the Customer's Premises, and 2. has had their Net Metering Application for Service under this Rate Schedule accepted by BC Hydro in writing and has received Interconnection Approval. <p>With the consent of BC Hydro, Customers taking Service under other Rate Schedules may be admitted to Service under this Rate Schedule, provided that BC Hydro is satisfied that the metering, billing and other requirements of this Rate Schedule can be met.</p>
Applicable in	All Rate Zones.
Rate	<p>Energy Charge:</p> <p>Charges for the Customer's Net Consumption will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro.</p> <p>Energy Price:</p> <p>For all Electricity represented by the Generation Account Balance remaining in the Customer's Generation Account at any Anniversary Date, BC Hydro will pay:</p> <p>(a) Customers with an accepted Net Metering Application from April 21, 2018 or later:</p> <p>a price calculated every January 1st based on the daily average Mid-Columbia prices for the previous calendar year, converted to Canadian dollars using the average annual exchange rate from the Bank of Canada for that year.</p>

ACCEPTED: _____

ORDER NO. _____

COMMISSION SECRETARY

BC Hydro

Rate Schedule 1289 – Revision 2

Effective:

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	<p>(b) Customers with an accepted Net Metering Application from on or before April 20, 2018:</p> <p>a transitional Energy Price of 9.99 ¢ per kWh. This transitional Energy Price will expire on April 30, 2024. After April 30, 2024, all Customers receiving Service under this Rate Schedule will be paid the Energy Price described in (a), above.</p>
Definitions	<p>1. Anniversary Date</p> <p>The Anniversary Date is March 1st or such other date chosen by the Customer in the manner described in this Rate Schedule.</p> <p>2. Annual Energy Output</p> <p>The Annual Energy Output is the calculated annual energy output for a Generating Facility that will be calculated as follows:</p> <p>Generating Facility's nameplate rating in kilowatts x capacity factor x 365 days x 24 hours, where the capacity factor is:</p> <ul style="list-style-type: none"> • 10 per cent for photovoltaic; • 20 per cent for biogas, thermal and wind; • 30 per cent for fuel cell; and • 40 per cent for hydro. <p>For inverter based Generating Facilities, the nameplate rating for a Generating Facility is the total capacity of the inverters (AC capacity).</p> <p>3. Annual Load</p> <p>The Annual Load is the estimated annual Electricity requirements on the Customer's Premises, calculated based on:</p> <p>(a) The total kilowatt hours of Electricity supplied by BC Hydro to the Customer's Point of Delivery based on the Customer's billing data from the 12 consecutive months immediately preceding BC Hydro's receipt of the Customer's Net Metering Application;</p>

ACCEPTED: _____

ORDER NO. _____

COMMISSION SECRETARY

BC Hydro

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Effective:

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	<p>(b) if 12 consecutive months of billing data is not available, an estimate of the annual Electricity requirements, supported by the Customer's billing data to the date of the Customer's Net Metering Application and other relevant Customer information satisfactory to BC Hydro in its sole discretion; and</p> <p>(c) if the Customer provides BC Hydro with evidence of the purchase of new equipment, such as an electric vehicle, for use on the Customer's Premises, BC Hydro may increase the Customer's estimated Annual Load by the estimated amount of Electricity that the new equipment is expected to require, as determined by BC Hydro in its sole discretion.</p>
4.	<p>DGTIR-100</p> <p>DGTIR-100 is BC Hydro's <i>Distributed Generation Technical Interconnection Requirements – 100 kW and Below</i>.</p>
5.	<p>Generation Account</p> <p>The Generation Account is an account established by BC Hydro for a Customer on the first billing period following the date the Customer commences taking Service under this Rate Schedule.</p>
6.	<p>Generation Account Balance</p> <p>The Generation Account Balance is the Electricity represented by credits in a Customer's Generation Account.</p>
7.	<p>Generating Facility</p> <p>Generating Facility for the purposes of this Rate Schedule means a generating facility, including fuel cells and energy recovery generation, that:</p> <p>(a) Utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a "clean or renewable resource" in the Clean Energy Act (as updated from time to time) to generate Electricity;</p> <p>(b) Has a nameplate rating of not more than 100 kilowatts; and</p>

ACCEPTED: _____

ORDER NO. _____

COMMISSION SECRETARY

BC Hydro

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	<p>(c) Is owned or leased by the Customer and is located on the same parcel of land as the Customer's Premises for which Service is being provided under any of the Rate Schedules described above, or on an adjacent parcel of land owned or leased by the Customer, and is connected to the same Point of Delivery as the Customer's Premises being served under any of the Rate Schedules described above, and includes all wiring, protection isolation devices, disconnect switches, and other equipment and facilities on the Customer's side of the Point of Delivery.</p>
8.	<p>Interconnection Approval</p> <p>BC Hydro's approval of the interconnection of the Generating Facility to the BC Hydro system and the commencement of operation of the Generating Facility.</p>
9.	<p>Net Consumption</p> <p>Net Consumption is the Net Energy that is positive because BC Hydro supplies more Electricity to the Customer than the Electricity delivered.</p>
10.	<p>Net Energy</p> <p>Net Energy is the difference between the Electricity supplied by BC Hydro to the Customer during the billing period and the Electricity delivered from the Generating Facility to BC Hydro's system during the billing period.</p>
11.	<p>Net Generation</p> <p>Net Generation is the Net Energy that is negative because the Customer delivers more Electricity from the Generating Facility to BC Hydro's system than the Customer receives in Electricity from BC Hydro during the billing period.</p>
12.	<p>Net Metering Application</p> <p>The Net Metering Application is the Customer's application to receive Service under this Rate Schedule, to expand the generating capacity of their Generating Facility, or to modify their Generating Facility.</p>
13.	<p>Net Metering Site Acceptance Verification Fee</p> <p>The Net Metering Site Acceptance Verification Fee is the fee set out in section 11 (Schedule of Standard Charges) of the Terms and Conditions of the Electric Tariff.</p>

ACCEPTED: _____

ORDER NO. _____

COMMISSION SECRETARY

BC Hydro

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<p>Net Metering Application and Interconnection Approval</p>	<ol style="list-style-type: none"> 1. Customers wishing to receive Service under this Rate Schedule must submit a Net Metering Application to BC Hydro. The Customer must not interconnect or commence operation of a Generating Facility before receiving: <ol style="list-style-type: none"> (a) BC Hydro's written acceptance of the Net Metering Application, and (b) Interconnection Approval. 2. A Customer receiving Service under this Rate Schedule may change their Anniversary Date in the Net Metering Application or by request to BC Hydro. BC Hydro will accept one request to change the Anniversary Date per Customer. 3. BC Hydro will assess the proposed Generating Facility described in the Net Metering Application. Specifically: <ol style="list-style-type: none"> (a) for Generating Facilities with a nameplate rating of less than or equal to five kilowatts, BC Hydro will not assess the Customer's Annual Load or require a Customer to submit load data or load estimates in their Net Metering Application, and (b) for Generating Facilities with nameplate rating of greater than five kilowatts, the Generating Facility's Annual Energy Output must not exceed 110 per cent of the Annual Load. 4. BC Hydro may determine that a site acceptance verification is required. In that case: <ol style="list-style-type: none"> (a) the Customer will be notified; (b) BC Hydro will inspect the installation of the Generating Facility and may require the Customer to supply additional information and provide access to the Customer's Generating Facility to carry out additional inspections, as described in the DGTIR-100 or other interconnection requirements applicable to the Generating Facility, and (c) the Customer must pay the Net Metering Site Acceptance Verification Fee.
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ACCEPTED: _____

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	<p>5. The Customer will submit a copy of the final inspection report or approval issued by the governmental authority having jurisdiction to inspect and approve the installation, and any additional information that may be requested by BC Hydro. BC Hydro will provide a decision on Interconnection Approval with reasonable promptness following BC Hydro's receipt of any final inspection reports, applicable government approvals and requested information.</p> <p>6. A Customer will begin receiving Service under this Rate Schedule on the date identified in BC Hydro's written Interconnection Approval.</p> <p>7. In BC Hydro's sole discretion, BC Hydro may reject any Net Metering Application where:</p> <ul style="list-style-type: none">(a) BC Hydro considers that the information provided in the Net Metering Application is insufficient or inconsistent with the terms of this Rate Schedule, the DGTIR-100 or other applicable interconnection requirements;(b) the Customer has submitted false or misleading information to BC Hydro in the Net Metering Application or other information requested by BC Hydro;(c) the Customer has a prior history of non-compliance with this Rate Schedule; or(d) BC Hydro's system cannot accommodate the connection of the Customer's Generating Facility due to existing or expected system, safety, financial or technical constraints. <p>8. Where BC Hydro has accepted the Customer's Net Metering Application, this acceptance will expire 18 months from the date BC Hydro accepted the Customer's Net Metering Application if the Customer has not received Interconnection Approval. The Customer may then submit a new Net Metering Application.</p>
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Metering	<ol style="list-style-type: none"> 1. Electricity supplied from the BC Hydro system to the Customer, and Electricity delivered from the Customer's Generating Facility to the BC Hydro system, will be determined by means of a Smart Meter or Radio-Off Meter. 2. The Customer will install, at their cost, the meter base and any wiring, poles, protection-isolation devices, disconnect switches, and other equipment and facilities on the Customer's side of the Point of Delivery as required under DGTIR-100 or other interconnection requirements applicable to the Generating Facility. BC Hydro will supply and install the Metering Equipment and make the final connections.
Billing	<p>Determination of the Customer's bill will be as follows:</p> <ol style="list-style-type: none"> 1. Meter reading and billing frequency will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro. 2. At the end of each billing period BC Hydro will determine the Net Energy applicable for that billing period. 3. If there is Net Consumption, then BC Hydro will apply any credits in the Generation Account Balance to the Net Consumption until the Net Consumption amount is reduced to zero. If the Customer's Generation Account Balance has insufficient credits to reduce the Net Consumption to zero, BC Hydro will bill the Customer for the remaining Net Consumption. 4. If there is Net Generation, BC Hydro will credit the Customer's Generation Account with the Net Generation. 5. Every billing period, BC Hydro will bill the Customer for the Basic Charge and Demand Charge (if applicable) under the Rate Schedule under which the Customer is receiving Service from BC Hydro.

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	<p>6. BC Hydro will follow this procedure, and will notify the Customer of amounts credited and debited to the Customer's Generation Account and of any Generation Account Balance on the bill rendered by BC Hydro for each billing period, until the Anniversary Date.</p> <p>7. At the Anniversary Date, if a Customer has a Generation Account Balance, BC Hydro will be deemed to have purchased that amount of Electricity from the Customer, and will be obliged to pay the Customer for that Electricity at the Energy Price and the Generation Account Balance will revert to zero.</p> <p>8. The procedures described above will apply in each succeeding 12 month period and at each succeeding Anniversary Date for as long as the Customer continues to take Service under this Rate Schedule.</p> <p>9. If Service under this Rate Schedule is Terminated, the billing procedures described above will be applied as of the date of Termination instead of the Anniversary Date. In that event, BC Hydro will pay the amount owing in respect of any Generation Account Balance to the Customer within 45 days of the date of Termination, subject to any rights of deduction or set-off BC Hydro may have.</p> <p>10. In no case will any Generation Account Balance have any cash value or be convertible to cash, except as provided above.</p>
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<p>Special Conditions</p>	<ol style="list-style-type: none"> 1. Subject to the provisions of Rate Schedule 1289, any other applicable Rate Schedule(s) under which the Customer is from time to time receiving Service from BC Hydro and other applicable provisions of BC Hydro's Electric Tariff, BC Hydro will supply Electricity to, and accept delivery of Electricity from, the Customer at the Point of Delivery. 2. A Customer who (a) utilizes a synchronous generator, (b) takes Service at a Primary Voltage and/or (c) utilizes a Generating Facility with a nameplate rating greater than 50 kilowatts, will pay all associated incremental costs for connection of the Customer's Generating Facility as set out in Terms and Conditions section 9.7 (Generating Facility Connections (Distributed Generation)). 3. The Customer will design, install, operate and maintain the Generating Facility, and all ancillary facilities on the Customer's side of the Point of Delivery in accordance with all governmental laws and regulations from time to time applicable, and BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. Customers will obtain and maintain any required governmental authorizations and/or permits required for the installation and operation of the Generating Facility. The Generating Facility will meet all applicable safety and performance standards, including the codes and standards identified in BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. The Customer will be responsible for the safe and proper operations of the Generating Facility consistent with the requirements of the regulations of the <i>Safety Standards Act</i>. BC Hydro, acting reasonably, may from time to time prescribe additional requirements which in its judgment are required for the safety of its system.
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	<p>4. The Customer will promptly notify BC Hydro of any malfunction or breakdown of the Generating Facility that could constitute a safety hazard or reasonably be expected to cause disturbance or damage to BC Hydro's system.</p> <p>5. Where the Customer leases the Generating Facility from a third party or retains a third party to install, operate and maintain the Generating Facility on its behalf, then as between the Customer and BC Hydro, the Customer will remain responsible for any obligations under all terms and conditions of Service, including applicable Rate Schedules, DGTIR-100, and other applicable interconnection requirements to the same extent as if the Customer owns, installs, operates and maintains the Generating Facility itself.</p> <p>6. The Customer will not operate the Generating Facility so as to generate Electricity at a rate greater than 110 per cent of the nameplate rating of the Generating Facility, and will not add to or modify the Generating Facility without Interconnection Approval.</p> <p>7. BC Hydro may suspend or Terminate the Customer's Service under this Rate Schedule if the Customer fails to comply with this Rate Schedule.</p> <p>8. Service under this Rate Schedule is conditional on the continuance of Service to the Customer under any of the Rate Schedules described under the Availability section above, and is further conditional on the Customer being billed monthly or bi-monthly under BC Hydro's regular billing plan.</p>
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	<p>If Service under the applicable Rate Schedule is suspended or Terminated for any reason, or if the Customer ceases to be billed under BC Hydro's regular billing plan, Service under this Rate Schedule will be deemed to have automatically been suspended or Terminated concurrent with suspension or Termination of Service under the applicable Rate Schedule, or change to a different billing plan, as applicable.</p> <p>9. If Service under this Rate Schedule is suspended or Terminated for any reason, BC Hydro may require the Customer to obtain a new Interconnection Approval prior to resuming operation of the Generating Facility.</p> <p>10. BC Hydro will have the right to require the Customer to interrupt (including, if so specified by BC Hydro, by means of physical disconnection or lock-out) or reduce the output of their Generating Facility whenever:</p> <ul style="list-style-type: none">(a) BC Hydro deems such action necessary, in its sole judgment, to permit BC Hydro to construct, install, maintain, repair, replace, remove, investigate, or inspect any of its equipment or any part of its electric system; or(b) BC Hydro determines in its sole judgment, that curtailment, interruption, or reduction of the Customer's electrical generation is otherwise necessary due to emergencies, forced outages, force majeure, safety hazards, possible damage to or disturbance of its electric system, or compliance with prudent electrical practices. <p>11. Notwithstanding any other provision of this Rate Schedule, in any of the events or circumstances mentioned in Special Condition No. 10, BC Hydro will have the right:</p> <ul style="list-style-type: none">(a) To require the Customer to immediately disconnect the Generating Facility from BC Hydro's system; and(b) To itself immediately disconnect the Generating Facility from the BC Hydro system if the Customer is either not available or fails to act, and such disconnection is deemed necessary by BC Hydro.
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	<p>12. Whenever feasible BC Hydro will give the Customer reasonable advance notice that interruption or reduction in deliveries may be required, or that disconnection of the Generating Facility from BC Hydro's system may be required, but the failure of BC Hydro to give such notice will not invalidate any action taken by BC Hydro under any of the Special Conditions in Rate Schedule 1289.</p> <p>13. If BC Hydro in its discretion deems it necessary to require the Customer to interrupt or disconnect the Generating Facility from BC Hydro's system, or for BC Hydro to itself effect the interruption or disconnection of the Generating Facility from its system, as provided in Rate Schedule 1289, or such interruption occurs as a result of suspension or Termination of Service to the Customer in accordance the provisions of Rate Schedule 1289, then except to the extent caused by the wilful misconduct or gross negligence of BC Hydro, its servants or agents, BC Hydro and its servants or agents will not be liable to the Customer for any loss or damage whatsoever resulting from the exercise of such rights by BC Hydro.</p> <p>14. BC Hydro will have the right to enter the Customer's Premises at all reasonable hours, without notice to the Customer, to inspect the Customer's protective devices and read, inspect and/or test meters, or to disconnect the Generating Facility. Nothing in this Rate Schedule will limit or affect any rights of entry to the Customer's Premises that BC Hydro may have under any other sections of the Electric Tariff or any other agreement with the Customer.</p>
Rate Rider	The Deferral Account Rate Rider as set out in Rate Schedule 1901 applies to all charges payable under this Rate Schedule, before taxes and levies.

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6. OTHER

RATE SCHEDULE 1289 – NET METERING SERVICE

<p>Availability</p>	<p>For any Residential Service Customer and for any General Service Customer who:</p> <ol style="list-style-type: none"> installs a Generating Facility to generate electricity to serve all or part of their electricityElectricity requirements on the Customer's Premises, and has an Annual Load that is equal to or exceeds the Generating Facility's Annual Energy Output. had their Net Metering Application for Service under this Rate Schedule accepted by BC Hydro in writing and has received Interconnection Approval. - <p>With the consent of BC Hydro, Customers taking Service under other Rate Schedules may be admitted to Service under this Rate Schedule, provided that BC Hydro is satisfied that the metering, billing and other requirements of this Rate Schedule can be met.</p> <p>In addition, this Rate Schedule 1289 is available to those Customers receiving Service under this Rate Schedule as of April 20, 2018, and those Customers whose applications have been accepted by BC Hydro in writing, prior to and including April 20, 2018, as meeting the criteria of a simple or complex distributed generator as defined in BC Hydro's "Distributed Generation Technical Interconnection Requirements – 100 kW and Below."</p>
	<p>"Annual Energy Output" means the calculated annual energy output for a Generating Facility and will be calculated as follows:</p> <p>Generating Facility's nameplate rating x capacity factor x 365 days x 24 hours, where the capacity factor is:</p> <ul style="list-style-type: none"> 10 per cent for photovoltaic; 20 per cent for biogas, thermal and wind; 30 per cent for fuel cell; and 40 per cent for hydro,

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	<p>and where the nameplate rating for an Generating Facility is the total capacity of the inverters (AC capacity).</p> <p>“Annual Load” means the total kilowatt hours of electricity supplied by BC Hydro to the Customer’s Point of Delivery based on the Customer’s billing data from the 12 consecutive months immediately preceding BC Hydro’s receipt of the Customer’s application; or if 12 consecutive months of billing data is not available, BC Hydro may accept an estimate of the Annual Load, supported by the Customer’s billing data to date and/or other relevant Customer information satisfactory to BC Hydro in its sole discretion.</p>
	<p>“Generating Facility” for purposes of this Rate Schedule means a generating facility, including fuel cells and energy recovery generation, that:</p> <ol style="list-style-type: none"> 1. Utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a “clean or renewable resource” in the Clean Energy Act (as updated from time to time) to generate electricity; 2. Has a nameplate rating of not more than 100 kilowatts; and 3. Is owned or leased by the Customer and is located on the same parcel of land as the Customer’s Premises for which Service is being provided under any of the Rate Schedules described above, or on an adjacent parcel of land owned or leased by the Customer, and is connected to the same Point of Delivery as the Customer’s Premises being served under any of the Rate Schedules described above; <p>and includes all wiring, protection isolation devices, disconnect switches, and other equipment and facilities on the Customer’s side of the Point of Delivery.</p> <ol style="list-style-type: none"> 4. For clarity, where the Customer leases the Generating Facility from a third party or retains a third party to install, operate and maintain the Generating Facility on its behalf, then as between the Customer and BC Hydro, the Customer will remain responsible for any obligations under all terms and conditions of Service, including

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	applicable Rate Schedules, BC Hydro's DGTIR-100, and other applicable interconnection requirements to the same extent as if the Customer owns, installs, operates and maintains the Generating Facility itself.
Applicable in	All Rate Zones.
Rate	<p>Energy Charge:</p> <p>Charges for Net Energy consumed by the Customer's <u>Net Consumption</u> will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro.</p> <p>Energy Price:</p> <p>For all electricity <u>Electricity</u> represented by the Generation Credit <u>Account</u> Balance remaining in the Customer's Generation Account at any Anniversary Date, BC Hydro will pay 9.99 ¢ per kWh;</p> <p>(a) <u>Customers with an accepted Net Metering Application from April 21, 2018 or later;</u></p> <p>(b) <u>a price calculated every January 1st based on the daily average Mid-Columbia prices for the previous calendar year, converted to Canadian dollars using the average annual exchange rate from the Bank of Canada for that year.</u></p>
	<p>(c) <u>Customers with an accepted Net Metering Application from on or before April 20, 2018;</u></p> <p>(d) <u>a transitional Energy Price of 9.99 ¢ per kWh. This transitional Energy Price will expire on April 30, 2024. After April 30, 2024, all Customers receiving Service under this Rate Schedule will be paid the Energy Price described in (a), above.</u></p>
Definitions	<ol style="list-style-type: none"> <u>Anniversary Date</u> <u>The Anniversary Date is March 1st or such other date chosen by the Customer in the manner described in this Rate Schedule.</u> <u>Annual Energy Output</u> <u>The Annual Energy Output is the calculated annual energy output for a Generating Facility that will be calculated as follows:</u> <u>Generating Facility's nameplate rating in kilowatts x capacity factor</u>

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	<p><u>x 365 days x 24 hours, where the capacity factor is:</u></p> <ul style="list-style-type: none">• <u>10 per cent for photovoltaic;</u>• <u>20 per cent for biogas, thermal and wind;</u>• <u>30 per cent for fuel cell; and</u>• <u>40 per cent for hydro.</u> <p>• <u>For inverter based Generating Facilities, the nameplate rating for a Generating Facility is the total capacity of the inverters (AC capacity).</u></p> <p><u>6. Annual Load</u></p> <p><u>7. The Annual Load is the estimated annual Electricity requirements on the Customer's Premises, calculated based on:</u></p> <p>(a) <u>The total kilowatt hours of Electricity supplied by BC Hydro to the Customer's Point of Delivery based on the Customer's billing data from the 12 consecutive months immediately preceding BC Hydro's receipt of the Customer's Net Metering Application;</u></p>
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	<p><u>(b) if 12 consecutive months of billing data is not available, an estimate of the annual Electricity requirements, supported by the Customer's billing data to the date of the Customer's Net Metering Application and other relevant Customer information satisfactory to BC Hydro in its sole discretion; and</u></p> <p><u>(c) if the Customer provides BC Hydro with evidence of the purchase of new equipment, such as an electric vehicle, for use on the Customer's Premises, BC Hydro may increase the Customer's estimated Annual Load by the estimated amount of Electricity that the new equipment is expected to require, as determined by BC Hydro in its sole discretion.</u></p>
	<p><u>8. DGTIR-100</u></p> <p><u>9. DGTIR-100 is BC Hydro's <i>Distributed Generation Technical Interconnection Requirements – 100 kW and Below</i>.</u></p> <p><u>10. Generation Account</u></p> <p><u>11. The Generation Account is an account established by BC Hydro for a Customer on the first billing period following the date the Customer commences taking Service under this Rate Schedule.</u></p> <p><u>12. Generation Account Balance</u></p> <p><u>13. The Generation Account Balance is the Electricity represented by credits in a Customer's Generation Account.</u></p> <p><u>14. Generating Facility</u></p> <p><u>15. Generating Facility for the purposes of this Rate Schedule means a generating facility, including fuel cells and energy recovery generation, that:</u></p> <p><u>(a) Utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a "clean or renewable resource" in the Clean Energy Act (as updated from time to time) to generate Electricity;</u></p> <p><u>(b) Has a nameplate rating of not more than 100 kilowatts; and</u></p> <p><u>(d) Is owned or leased by the Customer and is located on the</u></p>

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	<p><u>same parcel of land as the Customer's Premises for which Service is being provided under any of the Rate Schedules described above, or on an adjacent parcel of land owned or leased by the Customer, and is connected to the same Point of Delivery as the Customer's Premises being served under any of the Rate Schedules described above, and includes all wiring, protection isolation devices, disconnect switches, and other equipment and facilities on the Customer's side of the Point of Delivery.</u></p> <p><u>16. Interconnection Approval</u></p> <p><u>17. BC Hydro's approval of the interconnection of the Generating Facility to the BC Hydro system and the commencement of operation of the Generating Facility.</u></p> <p><u>18. Net Consumption</u></p> <p><u>19. Net Consumption is the Net Energy that is positive because BC Hydro supplies more Electricity to the Customer than the Electricity delivered.</u></p> <p><u>20. Net Energy</u></p> <p><u>21. Net Energy is the difference between the Electricity supplied by BC Hydro to the Customer during the billing period and the Electricity delivered from the Generating Facility to BC Hydro's system during the billing period.</u></p> <p><u>22. Net Generation</u></p> <p><u>23. Net Generation is the Net Energy that is negative because the Customer delivers more Electricity from the Generating Facility to BC Hydro's system than the Customer receives in Electricity from BC Hydro during the billing period.</u></p> <p><u>24. Net Metering Application</u></p> <p><u>25. The Net Metering Application is the Customer's application to receive Service under this Rate Schedule, to expand the generating capacity of their Generating Facility, or to modify their Generating Facility.</u></p> <p><u>26. Net Metering Site Acceptance Verification Fee</u></p> <p><u>27. The Net Metering Site Acceptance Verification Fee is the fee set out in section 11 (Schedule of Standard Charges) of the Terms and Conditions of the Electric Tariff.</u></p> <p><u>28.</u></p>
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<u>Net Metering Application and Interconnection Approval</u>	<ol style="list-style-type: none">1. <u>Customers wishing to receive Service under this Rate Schedule must submit a Net Metering Application to BC Hydro. The Customer must not interconnect or commence operation of a Generating Facility before receiving:</u><ol style="list-style-type: none">(a) <u>BC Hydro's written acceptance of the Net Metering Application, and</u>(b) <u>Interconnection Approval.</u>2. <u>A Customer receiving Service under this Rate Schedule may change their Anniversary Date in the Net Metering Application or by request to BC Hydro. BC Hydro will accept one request to change the Anniversary Date per Customer.</u>3. <u>BC Hydro will assess the proposed Generating Facility described in the Net Metering Application. Specifically:</u><ol style="list-style-type: none">(a) <u>for Generating Facilities with a nameplate rating of less than or equal to five kilowatts, BC Hydro will not assess the Customer's Annual Load or require a Customer to submit load data or load estimates in their Net Metering Application, and</u>(b) <u>for Generating Facilities with nameplate rating of greater than five kilowatts, the Generating Facility's Annual Energy Output must not exceed 110 per cent of the Annual Load.</u>4. <u>BC Hydro may determine that a site acceptance verification is required. In that case:</u><ol style="list-style-type: none">(a) <u>the Customer will be notified;</u>(b) <u>BC Hydro will inspect the installation of the Generating Facility and may require the Customer to supply additional information and provide access to the Customer's Generating Facility to carry out additional inspections, as described in the DGTIR-100 or other interconnection requirements applicable to the Generating Facility, and</u>(c) <u>the Customer must pay the Net Metering Site Acceptance Verification Fee.</u>
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	<u>(d)</u>
	<p>5. <u>The Customer will submit a copy of the final inspection report or approval issued by the governmental authority having jurisdiction to inspect and approve the installation, and any additional information that may be requested by BC Hydro. BC Hydro will provide a decision on Interconnection Approval with reasonable promptness following BC Hydro's receipt of any final inspection reports, applicable government approvals and requested information.</u></p> <p>6. <u>A Customer will begin receiving Service under this Rate Schedule on the date identified in BC Hydro's written Interconnection Approval.</u></p> <p>7. <u>In BC Hydro's sole discretion, BC Hydro may reject any Net Metering Application where:</u></p> <p class="margin-left: 40px;">(a) <u>BC Hydro considers that the information provided in the Net Metering Application is insufficient or inconsistent with the terms of this Rate Schedule, the DGTIR-100 or other applicable interconnection requirements;</u></p> <p class="margin-left: 40px;">(b) <u>the Customer has submitted false or misleading information to BC Hydro in the Net Metering Application or other information requested by BC Hydro;</u></p> <p class="margin-left: 40px;">(c) <u>the Customer has a prior history of non-compliance with this Rate Schedule; or</u></p> <p class="margin-left: 40px;">(d) <u>BC Hydro's system cannot accommodate the connection of the Customer's Generating Facility due to existing or expected system, safety, financial or technical constraints.</u></p> <p>8. <u>Where BC Hydro has accepted the Customer's Net Metering Application, this acceptance will expire 18 months from the date BC Hydro accepted the Customer's Net Metering Application if the Customer has not received Interconnection Approval. The Customer may then submit a new Net Metering Application.</u></p>

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Metering	<p>1. Inflows of Electricity <u>supplied</u> from the BC Hydro system to the Customer, and outflows of electricity <u>Electricity delivered</u> from the Customer's Generating Facility to the BC Hydro system, will normally be determined by means of a single meter capable of measuring flows of electricity in both directions <u>Smart Meter or Radio-Off Meter</u>.</p>
	<p>2. — Alternatively, if BC Hydro determines that flows of electricity in both directions cannot be reliably determined by a single meter, or that dual metering will be more cost effective, BC Hydro may require that separate meters be installed to measure inflows and outflows of electricity.</p>
	<p>2. <u>3.</u> The Customer will install, at its <u>their</u> cost, the meter base and any wiring, poles, protection-isolation devices, disconnect switches, and other equipment and facilities on the Customer's side of the Point of Delivery as required under BC Hydro's "Distributed Generation Technical Interconnection Requirements — 100 kW and Below" (DGTIR-100) <u>DGTIR-100</u> or other interconnection requirements applicable to the Generating Facility. BC Hydro will supply and install the Metering Equipment and make the final connections.</p>
	<p>4. — Any Metering Equipment required for purposes of this Rate Schedule will be in addition to any meters with demand measurement capability (if applicable) required under the Rate Schedule under which the Customer is receiving Service from BC Hydro.</p>
Billing	<p>Determination of the Customer's bill will be as follows:</p> <ol style="list-style-type: none"> 1. Meter reading and billing frequency will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro. 2. At the end of each billing period BC Hydro will determine the "Net Energy" applicable for that billing period, defined as the difference between the Electricity supplied by BC Hydro to the Customer during the billing period and the electricity delivered from the Generating Facility to BC Hydro's system during the billing period.

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	<p>3. If Net Energy is positive, BC Hydro will bill the Customer for the Net Energy consumed by the Customer during the billing period, subject to the application of any generation <u>there is Net Consumption, then BC Hydro will apply any</u> credits then <u>in the Generation Account Balance to the Net Consumption until the Net Consumption amount is reduced to zero. If</u> the Customer's Generation Account, as described in item 5 below <u>Balance has insufficient credits to reduce the Net Consumption to zero. BC Hydro will bill the Customer for the remaining Net Consumption.</u></p> <p>4. If <u>there is</u> Net Energy is negative <u>Generation</u>, BC Hydro will credit the Net Energy amount to the Customer's Generation Account, as described in item 5 below, and <u>with the Net Generation.</u></p> <p><u>5. Every billing period, BC Hydro</u> will bill the Customer only for the Basic Charge and Demand Charge (if applicable) under the Rate Schedule under which the Customer is receiving Service from BC Hydro.</p> <p>5. Beginning with the first billing period following the date a Customer commences taking Service under this Rate Schedule, BC Hydro will establish a Generation Account for that Customer. If Net Energy is negative for that billing period, BC Hydro will credit the Net Energy amount to the Customer's Generation Account. BC Hydro will likewise follow this procedure for successive billing periods, except that if for any billing period Net Energy is positive, any credit balance then in the Customer's Generation Account will be applied to the positive Net Energy amount for that billing period until the Net Energy amount is reduced to zero.</p>
	<p>6. BC Hydro will follow this procedure, and will notify the Customer of amounts credited and debited to the <u>Customer's</u> Generation Account and of the remaining credit balance (if any) in the any <u>Balance</u> on the bill rendered by BC Hydro for each billing period, until the end of the sixth billing period, in the case of Customers being billed bi-monthly, or until the end of the twelfth billing period, in the case of Customers being billed monthly (Anniversary Date) <u>Anniversary Date.</u></p> <p><u>7.</u> At the Anniversary Date, BC Hydro will credit any negative Net</p>

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	<p>Energy amount for that billing period to the Generation Account, or apply any credits in the Generation Account to any positive Net Energy amount for that billing period, in the same manner as for prior billing periods, if a Customer has a Generation Account Balance, BC Hydro will be deemed to have purchased that amount of Electricity from the Customer, and will be obliged to pay the Customer for that Electricity at the Energy Price and the Generation Account Balance will revert to zero.</p>
	<p>7. If any credit balance ("Generation Account Balance") remains in the Generation Account following the procedures set forth in item 6, BC Hydro will be deemed to have purchased that amount of electricity from the Customer, and will be obliged to pay the Customer for that electricity at the Energy Price determined in accordance with the Rate provision of this Rate Schedule, and the Generation Account will revert to zero.</p>
	<p>8. The procedures set forth<u>described</u> above will apply in each succeeding 12- month period and at each succeeding Anniversary Date for so as long as the Customer continues to take Service under this Rate Schedule.</p> <p><u>9.</u> If Service under this Rate Schedule is Terminatedprior to any Anniversary Date, the <u>billing</u> procedures set forth<u>described</u> above will be applied as of the date of Termination <u>instead of the Anniversary Date</u>. In that event, BC Hydro will pay the amount owing in respect of any credit balance in the Generation Account <u>Balance</u> to the Customer within 45 days of the date of Termination, subject to any rights of deduction or set-off BC Hydro may have.</p> <p><u>10.</u> <u>In no case will any Generation Account Balance have any cash value or be convertible to cash, except as provided above.</u></p>
	<p>9. In no case will any credit balance in the Generation Account have any cash value or be convertible to cash, except as provided above. If the amount determined to be owing to the Customer at any Anniversary Date as set forth in item 7 above is equal to or less than the charges BC Hydro anticipates are likely to be billed to the Customer during the six month period following the Anniversary Date, BC Hydro may withhold the amount owing and credit it</p>

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	<p>against charges owing by the Customer for future billing periods. If the amount determined to be owing is greater than the charges BC Hydro anticipates are likely to be billed to the Customer during the six month period following the Anniversary Date, BC Hydro will pay the amount owing to the Customer within 45 days of the Anniversary Date.</p>
Special Conditions	<p>1. Subject to the provisions of Rate Schedule 1289, any other applicable Rate Schedule(s) under which the Customer is from time to time receiving Service from BC Hydro and other applicable provisions of BC Hydro's Electric Tariff, BC Hydro will supply Electricity to, and accept delivery of electricity from, the Customer at the Point of Delivery.</p> <p>2. BC Hydro will act with reasonable promptness to perform any inspections and/or give any approvals that it is authorized or required to give under the terms and conditions of Service, and will not unreasonably withhold or delay the giving of its consent in any case where its consent is required.</p> <p>3. To receive Service under this Rate Schedule, the Customer must submit the required application. For Generating Facilities having a rated generating capacity of greater than five kilowatts, and for which BC Hydro determines that a site acceptance verification is required, the Customer must also pay the Net Metering Site Acceptance Verification Fee as set out in section 11 (Schedule of Standard Charges) of the Terms and Conditions of the Electric Tariff.</p>
	<p>4. In addition, a Customer who (a) utilizes a synchronous generator, (b) takes Service at a Primary Voltage and/or (c) utilizes a Generating Facility with a nameplate rating greater than 50 kilowatts, will pay all associated incremental costs for connection of the Customer's Generator Facility as set out in Terms and Conditions section 9.7 (Generating Facility Connections (Distributed Generation)).</p> <p>5. The Customer must not commence parallel operation of its Generating Facility until written approval has been provided to it by BC Hydro. Written approval will normally be provided by BC Hydro</p>

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	<p>within 14 days following BC Hydro's receipt of a copy of the final inspection report or approval issued by the governmental authority having jurisdiction to inspect and approve the installation. Where Customer has been notified that inspection and acceptance by BC Hydro's Field Services – Protection and Control Department will also be required before the Generating Facility will be accepted for parallel operation, BC Hydro's approval will normally be provided within 14 days following the date of inspection and acceptance. BC Hydro may require the Customer to supply additional information and/or provide access to the Customer's Generating Facility to carry out additional inspections, as set forth in BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility.</p>
<u>Special Conditions</u>	<ol style="list-style-type: none"> <u>1. Subject to the provisions of Rate Schedule 1289, any other applicable Rate Schedule(s) under which the Customer is from time to time receiving Service from BC Hydro and other applicable provisions of BC Hydro's Electric Tariff, BC Hydro will supply Electricity to, and accept delivery of Electricity from, the Customer at the Point of Delivery.</u> <u>2. A Customer who (a) utilizes a synchronous generator, (b) takes Service at a Primary Voltage and/or (c) utilizes a Generating Facility with a nameplate rating greater than 50 kilowatts, will pay all associated incremental costs for connection of the Customer's Generating Facility as set out in Terms and Conditions section 9.7 (Generating Facility Connections (Distributed Generation)).</u> <u>3. 6-The Customer will design, install, operate and maintain the Generating Facility, and all ancillary facilities on the Customer's side of the Point of Delivery in accordance with all governmental laws and regulations from time to time applicable, and BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. Customers will obtain and maintain any required governmental authorizations and/or permits required for the installation and operation of the Generating Facility. The Generating Facility will meet all applicable safety and performance standards, including the codes and standards identified in BC Hydro's DGTIR-100 or other interconnection requirements</u>

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	<p>applicable to the Generating Facility. The Customer will be responsible for the safe and proper operations of the Generating Facility consistent with the requirements of the regulations of the <i>Safety Standards Act</i>. BC Hydro, acting reasonably, may from time to time prescribe additional requirements which in its judgment are required for the safety of its system.</p>
	<p>7. The Customer will at all times operate the Generating Facility in accordance with applicable governmental standards and requirements, and any manufacturer's instructions, and will further comply with BC Hydro standards and requirements from time to time in effect relating to parallel operation of independent net metering installations with its system. The Customer will promptly notify BC Hydro of any malfunction or breakdown of the Generating Facility that could constitute a safety hazard or reasonably be expected to cause disturbance or damage to BC Hydro's system.</p> <p>8. The Customer will not operate the Generation Facility so as to generate electricity at a rate greater than 110% of the nameplate rating of the Generating Facility, and will not add to or modify the Generating Facility without the prior written consent of BC Hydro.</p>
	<p>9. Service under this Rate Schedule is conditional on the continuance of Service to the Customer under any of the Rate Schedules described under the Availability section above, and is further conditional on the Customer being billed monthly or bi-monthly under BC Hydro's regular billing plan. If Service under the applicable Rate Schedule is suspended or Terminated for any reason, or if the Customer ceases to be billed under BC Hydro's regular billing plan, Service under this Rate Schedule will be deemed to have automatically been suspended or Terminated concurrent with suspension or Termination of Service under the applicable Rate Schedule, or change to a different billing plan, as applicable.</p> <p>10. If Service under this Rate Schedule is suspended or Terminated for any reason, and BC Hydro considers it necessary in its discretion for the Customer's Generating Facility to be re-inspected and approved prior to resuming parallel operation with BC Hydro's</p>

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	<p>system, the Customer will pay the costs that BC Hydro estimates that it will incur for the re-inspection and approval.</p>
	<p>11. If the Customer voluntarily Terminates Service under this Rate Schedule, the Customer will not be eligible to again take Service under this Rate Schedule for a period of 12 months from the date of Termination, unless BC Hydro otherwise consents.</p>
	<p><u>4. The Customer will promptly notify BC Hydro of any malfunction or breakdown of the Generating Facility that could constitute a safety hazard or reasonably be expected to cause disturbance or damage to BC Hydro's system.</u></p> <p><u>5. Where the Customer leases the Generating Facility from a third party or retains a third party to install, operate and maintain the Generating Facility on its behalf, then as between the Customer and BC Hydro, the Customer will remain responsible for any obligations under all terms and conditions of Service, including applicable Rate Schedules, DGTIR-100, and other applicable interconnection requirements to the same extent as if the Customer owns, installs, operates and maintains the Generating Facility itself.</u></p> <p><u>6. The Customer will not operate the Generating Facility so as to generate Electricity at a rate greater than 110 per cent of the nameplate rating of the Generating Facility, and will not add to or modify the Generating Facility without Interconnection Approval.</u></p> <p><u>7. BC Hydro may suspend or Terminate the Customer's Service under this Rate Schedule if the Customer fails to comply with this Rate Schedule.</u></p> <p><u>8. Service under this Rate Schedule is conditional on the continuance of Service to the Customer under any of the Rate Schedules described under the Availability section above, and is further conditional on the Customer being billed monthly or bi-monthly under BC Hydro's regular billing plan.</u></p>
	<p><u>If Service under the applicable Rate Schedule is suspended or Terminated for any reason, or if the Customer ceases to be billed under BC Hydro's regular billing plan, Service under this Rate Schedule will be deemed to have automatically been suspended or</u></p>

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	<p><u>Terminated concurrent with suspension or Termination of Service under the applicable Rate Schedule, or change to a different billing plan, as applicable.</u></p> <p><u>9. If Service under this Rate Schedule is suspended or Terminated for any reason, BC Hydro may require the Customer to obtain a new Interconnection Approval prior to resuming operation of the Generating Facility.</u></p> <p><u>10.</u> 42. BC Hydro will have the right to require <u>the</u> Customer to interrupt (including, if so specified by BC Hydro, by means of physical disconnection or lock-out,) or reduce the output of its <u>their</u> Generating Facility whenever:</p> <p class="list-item-l1">(a) BC Hydro deems such action necessary, in its sole judgment, to permit BC Hydro to construct, install, maintain, repair, replace, remove, investigate, or inspect any of its equipment or any part of its electric system; or</p> <p class="list-item-l1">(b) BC Hydro determines in its sole judgment, that curtailment, interruption, or reduction of <u>the</u> Customer's electrical generation is otherwise necessary due to emergencies, forced outages, force majeure, safety hazards, possible damage to or disturbance of its electric system, or compliance with prudent electrical practices.</p> <p><u>11. Notwithstanding any other provision of this Rate Schedule, in any of the events or circumstances mentioned in Special Condition No. 10, BC Hydro will have the right:</u></p> <p class="list-item-l1">(a) <u>To require the Customer to immediately disconnect the Generating Facility from BC Hydro's system; and</u></p> <p>13. Notwithstanding any other provision of this Rate Schedule, in any of the events or circumstances mentioned in Special Condition No. 12, BC Hydro will have the right:</p> <p class="list-item-l1">(a) (a) To require the Customer to immediately disconnect the Generating Facility from BC Hydro's system; and To itself immediately disconnect the Generating Facility from the BC Hydro system if the Customer is either not available or</p>
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ACCEPTED: _____

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	fails to act, and such disconnection is deemed necessary by BC Hydro.
	<p><u>12.</u> 44. Whenever feasible BC Hydro will give the Customer reasonable advance notice that interruption or reduction in deliveries may be required, or that disconnection of the Generating Facility from BC Hydro's system may be required, but the failure of BC Hydro to give such notice will not invalidate any action taken by BC Hydro under any of the Special Conditions in Rate Schedule 1289.</p> <p><u>13.</u> 45. If BC Hydro in its discretion deems it necessary to require the Customer to interrupt or disconnect its<u>the</u> Generating Facility from BC Hydro's system, or for BC Hydro to itself effect the interruption or disconnection of the Generating Facility from its system, as provided in Rate Schedule 1289, or such interruption occurs as a result of suspension or Termination of Service to the Customer in accordance the provisions of Rate Schedule 1289, then except to the extent caused by the wilful misconduct or gross negligence of BC Hydro, its servants or agents, BC Hydro and its servants or agents will not be liable to the Customer for any loss or damage whatsoever resulting from the exercise of such rights by BC Hydro.</p> <p><u>14.</u> 46. BC Hydro will have the right to enter the Customer's Premises at all reasonable hours, without notice to the Customer, to inspect the Customer's protective devices and read, inspect and/or test meters, or to disconnect the Generating Facility. Nothing in the foregoing terms and conditions<u>this Rate Schedule</u> will limit or otherwise affect any rights of entry to the Customer's Premises <u>that</u> BC Hydro may have under any other sections of the Electric Tariff or any other agreement with the Customer.</p> <p><u>15.</u></p>
Rate Rider	The Deferral Account Rate Rider as set out in Rate Schedule 1901 applies to all charges payable under this Rate Schedule, before taxes and levies.

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Document comparison by Workshare 9.5 on Monday, April 29, 2019 9:33:34 AM

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Description	21_01 RS_1289
Document 2 ID	file:///C:/Users/mafloare/Desktop/Appendix B - RS 1289 Clean.docx
Description	Appendix B - RS 1289 Clean
Rendering set	Standard

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Deletion	
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<u>Moved to</u>	
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Split/Merged cell	
Padding cell	

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Moved to	3
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Total changes	270

Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

Appendix C

2018 Amendment Application

**Fred James**

Chief Regulatory Officer

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bchydroregulatorygroup@bchydro.com

April 20, 2018

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)
 Application to Amend Net Metering Service under Rate Schedule (RS) 1289**

BC Hydro is writing to seek approval from the Commission to amend RS 1289 (**Application to Amend**) and seeks to have such amendments effective as of the date of this application (**proposed effective date**). The proposed amendments are limited in scope to address an immediate concern of a recent growing trend of project applications where the customer's generating facility is sized to exceed the customer's annual load (**oversized generating facilities**) resulting in significant annual surplus energy payouts. BC Hydro believes these oversized generating facilities projects are not consistent with the intent of the Net Metering program. RS 1289 does not currently provide BC Hydro with the discretion to deny such applications.

This Application to Amend requests that the Commission approve limited amendments to the Net Metering Program (the **Program**) under RS 1289, so that RS 1289 is no longer available to customers proposing a generating facility with an estimated annual energy output that is greater than their estimated annual load. These amendments will not impact customers currently under RS 1289, customers whose applications have been accepted by BC Hydro as of the proposed effective date, or customers who are proposing a generating facility sized to generate electricity up to their annual load requirements.

This Application to Amend is an interim step to address the issue of oversized generating facilities while BC Hydro undertakes a broader review of the Program and its requirements. BC Hydro is targeting to complete this review of the Program and file an application with the Commission for approval of further amendments by the end of calendar year 2018. In its review, BC Hydro will be considering other options to address the issue of oversized generating facilities. Our future application may propose maintaining the amendments requested in this Application to Amend or may propose different amendments that reflect the outcome of the review.

April 20, 2018
 Mr. Patrick Wruck
 Commission Secretary and Manager
 Regulatory Support
 British Columbia Utilities Commission



Application to Amend Net Metering Service under Rate Schedule (RS) 1289

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A draft Order is provided in Appendix A, and the proposed amendments to RS 1289 are provided in Appendix B. Appendix C provides the communication that BC Hydro will concurrently send to (i) all registered interveners in the 2014 Application to Amend Rate Schedule 1289 proceeding, (ii) all customers currently taking service under RS 1289, (iii) known applicants, and (iv) interested stakeholders.

The Application to Amend is organized as follows:

- Purpose of the Application to Amend and Proposed Amendments;
- Background of the Net Metering Program;
- Situational and Impact Analysis; and
- Request for Commission Approval and Proposed Regulatory Review Process.

Purpose of the Application to Amend and Proposed Amendments

The Application to Amend proposes limited amendments to the Program to address a growing trend, recently observed by BC Hydro, of project applications where the customer's generating facility is sized to exceed the customer's annual load, or a new service has been requested to allow the generation to bypass the customer's load on its premises, resulting in significant annual surplus energy payouts to such customers. Currently, RS 1289 does not provide BC Hydro with discretion to deny such applications.

BC Hydro believes that such oversized generating facilities are designed to systematically supply an annual amount of energy that is surplus to a customer's historical or anticipated annual load. These oversized projects are not consistent with the intent of the Program, which is to allow customers the opportunity to generate electricity to offset part or all of their own annual load requirements on their premises with a clean or renewable resource. This distributed generation program was not intended to facilitate the sale of excess generation to BC Hydro on a consistent basis which is more akin to an electricity purchase agreement with an independent power producer.

BC Hydro believes immediate limited amendments to RS 1289 are required to prevent additional applicants with oversized generating facilities from entering the Program. We request that these amendments become effective on the proposed effective date (the same date as the date of this application) in order to prevent additional costs and inequities from being imposed on ratepayers, as well as to avoid leaving a window of time open that may prompt a rush of applications to BC Hydro for proposed oversized generating facilities.

Customers who are already taking service under RS 1289, customers with applications that have already been accepted¹ into the Program and future applicants who submit an application for a proposed generating facility with an estimated annual energy output not exceeding their estimated annual load will not be affected by these proposed amendments. As such, only a small number of customers will be affected by these proposed amendments.

To implement changes to the Program to address the issue of oversized generating facilities, BC Hydro proposes limited amendments to RS 1289 as provided in Appendix B, which are summarized as follows:

- The Availability provision has been amended to clarify that Net Metering is available per Customer Premises (i.e., a customer cannot bypass an existing load on its premises by requesting a new service on the same premises) and to include the additional requirement that the Customer's Annual Load must meet or exceed the generating facility's Annual Energy Output. In addition, language has been added to provide clarification that RS 1289 continues to be available for those customers who are now receiving the RS 1289 Service and those customers whose applications have been accepted¹ by BC Hydro as of the date of this application.
- Two new definitions for "Annual Energy Output" and "Annual Load" have also been included in the Availability provision:
 - The "Annual Energy Output" will be an estimate of the generating facility's annual generation output based on a calculation using the nameplate rating of the generating facility; and
 - The "Annual Load" will be an estimate based on the customer's anticipated annual consumption on its premises based on the customer's billing data from the previous year and/or anticipated load.

As noted above, this Application to Amend is an interim step to address the issue of oversized generating facilities while BC Hydro undertakes a review of the Program and its requirements which will include a broad range of issues. Our review process will include stakeholder consultation and BC Hydro expects that this will help inform the future application to be filed with the Commission. As part of this broader review, BC Hydro will be considering other options to address the issue of oversized generating facilities, and the proposed amendments of this application will allow BC Hydro to test and collect data for one approach to addressing this issue.

¹ All accepted applicants would have received an email or letter from the Net Metering Program stating "This project meets the criteria of a "Simple (or Complex) Distributed Generator" as defined in the "Distributed Generation Technical Interconnection Requirements 100 kW and Below."

Background on the Net Metering Program

The following provides a brief summary of the Program and related regulatory decisions and filings, with an emphasis on those most relevant to the issue of oversized generating facilities.

The Net Metering Service under RS 1289 has its origins in Policy Action #20 of the B.C. Government's 2002 Energy Plan. In November 2003, pursuant to a direction from the Commission, BC Hydro filed a report with the Commission which included feedback from consultation with customer groups and other utilities, to assess the merits of a net metering policy. In Letter No. L-37-03, the Commission recommended the development and implementation of a net metering tariff and directed BC Hydro to prepare an application for a simple net metering tariff, with the following parameters:

- It should be available to the residential and commercial customer classes.
- It should be applicable only to clean energy projects, as defined in the BC Government's Energy Policy.
- It should be applicable to generation of 50 kW or less.
- Interconnection must be safe, but the rules governing interconnection should not be extensive, nor burdensome in administrative process.
- BC Hydro should consult with other agencies and interest groups as appropriate.
- *Customer generation should be limited to own use only at the registered location of the net metering installation.* In determining consumption charges, net excess generation may be banked as a credit to the customer's account to be applied against future net consumption. [emphasis added]

Subsequently, in November 2003, BC Hydro filed its Net Metering application and applied for a Net Metering rate of 5.40 cents per kWh (i.e., the RS 1289 "Energy Price") consistent with the requirements established by the Commission. RS 1289, including the RS 1289 Energy Price, was approved by Order No. G-26-04.²

An important concern at the time RS 1289 was established was the possible impact on non-participating ratepayers (i.e., cost shifting). In section 2.1 in the Reasons for Decision of Order No. G-26-04, the Commission determined:

"...A 50 kW system size is consistent with the intent of net metering to allow individual customers to meet all or part of their electricity demand...and more importantly to net metering tariff design from a regulatory perspective, limits to system size are intended to reduce the potential magnitude of cost-shifting to non-participating customers."

² [Commission Order No. G-26-04 Order and Reasons for Decision on BC Hydro's Net Metering Application – Rate Schedule 1289, March 10, 2004.](#)

This concern of imposing material costs to non-participating ratepayers was also noted in Letter No. L-37-03 but the Commission agreed with BC Hydro, as referenced on page 2 of the Reasons of Decision of Order No. G-26-04,³ that:

“...net metering is not likely to be developed to a great extent in B.C. given our low electricity rates currently and the high expected premiums for customer participation in a net metering program. The Commission believed that the potential for cost-shifting would be limited by low expected participation and the 50 kW limit on generation capacity.”

Since the establishment of RS 1289 in 2003, the Program has been amended several times, including the following:

- In 2008, the Energy Price was increased from 5.40 to 8.16 cents per kWh in response to the 2007 Energy Plan which indicated that the price paid for net annual surpluses of generation the Program should be generally consistent with the prices paid in the Standing Offer Program (**SOP**).⁴ In 2011, the Energy Price in RS 1289 was updated from 8.16 cents per kWh to 9.99 cents per kWh, to reflect the updated SOP prices at that time.⁵
- In 2014, in response to directive No. 14 in Order No. G-57-12,⁶ BC Hydro proposed and received approval from the Commission to increase the generator capacity size limit from 50 kW to 100 kW.^{7, 8} The change to the generator capacity limit, along with other changes introduced by BC Hydro to the Program at the time, were intended to reduce barriers to customers seeking to net meter (e.g., First Nation communities, government agencies and municipalities).

As noted above, these changes to the Program were made to align with the 2007 Energy Plan and to reduce barriers to customers seeking to net meter. The intent was not to attract projects with generating facilities designed to have annual energy output well in excess of annual load nor was it to facilitate a consistent and significant sale of energy by customers to BC Hydro.

⁴ By Order No. G-4-09, the Commission approved the Energy Price increase. Please also see page 10 of the 2007 Energy Plan.

⁵ By Order No. G-57-12, the Commission approved the Energy Price increase.

⁶ Directive 14 states as follows: “The Panel directs BC Hydro to further consider the issue of capacity limit. BC Hydro is directed to consult with affected market participants to identify connection related barriers to entry to small-scale clean DG less than 2 MW, develop and evaluate options to address those barriers and provide the results of this consultation in the next Net Metering Monitoring and Evaluation Report.”

⁷ [BC Hydro Application to Amend Rate Schedule \(RS 1289\) – February 28, 2014.](#)

⁸ [Order No. G-104-14.](#)

BC Hydro notes that FortisBC Inc. also has a net metering program (which stems from the 2002 and 2007 Energy Plans) with a similar purpose, requirements and offering to BC Hydro's Program. In April 2016, FortisBC Inc. filed a Net Metering Program Tariff Update Application⁹ with the Commission requesting amendments to their Net Metering Tariff (RS 95) including changes to RS 95 to clarify that the intent of the program was only to allow customers to offset their own consumption. The changes were "...intended to clarify that the Program does not allow a customer to systematically generate a surplus".¹⁰ By Order No. G-199-16,¹¹ the Commission approved FortisBC's proposed changes. The changes proposed by BC Hydro in this application are consistent with the intent of the changes which were approved by the Commission with respect to FortisBC's Net Metering Program.

Situational and Impact Analysis

BC Hydro believes that the more recent increases to the Net Metering Energy Price and to the generating facility's capacity limit outlined above have created conditions that have encouraged some customers to use Net Metering as a revenue generation opportunity rather than a way to offset their own power consumption.

In 2003, when the Program was established, it was expected to be a very small program with just a handful of interested participants. More recently, the Program has been more successful than originally expected. At the end of March 2018, the Program had over 1,330 customers with 9,000 kW of total capacity. In the past 12 months alone, BC Hydro has received over 500 new Net Metering applications.

⁹ [FortisBC Inc. Net Metering Program Update Application, April 15, 2016.](#)

¹⁰ *Ibid*, section 4.4.

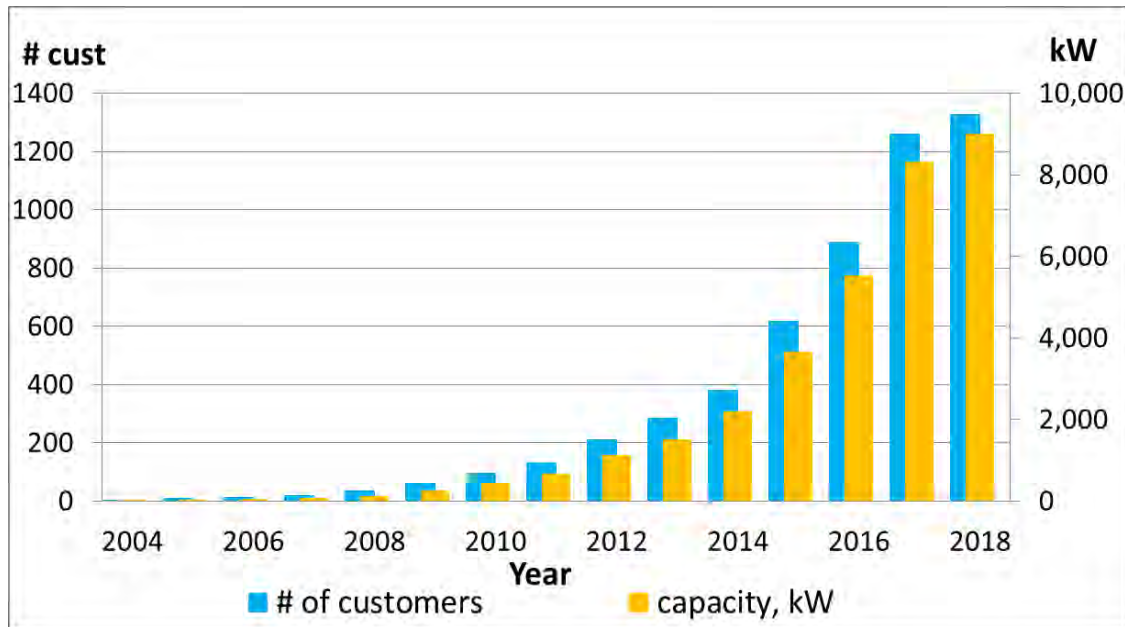
¹¹ [Order No. G-199-16 FortisBC Inc. Net Metering Program – Tariff Update Application, Final Order with Reasons, December 29, 2016.](#) In section 3.1, the Commission stated: ["The Panel approves FBC's proposed changes to the RS 95 tariff that clarify that new customers will not be accepted into the NM Program if their proposed generating capacity exceeds their anticipated annual consumption \(i.e., in addition to being limited by the 50 kW maximum\)."](#) ["The Panel agrees that FBC does, in fact, have the right to continue to reject applications that are sized beyond the customer's expected consumption. The intent of the Program is for customers to generate a portion or all of their own consumption, so it is appropriate that FBC has the right to include only those customers who make a reasonable attempt, at the outset, to limit their generation capacity to their expected annual consumption."](#)

April 20, 2018
 Mr. Patrick Wruck
 Commission Secretary and Manager
 Regulatory Support
 British Columbia Utilities Commission
 Application to Amend Net Metering Service under Rate Schedule (RS) 1289



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BC Hydro Net Metering Program -Total Number of Customers and Capacity Size Achieved Chart - Since Program Inception to March 2018



BC Hydro has also recently observed that we are now receiving an increased number of applications with oversized generating facilities where customers with minimal historical or anticipated annual load requirements have proposed a generating facility with an estimated annual energy output that far exceeds their anticipated load requirements. For example, BC Hydro has received applications for generator capacity sizes that are 40 to 50 times greater than the anticipated annual load of the customer (e.g., a residential customer who installed a 50 kW generator to offset a typical residential service of 10 kW and a commercial customer seeking to install a 100 kW generator on a new service with minimal load).

The impact of these applications with oversized generating facilities is reflected in the annual energy surplus payout amounts. In 2017, 230 Net Metering customers received an annual energy surplus payout. The total annual payout amounts were approximately \$280,000 which would imply an average payout of approximately \$1,200 for each customer. However, of these 230 customers, six customers received approximately \$220,000 with individual annual payouts ranging from \$10,000 to \$60,000 per customer. This means that almost 80 per cent of the total annual payout was received by just 3 per cent of all Net Metering customers who received an annual energy surplus payout. BC Hydro estimates that there are approximately 12 customers with oversized generating facilities in the application review process at the time of this filing.

Projects with oversized generating facilities that have an annual energy output that is well in excess of the customer's annual load requirements provide a consistent supply of surplus energy to BC Hydro that conflicts with the intent of the Program, which is to encourage and allow customers the opportunity to generate electricity only to offset part or all of their own load requirements with a clean or renewable resource.

As described in the Reasons for Decision for Commission Order No. G-26-04,¹² BC Hydro's position at the time the Program was established was that "... although net metering of small generators is unlikely to produce significant quantities of clean energy in a cost-effective way, there are reasons to consider its implementation since it provides customers with the means to take responsibility over their own power production and to lower their environmental impact."

BC Hydro recognizes that implementing new generation can be an expensive endeavor, and that reasonable allowances should be made to enable customers to offset all or part of their load with incidental surplus occurrences from time to time throughout the year. However, BC Hydro believes that proposed projects with oversized generating facilities that are purposely designed to generate revenue through the annual surplus energy payout go beyond taking responsibility for a customer's own power production, are not a reasonable allowance to enable customers to use RS 1289, and are not consistent with the intent of the Program.

Based on Program growth in the past few years, BC Hydro expects to receive approximately 600 applications for Net Metering service in calendar year 2018. In addition, based on the growing trends that have been observed, BC Hydro expects that it will continue to receive an increasing number of applications for projects with oversized generating facilities. The current tariff language does not provide BC Hydro with discretion to deny such applications. Accordingly, amendments to RS 1289 are required to prevent the circumvention of the intent of the Program and cost-shifting to other ratepayers.

It is important to note that both cost and benefit impacts of the Program are shared amongst all ratepayers. In Net Metering Evaluation Report No. 3,¹³ section 6.1, BC Hydro stated that the installed capacity of RS 1289 generators and the volume of energy generated are too small to result in any appreciable avoided cost benefits to BC Hydro and other ratepayers, both in terms of the impact on BC Hydro's Load Resource Balance and avoided system costs. As a result, the cost of the Program is assumed by all ratepayers with minimal return benefit from the volume of energy BC Hydro receives from the Net Metering projects.

¹² *Supra*, note 2.

¹³ [BC Hydro's Net Metering Evaluation Report No. 3, April 30, 2013](#) – section 6.1 Value of RS 1289: Avoided Cost and Load-Resource Balance.

In this context, BC Hydro believes that annual surplus energy payouts ranging from \$10,000 to \$60,000 per customer, as discussed above, go far beyond the limited cost shifting that the Commission has previously stated is warranted to support the implementation of Net Metering and in fact represent substantial costs for both BC Hydro and its ratepayers.¹⁴

Request for Commission Approval and Proposed Regulatory Review Process

BC Hydro requests that the Commission approve the proposed amendments to RS 1289 as provided in Appendix B of this application on the proposed effective date. With this filing BC Hydro has also concurrently provided a communication (Appendix C) to all registered interveners in the 2014 Application to Amend Rate Schedule 1289, all customers currently taking service under RS 1289, known applicants and interested stakeholders so that potentially impacted customers and stakeholders are aware of these proposed changes to the Program.

Given the small number of potential net metering customers that will be impacted by these proposed amendments to RS 1289 and that the proposed amendments are very limited in scope, BC Hydro is of the view that the Application to Amend provides sufficient information to proceed directly to a Commission Decision. Moreover, BC Hydro notes that this Application to Amend is an interim step to address the issue of oversized generating facilities while a broader review of the Program and its requirements is undertaken. BC Hydro will be conducting stakeholder consultation as part of this review process and is targeting to file an application with the Commission for approval of further amendments by the end of calendar year 2018.

As discussed above, BC Hydro seeks to have the amendments proposed in this Application to Amend become effective on the proposed effective date. However, should the Commission determine that further process is required, BC Hydro requests that interim approval be provided for the proposed amendments to avoid leaving a window open that may prompt a rush of applications to BC Hydro for proposed oversized generating facilities.

¹⁴ Order No. G-57-12, section 4.2.1, "The second is that the Commission stated that limited cost shifting was warranted to support the implementation of Net Metering. The Panel is of the view that BC Hydro should demonstrate that increasing the cap would result in a substantial cost on the utility and its ratepayers, not just that it would result in more exports to the grid."

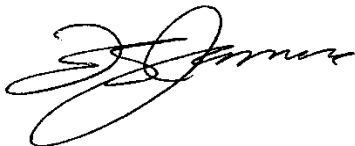
April 20, 2018
Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Application to Amend Net Metering Service under Rate Schedule (RS) 1289



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

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Fred James', written in a cursive style.

Fred James
Chief Regulatory Officer

Is/ma

Enclosure

Copy to: BCUC Project No. 3698662 (BC Hydro 2014 Application to Amend
Rate Schedule 1289 for Net Metering Service) Registered Intervener Distribution List.



Application to Amend Net Metering Service under RS 1289

Appendix A

Draft Order

ORDER NUMBER

G-xx-xx

IN THE MATTER OF

the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Hydro and Power Authority (BC Hydro)
Application to Amend Net Metering Service
under Rate Schedule (RS) 1289

BEFORE:

Commissioner
Commissioner
Commissioner

on Date

ORDER

WHEREAS:

- A. On April 20, 2018, British Columbia Hydro and Power Authority (BC Hydro) applied for approval pursuant to sections 58 to 61 of the *Utilities Commission Act* (the Act), to amend the Net Metering Rate Schedule 1289 (RS 1289) and for such amendments to be effective as of the date of BC Hydro's application.
- B. The amendments to RS 1289 proposed by BC Hydro makes RS 1289 no longer available to customers proposing a generating facility with an Annual Energy Output that is greater than their Annual Load. These amendments will not impact any customers currently under RS 1289, any customers whose applications have been accepted by BC Hydro as of the proposed effective date, or any customers who are proposing a generating facility sized to generate electricity up to their Annual Load.
- C. The Application to Amend is an interim step to address the issue of oversized generating facilities while BC Hydro undertakes a broader review of the Program and its requirements. BC Hydro has stated that this review will include stakeholder consultation and BC Hydro is expecting to file any further amendments to RS 1289 by the end of calendar year 2018.
- D. The Commission has reviewed the Application and has determined that the amendments to RS 1289 in the Application are in the public interest.

NOW THEREFORE the Commission orders as follows:

1. The amendments to RS 1289 proposed in the Application are approved effective April 20, 2018

DATED at the City of Vancouver, in the Province of British Columbia, this (XX) day of (Month Year).

BY ORDER

(X. X. last name)
Commissioner

Attachment Options

DRAFT



Application to Amend Net Metering Service under RS 1289

Appendix B

Revised RS 1289 Clean and Black-lined

BC Hydro

Rate Schedule 1289 – Revision 1
Effective: April 20, 2018
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6. OTHER

RATE SCHEDULE 1289 – NET METERING SERVICE

Availability	<p>For any Residential Service Customer and for any General Service Customer who:</p> <ol style="list-style-type: none">1. installs a Generating Facility to generate electricity to serve all or part of their electricity requirements on the Customer's Premises, and2. has an Annual Load that is equal to or exceeds the Generating Facility's Annual Energy Output. <p>With the consent of BC Hydro, Customers taking Service under other Rate Schedules may be admitted to Service under this Rate Schedule, provided that BC Hydro is satisfied that the metering, billing and other requirements of this Rate Schedule can be met.</p> <p>In addition, this Rate Schedule 1289 is available to those Customers receiving Service under this Rate Schedule as of April 20, 2018, and those Customers whose applications have been accepted by BC Hydro in writing, prior to and including April 20, 2018, as meeting the criteria of a simple or complex distributed generator as defined in BC Hydro's "Distributed Generation Technical Interconnection Requirements – 100 kW and Below."</p>
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ACCEPTED: _____

ORDER NO. _____

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	<p>“Annual Energy Output” means the calculated annual energy output for a Generating Facility and will be calculated as follows:</p> <p>Generating Facility’s nameplate rating x capacity factor x 365 days X 24 hours, where the capacity factor is:</p> <ul style="list-style-type: none">• 10 per cent for photovoltaic;• 20 per cent for biogas, thermal and wind;• 30 per cent for fuel cell; and• 40 per cent for hydro, <p>and where the nameplate rating for an Generating Facility is the total capacity of the inverters (AC capacity).</p>
	<p>“Annual Load” means the total kilowatt hours of electricity supplied by BC Hydro to the Customer’s Point of Delivery based on the Customer’s billing data from the 12 consecutive months immediately preceding BC Hydro’s receipt of the Customer’s application; or if 12 consecutive months of billing data is not available, BC Hydro may accept an estimate of the Annual Load, supported by the Customer’s billing data to date and/or other relevant Customer information satisfactory to BC Hydro in its sole discretion.</p>

ACCEPTED: _____

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	<p>“Generating Facility” for purposes of this Rate Schedule means a generating facility, including fuel cells and energy recovery generation, that:</p> <ol style="list-style-type: none"> 1. Utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a “clean or renewable resource” in the <i>Clean Energy Act</i> (as updated from time to time) to generate electricity; 2. Has a nameplate rating of not more than 100 kilowatts; and 3. Is owned or leased by the Customer and is located on the same parcel of land as the Customer’s Premises for which Service is being provided under any of the Rate Schedules described above, or on an adjacent parcel of land owned or leased by the Customer, and is connected to the same Point of Delivery as the Customer’s Premises being served under any of the Rate Schedules described above,
	<p>and includes all wiring, protection-isolation devices, disconnect switches, and other equipment and facilities on the Customer’s side of the Point of Delivery.</p> <p>For clarity, where the Customer leases the Generating Facility from a third party or retains a third party to install, operate and maintain the Generating Facility on its behalf, then as between the Customer and BC Hydro, the Customer will remain responsible for any obligations under all terms and conditions of Service, including applicable Rate Schedules, BC Hydro’s DGTIR-100, and other applicable interconnection requirements to the same extent as if the Customer owns, installs, operates and maintains the Generating Facility itself.</p>
Applicable in	All Rate Zones.

ACCEPTED: _____

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Application to Amend Net Metering Service under RS 1289

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Rate	<p>Energy Charge:</p> <p>Charges for Net Energy consumed by the Customer will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro.</p> <p>Energy Price:</p> <p>For all electricity represented by the Generation Credit Balance remaining in the Customer's Generation Account at any Anniversary Date, BC Hydro will pay 9.99 ¢ per kWh.</p>
Metering	<ol style="list-style-type: none"> 1. Inflows of Electricity from the BC Hydro system to the Customer, and outflows of electricity from the Customer's Generating Facility to the BC Hydro system, will normally be determined by means of a single meter capable of measuring flows of electricity in both directions. 2. Alternatively, if BC Hydro determines that flows of electricity in both directions cannot be reliably determined by a single meter, or that dual metering will be more cost-effective, BC Hydro may require that separate meters be installed to measure inflows and outflows of electricity. 3. The Customer will install, at its cost, the meter base and any wiring, poles, protection-isolation devices, disconnect switches, and other equipment and facilities on the Customer's side of the Point of Delivery as required under BC Hydro's "Distributed Generation Technical Interconnection Requirements – 100 kW and Below" (DGTIR-100) or other interconnection requirements applicable to the Generating Facility. BC Hydro will supply and install the Metering Equipment and make the final connections. 4. Any Metering Equipment required for purposes of this Rate Schedule will be in addition to any meters with demand measurement capability (if applicable) required under the Rate Schedule under which the Customer is receiving Service from BC Hydro.

ACCEPTED: _____

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BC Hydro

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Billing	<p>Determination of the Customer's bill will be as follows:</p> <ol style="list-style-type: none">1. Meter reading and billing frequency will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro.2. At the end of each billing period BC Hydro will determine the "Net Energy" applicable for that billing period, defined as the difference between the Electricity supplied by BC Hydro to the Customer during the billing period and the electricity delivered from the Generating Facility to BC Hydro's system during the billing period.3. If Net Energy is positive, BC Hydro will bill the Customer for the Net Energy consumed by the Customer during the billing period, subject to the application of any generation credits then in the Customer's Generation Account, as described in item 5 below.4. If Net Energy is negative, BC Hydro will credit the Net Energy amount to the Customer's Generation Account, as described in item 5 below, and will bill the Customer only for the Basic Charge and Demand Charge (if applicable) under the Rate Schedule under which the Customer is receiving Service from BC Hydro.5. Beginning with the first billing period following the date a Customer commences taking Service under this Rate Schedule, BC Hydro will establish a Generation Account for that Customer. If Net Energy is negative for that billing period, BC Hydro will credit the Net Energy amount to the Customer's Generation Account. BC Hydro will likewise follow this procedure for successive billing periods, except that if for any billing period Net Energy is positive, any credit balance then in the Customer's Generation Account will be applied to the positive Net Energy amount for that billing period until the Net Energy amount is reduced to zero.
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ACCEPTED: _____

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BC Hydro

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6. BC Hydro will follow this procedure, and will notify the Customer of amounts credited and debited to the Generation Account and of the remaining credit balance (if any) in the Generation Account, on the bill rendered by BC Hydro for each billing period, until the end of the sixth billing period, in the case of Customers being billed bi-monthly, or until the end of the twelfth billing period, in the case of Customers being billed monthly (Anniversary Date). At the Anniversary Date, BC Hydro will credit any negative Net Energy amount for that billing period to the Generation Account, or apply any credits in the Generation Account to any positive Net Energy amount for that billing period, in the same manner as for prior billing periods.
7. If any credit balance ("Generation Account Balance") remains in the Generation Account following the procedures set forth in item 6, BC Hydro will be deemed to have purchased that amount of electricity from the Customer, and will be obliged to pay the Customer for that electricity at the Energy Price determined in accordance with the Rate provision of this Rate Schedule, and the Generation Account will revert to zero.
8. The procedures set forth above will apply in each succeeding 12-month period and at each succeeding Anniversary Date for so long as the Customer continues to take Service under this Rate Schedule. If Service under this Rate Schedule is Terminated prior to any Anniversary Date, the procedures set forth above will be applied as of the date of Termination. In that event, BC Hydro will pay the amount owing in respect of any credit balance in the Generation Account to the Customer within 45 days of the date of Termination, subject to any rights of deduction or set-off BC Hydro may have.

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	<p>9. In no case will any credit balance in the Generation Account have any cash value or be convertible to cash, except as provided above. If the amount determined to be owing to the Customer at any Anniversary Date as set forth in item 7 above is equal to or less than the charges BC Hydro anticipates are likely to be billed to the Customer during the six month period following the Anniversary Date, BC Hydro may withhold the amount owing and credit it against charges owing by the Customer for future billing periods. If the amount determined to be owing is greater than the charges BC Hydro anticipates are likely to be billed to the Customer during the six month period following the Anniversary Date, BC Hydro will pay the amount owing to the Customer within 45 days of the Anniversary Date.</p>
Special Conditions	<p>1. Subject to the provisions of Rate Schedule 1289, any other applicable Rate Schedule(s) under which the Customer is from time to time receiving Service from BC Hydro and other applicable provisions of BC Hydro's Electric Tariff, BC Hydro will supply Electricity to, and accept delivery of electricity from, the Customer at the Point of Delivery.</p> <p>2. BC Hydro will act with reasonable promptness to perform any inspections and/or give any approvals that it is authorized or required to give under the terms and conditions of Service, and will not unreasonably withhold or delay the giving of its consent in any case where its consent is required.</p> <p>3. To receive Service under this Rate Schedule, the Customer must submit the required application. For Generating Facilities having a rated generating capacity of greater than five kilowatts, and for which BC Hydro determines that a site acceptance verification is required, the Customer must also pay the Net Metering Site Acceptance Verification Fee as set out in section 11 (Schedule of Standard Charges) of the Terms and Conditions of the Electric Tariff.</p>

ACCEPTED: _____

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	<p>4. In addition, a Customer who (a) utilizes a synchronous generator, (b) takes Service at a Primary Voltage and/or (c) utilizes a Generating Facility with a nameplate rating greater than 50 kilowatts, will pay all associated incremental costs for connection of the Customer's Generator Facility as set out in Terms and Conditions section 9.7 (Generating Facility Connections (Distributed Generation)).</p> <p>5. The Customer must not commence parallel operation of its Generating Facility until written approval has been provided to it by BC Hydro. Written approval will normally be provided by BC Hydro within 14 days following BC Hydro's receipt of a copy of the final inspection report or approval issued by the governmental authority having jurisdiction to inspect and approve the installation. Where Customer has been notified that inspection and acceptance by BC Hydro's Field Services – Protection and Control Department will also be required before the Generating Facility will be accepted for parallel operation, BC Hydro's approval will normally be provided within 14 days following the date of inspection and acceptance. BC Hydro may require the Customer to supply additional information and/or provide access to the Customer's Generating Facility to carry out additional inspections, as set forth in BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility.</p>
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ACCEPTED: _____

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Application to Amend Net Metering Service under RS 1289

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6. Customer will design, install, operate and maintain the Generating Facility, and all ancillary facilities on the Customer's side of the Point of Delivery in accordance with all governmental laws and regulations from time to time applicable, and BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. Customers will obtain and maintain any required governmental authorizations and/or permits required for the installation and operation of the Generating Facility. The Generating Facility will meet all applicable safety and performance standards, including the codes and standards identified in BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. The Customer will be responsible for the safe and proper operations of the Generating Facility consistent with the requirements of the regulations of the *Safety Standards Act*. BC Hydro, acting reasonably, may from time to time prescribe additional requirements which in its judgment are required for the safety of its system.
7. The Customer will at all times operate the Generating Facility in accordance with applicable governmental standards and requirements, and any manufacturer's instructions, and will further comply with BC Hydro standards and requirements from time to time in effect relating to parallel operation of independent net metering installations with its system. The Customer will promptly notify BC Hydro of any malfunction or breakdown of the Generating Facility that could constitute a safety hazard or reasonably be expected to cause disturbance or damage to BC Hydro's system.
8. The Customer will not operate the Generation Facility so as to generate electricity at a rate greater than 110% of the nameplate rating of the Generating Facility, and will not add to or modify the Generating Facility without the prior written consent of BC Hydro.

ACCEPTED: _____

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9. Service under this Rate Schedule is conditional on the continuance of Service to the Customer under any of the Rate Schedules described under the Availability section above, and is further conditional on the Customer being billed monthly or bi-monthly under BC Hydro's regular billing plan. If Service under the applicable Rate Schedule is suspended or Terminated for any reason, or if the Customer ceases to be billed under BC Hydro's regular billing plan, Service under this Rate Schedule will be deemed to have automatically been suspended or Terminated concurrent with suspension or Termination of Service under the applicable Rate Schedule, or change to a different billing plan, as applicable.
10. If Service under this Rate Schedule is suspended or Terminated for any reason, and BC Hydro considers it necessary in its discretion for the Customer's Generating Facility to be re-inspected and approved prior to resuming parallel operation with BC Hydro's system, the Customer will pay the costs that BC Hydro estimates that it will incur for the re-inspection and approval.
11. If the Customer voluntarily Terminates Service under this Rate Schedule, the Customer will not be eligible to again take Service under this Rate Schedule for a period of 12 months from the date of Termination, unless BC Hydro otherwise consents.

ACCEPTED: _____

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	<p>12. BC Hydro will have the right to require Customer to interrupt (including, if so specified by BC Hydro, by means of physical disconnection or lock-out,) or reduce the output of its Generating Facility whenever:</p> <p class="list-item-l1">(a) BC Hydro deems such action necessary, in its sole judgment, to permit BC Hydro to construct, install, maintain, repair, replace, remove, investigate, or inspect any of its equipment or any part of its electric system; or</p> <p class="list-item-l1">(b) BC Hydro determines in its sole judgment, that curtailment, interruption, or reduction of Customer's electrical generation is otherwise necessary due to emergencies, forced outages, force majeure, safety hazards, possible damage to or disturbance of its electric system, or compliance with prudent electrical practices.</p> <p>13. Notwithstanding any other provision of this Rate Schedule, in any of the events or circumstances mentioned in Special Condition No. 12, BC Hydro will have the right:</p> <p class="list-item-l1">(a) To require the Customer to immediately disconnect the Generating Facility from BC Hydro's system; and</p> <p class="list-item-l1">(b) To itself immediately disconnect the Generating Facility from the BC Hydro system if the Customer is either not available or fails to act, and such disconnection is deemed necessary by BC Hydro.</p> <p>14. Whenever feasible BC Hydro will give the Customer reasonable advance notice that interruption or reduction in deliveries may be required, or that disconnection of the Generating Facility from BC Hydro's system may be required, but the failure of BC Hydro to give such notice will not invalidate any action taken by BC Hydro under any of the Special Conditions in Rate Schedule 1289.</p>
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ACCEPTED: _____

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BC Hydro

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	<p>15. If BC Hydro in its discretion deems it necessary to require the Customer to interrupt or disconnect its Generating Facility from BC Hydro's system, or for BC Hydro to itself effect the interruption or disconnection of the Generating Facility from its system, as provided in Rate Schedule 1289, or such interruption occurs as a result of suspension or Termination of Service to the Customer in accordance the provisions of Rate Schedule 1289, then except to the extent caused by the wilful misconduct or gross negligence of BC Hydro, its servants or agents, BC Hydro and its servants or agents will not be liable to the Customer for any loss or damage whatsoever resulting from the exercise of such rights by BC Hydro.</p> <p>16. BC Hydro will have the right to enter the Customer's Premises at all reasonable hours, without notice to the Customer, to inspect the Customer's protective devices and read, inspect and/or test meters, or to disconnect the Generating Facility. Nothing in the foregoing terms and conditions will limit or otherwise affect any rights of entry to the Customer's Premises BC Hydro may have under any other sections of the Electric Tariff or any other agreement with the Customer.</p>
Rate Rider	The Deferral Account Rate Rider as set out in Rate Schedule 1901 applies to all charges payable under this Rate Schedule, before taxes and levies.

ACCEPTED: _____

ORDER NO. _____

COMMISSION SECRETARY

Application to Amend Net Metering Service under RS 1289

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6. OTHER**RATE SCHEDULE 1289 – NET METERING SERVICE****Availability**

For any Residential Service Customer and for any General Service Customer who:

1. installs a Generating Facility to generate electricity to serve all or part of their electricity requirements on the Customer's Premises, and-
2. has an Annual Load that is equal to or exceeds the Generating Facility's Annual Energy Output.

With the consent of BC Hydro, Customers taking Service under other Rate Schedules may be admitted to Service under this Rate Schedule, provided that BC Hydro is satisfied that the metering, billing and other requirements of this Rate Schedule can be met.

In addition, this Rate Schedule 1289 is available to those Customers receiving Service under this Rate Schedule as of April 20, 2018, and those Customers whose applications have been accepted by BC Hydro in writing, prior to and including April 20, 2018, as meeting the criteria of a simple or complex distributed generator as defined in BC Hydro's "Distributed Generation Technical Interconnection Requirements – 100 kW and Below."

ACCEPTED: _____

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	<p><u>“Annual Energy Output” means the calculated annual energy output for a Generating Facility and will be calculated as follows:</u></p> <p><u>Generating Facility’s nameplate rating x capacity factor x 365 days</u> <u>X 24 hours, where the capacity factor is:</u></p> <ul style="list-style-type: none"> • <u>10 per cent for photovoltaic;</u> • <u>20 per cent for biogas, thermal and wind;</u> • <u>30 per cent for fuel cell; and</u> • <u>40 per cent for hydro,</u> <p><u>and where the nameplate rating for an Generating Facility is the total capacity of the inverters (AC capacity).</u></p>
	<p><u>“Annual Load” means the total kilowatt hours of electricity supplied by BC Hydro to the Customer’s Point of Delivery based on the Customer’s billing data from the 12 consecutive months immediately preceding BC Hydro’s receipt of the Customer’s application; or if 12 consecutive months of billing data is not available, BC Hydro may accept an estimate of the Annual Load, supported by the Customer’s billing data to date and/or other relevant Customer information satisfactory to BC Hydro in its sole discretion.</u></p>

ACCEPTED: _____

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	<p>“Generating Facility” for purposes of this Rate Schedule means a generating facility, including fuel cells and energy recovery generation, that:</p> <ol style="list-style-type: none"> 1. Utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a “clean or renewable resource” in the <i>Clean Energy Act</i> (as updated from time to time) to generate electricity; 2. Has a nameplate rating of not more than 100 kilowatts; and 3. Is owned or leased by the Customer and is located on the same parcel of land as the Customer’s Premises for which Service is being provided under any of the Rate Schedules described above, or on an adjacent parcel of land owned or leased by the Customer, and is connected to the same Point of Delivery as the Customer’s Premises being served under any of the Rate Schedules described above,
	<p>and includes all wiring, protection-isolation devices, disconnect switches, and other equipment and facilities on the Customer’s side of the Point of Delivery.</p> <p>For clarity, where the Customer leases the Generating Facility from a third party or retains a third party to install, operate and maintain the Generating Facility on its behalf, then as between the Customer and BC Hydro, the Customer will remain responsible for any obligations under all terms and conditions of Service, including applicable Rate Schedules, BC Hydro’s DGTIR-100, and other applicable interconnection requirements to the same extent as if the Customer owns, installs, operates and maintains the Generating Facility itself.</p>
Applicable in	All Rate Zones.

ACCEPTED: _____

ORDER NO. _____

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BC Hydro

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Rate	<p>Energy Charge:</p> <p>Charges for Net Energy consumed by the Customer will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro.</p> <p>Energy Price:</p> <p>For all electricity represented by the Generation Credit Balance remaining in the Customer's Generation Account at any Anniversary Date, BC Hydro will pay 9.99 ¢ per kWh.</p>
Metering	<ol style="list-style-type: none"> 1. Inflows of Electricity from the BC Hydro system to the Customer, and outflows of electricity from the Customer's Generating Facility to the BC Hydro system, will normally be determined by means of a single meter capable of measuring flows of electricity in both directions. 2. Alternatively, if BC Hydro determines that flows of electricity in both directions cannot be reliably determined by a single meter, or that dual metering will be more cost-effective, BC Hydro may require that separate meters be installed to measure inflows and outflows of electricity. 3. The Customer will install, at its cost, the meter base and any wiring, poles, protection-isolation devices, disconnect switches, and other equipment and facilities on the Customer's side of the Point of Delivery as required under BC Hydro's "Distributed Generation Technical Interconnection Requirements – 100 kW and Below" (DGTIR-100) or other interconnection requirements applicable to the Generating Facility. BC Hydro will supply and install the Metering Equipment and make the final connections. 4. Any Metering Equipment required for purposes of this Rate Schedule will be in addition to any meters with demand measurement capability (if applicable) required under the Rate Schedule under which the Customer is receiving Service from BC Hydro.

ACCEPTED: _____

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Billing	<p>Determination of the Customer's bill will be as follows:</p> <ol style="list-style-type: none"> 1. Meter reading and billing frequency will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro. 2. At the end of each billing period BC Hydro will determine the "Net Energy" applicable for that billing period, defined as the difference between the Electricity supplied by BC Hydro to the Customer during the billing period and the electricity delivered from the Generating Facility to BC Hydro's system during the billing period. 3. If Net Energy is positive, BC Hydro will bill the Customer for the Net Energy consumed by the Customer during the billing period, subject to the application of any generation credits then in the Customer's Generation Account, as described in item 5 below. 4. If Net Energy is negative, BC Hydro will credit the Net Energy amount to the Customer's Generation Account, as described in item 5 below, and will bill the Customer only for the Basic Charge and Demand Charge (if applicable) under the Rate Schedule under which the Customer is receiving Service from BC Hydro. 5. Beginning with the first billing period following the date a Customer commences taking Service under this Rate Schedule, BC Hydro will establish a Generation Account for that Customer. If Net Energy is negative for that billing period, BC Hydro will credit the Net Energy amount to the Customer's Generation Account. BC Hydro will likewise follow this procedure for successive billing periods, except that if for any billing period Net Energy is positive, any credit balance then in the Customer's Generation Account will be applied to the positive Net Energy amount for that billing period until the Net Energy amount is reduced to zero.
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ACCEPTED: _____

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BC Hydro

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| | <p>6. BC Hydro will follow this procedure, and will notify the Customer of amounts credited and debited to the Generation Account and of the remaining credit balance (if any) in the Generation Account, on the bill rendered by BC Hydro for each billing period, until the end of the sixth billing period, in the case of Customers being billed bi-monthly, or until the end of the twelfth billing period, in the case of Customers being billed monthly (Anniversary Date). At the Anniversary Date, BC Hydro will credit any negative Net Energy amount for that billing period to the Generation Account, or apply any credits in the Generation Account to any positive Net Energy amount for that billing period, in the same manner as for prior billing periods.</p> <p>7. If any credit balance ("Generation Account Balance") remains in the Generation Account following the procedures set forth in item 6, BC Hydro will be deemed to have purchased that amount of electricity from the Customer, and will be obliged to pay the Customer for that electricity at the Energy Price determined in accordance with the Rate provision of this Rate Schedule, and the Generation Account will revert to zero.</p> <p>8. The procedures set forth above will apply in each succeeding 12-month period and at each succeeding Anniversary Date for so long as the Customer continues to take Service under this Rate Schedule. If Service under this Rate Schedule is Terminated prior to any Anniversary Date, the procedures set forth above will be applied as of the date of Termination. In that event, BC Hydro will pay the amount owing in respect of any credit balance in the Generation Account to the Customer within 45 days of the date of Termination, subject to any rights of deduction or set-off BC Hydro may have.</p> |
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	<p>9. In no case will any credit balance in the Generation Account have any cash value or be convertible to cash, except as provided above. If the amount determined to be owing to the Customer at any Anniversary Date as set forth in item 7 above is equal to or less than the charges BC Hydro anticipates are likely to be billed to the Customer during the six month period following the Anniversary Date, BC Hydro may withhold the amount owing and credit it against charges owing by the Customer for future billing periods. If the amount determined to be owing is greater than the charges BC Hydro anticipates are likely to be billed to the Customer during the six month period following the Anniversary Date, BC Hydro will pay the amount owing to the Customer within 45 days of the Anniversary Date.</p>
Special Conditions	<p>1. Subject to the provisions of Rate Schedule 1289, any other applicable Rate Schedule(s) under which the Customer is from time to time receiving Service from BC Hydro and other applicable provisions of BC Hydro's Electric Tariff, BC Hydro will supply Electricity to, and accept delivery of electricity from, the Customer at the Point of Delivery.</p> <p>2. BC Hydro will act with reasonable promptness to perform any inspections and/or give any approvals that it is authorized or required to give under the terms and conditions of Service, and will not unreasonably withhold or delay the giving of its consent in any case where its consent is required.</p> <p>3. To receive Service under this Rate Schedule, the Customer must submit the required application. For Generating Facilities having a rated generating capacity of greater than five kilowatts, and for which BC Hydro determines that a site acceptance verification is required, the Customer must also pay the Net Metering Site Acceptance Verification Fee as set out in section 11 (Schedule of Standard Charges) of the Terms and Conditions of the Electric Tariff.</p>

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| | <p>4. In addition, a Customer who (a) utilizes a synchronous generator, (b) takes Service at a Primary Voltage and/or (c) utilizes a Generating Facility with a nameplate rating greater than 50 kilowatts, will pay all associated incremental costs for connection of the Customer's Generator Facility as set out in Terms and Conditions section 9.7 (Generating Facility Connections (Distributed Generation)).</p> <p>5. The Customer must not commence parallel operation of its Generating Facility until written approval has been provided to it by BC Hydro. Written approval will normally be provided by BC Hydro within 14 days following BC Hydro's receipt of a copy of the final inspection report or approval issued by the governmental authority having jurisdiction to inspect and approve the installation. Where Customer has been notified that inspection and acceptance by BC Hydro's Field Services – Protection and Control Department will also be required before the Generating Facility will be accepted for parallel operation, BC Hydro's approval will normally be provided within 14 days following the date of inspection and acceptance. BC Hydro may require the Customer to supply additional information and/or provide access to the Customer's Generating Facility to carry out additional inspections, as set forth in BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility.</p> |
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| | <p>6. Customer will design, install, operate and maintain the Generating Facility, and all ancillary facilities on the Customer's side of the Point of Delivery in accordance with all governmental laws and regulations from time to time applicable, and BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. Customers will obtain and maintain any required governmental authorizations and/or permits required for the installation and operation of the Generating Facility. The Generating Facility will meet all applicable safety and performance standards, including the codes and standards identified in BC Hydro's DGTIR-100 or other interconnection requirements applicable to the Generating Facility. The Customer will be responsible for the safe and proper operations of the Generating Facility consistent with the requirements of the regulations of the <i>Safety Standards Act</i>. BC Hydro, acting reasonably, may from time to time prescribe additional requirements which in its judgment are required for the safety of its system.</p> <p>7. The Customer will at all times operate the Generating Facility in accordance with applicable governmental standards and requirements, and any manufacturer's instructions, and will further comply with BC Hydro standards and requirements from time to time in effect relating to parallel operation of independent net metering installations with its system. The Customer will promptly notify BC Hydro of any malfunction or breakdown of the Generating Facility that could constitute a safety hazard or reasonably be expected to cause disturbance or damage to BC Hydro's system.</p> <p>8. The Customer will not operate the Generation Facility so as to generate electricity at a rate greater than 110% of the nameplate rating of the Generating Facility, and will not add to or modify the Generating Facility without the prior written consent of BC Hydro.</p> |
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9. Service under this Rate Schedule is conditional on the continuance of Service to the Customer under any of the Rate Schedules described under the Availability section above, and is further conditional on the Customer being billed monthly or bi-monthly under BC Hydro's regular billing plan. If Service under the applicable Rate Schedule is suspended or Terminated for any reason, or if the Customer ceases to be billed under BC Hydro's regular billing plan, Service under this Rate Schedule will be deemed to have automatically been suspended or Terminated concurrent with suspension or Termination of Service under the applicable Rate Schedule, or change to a different billing plan, as applicable.
10. If Service under this Rate Schedule is suspended or Terminated for any reason, and BC Hydro considers it necessary in its discretion for the Customer's Generating Facility to be re-inspected and approved prior to resuming parallel operation with BC Hydro's system, the Customer will pay the costs that BC Hydro estimates that it will incur for the re-inspection and approval.
11. If the Customer voluntarily Terminates Service under this Rate Schedule, the Customer will not be eligible to again take Service under this Rate Schedule for a period of 12 months from the date of Termination, unless BC Hydro otherwise consents.

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| | <p>12. BC Hydro will have the right to require Customer to interrupt (including, if so specified by BC Hydro, by means of physical disconnection or lock-out,) or reduce the output of its Generating Facility whenever:</p> <ul style="list-style-type: none"> (a) BC Hydro deems such action necessary, in its sole judgment, to permit BC Hydro to construct, install, maintain, repair, replace, remove, investigate, or inspect any of its equipment or any part of its electric system; or (b) BC Hydro determines in its sole judgment, that curtailment, interruption, or reduction of Customer's electrical generation is otherwise necessary due to emergencies, forced outages, force majeure, safety hazards, possible damage to or disturbance of its electric system, or compliance with prudent electrical practices. <p>13. Notwithstanding any other provision of this Rate Schedule, in any of the events or circumstances mentioned in Special Condition No. 12, BC Hydro will have the right:</p> <ul style="list-style-type: none"> (a) To require the Customer to immediately disconnect the Generating Facility from BC Hydro's system; and (b) To itself immediately disconnect the Generating Facility from the BC Hydro system if the Customer is either not available or fails to act, and such disconnection is deemed necessary by BC Hydro. <p>14. Whenever feasible BC Hydro will give the Customer reasonable advance notice that interruption or reduction in deliveries may be required, or that disconnection of the Generating Facility from BC Hydro's system may be required, but the failure of BC Hydro to give such notice will not invalidate any action taken by BC Hydro under any of the Special Conditions in Rate Schedule 1289.</p> |
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	<p>15. If BC Hydro in its discretion deems it necessary to require the Customer to interrupt or disconnect its Generating Facility from BC Hydro's system, or for BC Hydro to itself effect the interruption or disconnection of the Generating Facility from its system, as provided in Rate Schedule 1289, or such interruption occurs as a result of suspension or Termination of Service to the Customer in accordance the provisions of Rate Schedule 1289, then except to the extent caused by the wilful misconduct or gross negligence of BC Hydro, its servants or agents, BC Hydro and its servants or agents will not be liable to the Customer for any loss or damage whatsoever resulting from the exercise of such rights by BC Hydro.</p> <p>16. BC Hydro will have the right to enter the Customer's Premises at all reasonable hours, without notice to the Customer, to inspect the Customer's protective devices and read, inspect and/or test meters, or to disconnect the Generating Facility. Nothing in the foregoing terms and conditions will limit or otherwise affect any rights of entry to the Customer's Premises BC Hydro may have under any other sections of the Electric Tariff or any other agreement with the Customer.</p>
Rate Rider	The Deferral Account Rate Rider as set out in Rate Schedule 1901 applies to all charges payable under this Rate Schedule, before taxes and levies.

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Appendix C

BC Hydro Net Metering Email Communication



Net metering update

Hi [name],

We're changing eligibility requirements for our [Net Metering program](#). Applicants are now required to size their generation to meet their electricity needs.

You won't be affected by these changes if you:

- Are already a net metering customer, who has been approved to connect and generate electricity.
- Have applied for net metering and received an email confirming that your application is acceptable.
- Are proposing a generating facility sized to generate an amount of electricity that isn't more than what you require for your own needs each year.

What's changing? Generation can't exceed electricity needs

BC Hydro's net metering program is designed so that customers can generate and connect clean or renewable generation for their own needs.

We've found that while most of the program's 1,330 customers are only generating enough power to offset their usage, some have oversized their generation. Some have consistent large annual surplus payouts, a situation that was never intended and which isn't in the best interests of our customers as a whole.

We've submitted an [application](#) to the B.C. Utilities Commission to amend the net metering program so that it isn't available to customers who are proposing to oversize their generating facility beyond their own energy needs.

This is an interim step while we undertake a broader review of the program, and we're planning to complete the review and file an application with the B.C. Utilities Commission by the end of the calendar year 2018.

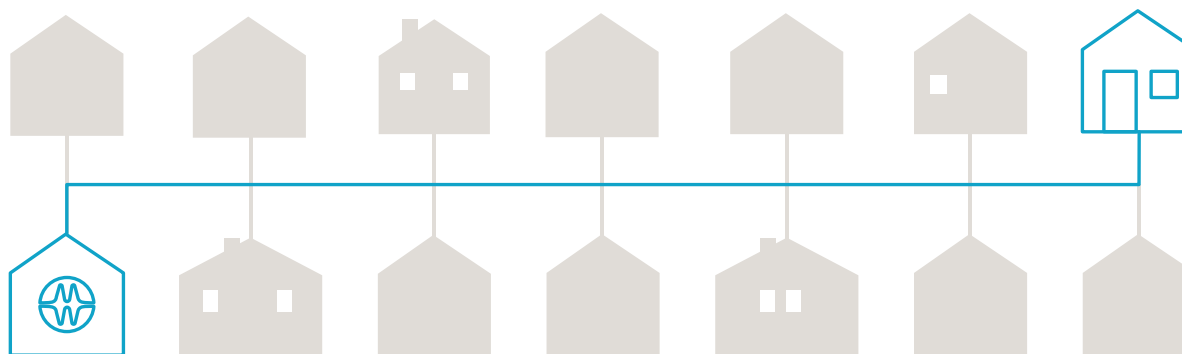
Thanks,
BC Hydro Net Metering Team

Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

Appendix D

Customer and Stakeholder Engagement Webinar Materials

BC Hydro Net Metering Program Webinar Presentation



March 18th & April 1, 2019



Purpose of Webinar

1. Provide an overview of the current Net Metering program
2. Identify and review proposed changes to the Net Metering program
3. Seek your input on proposed changes to inform BC Hydro's April 30, 2019 application
4. Explain next steps including a follow-up survey

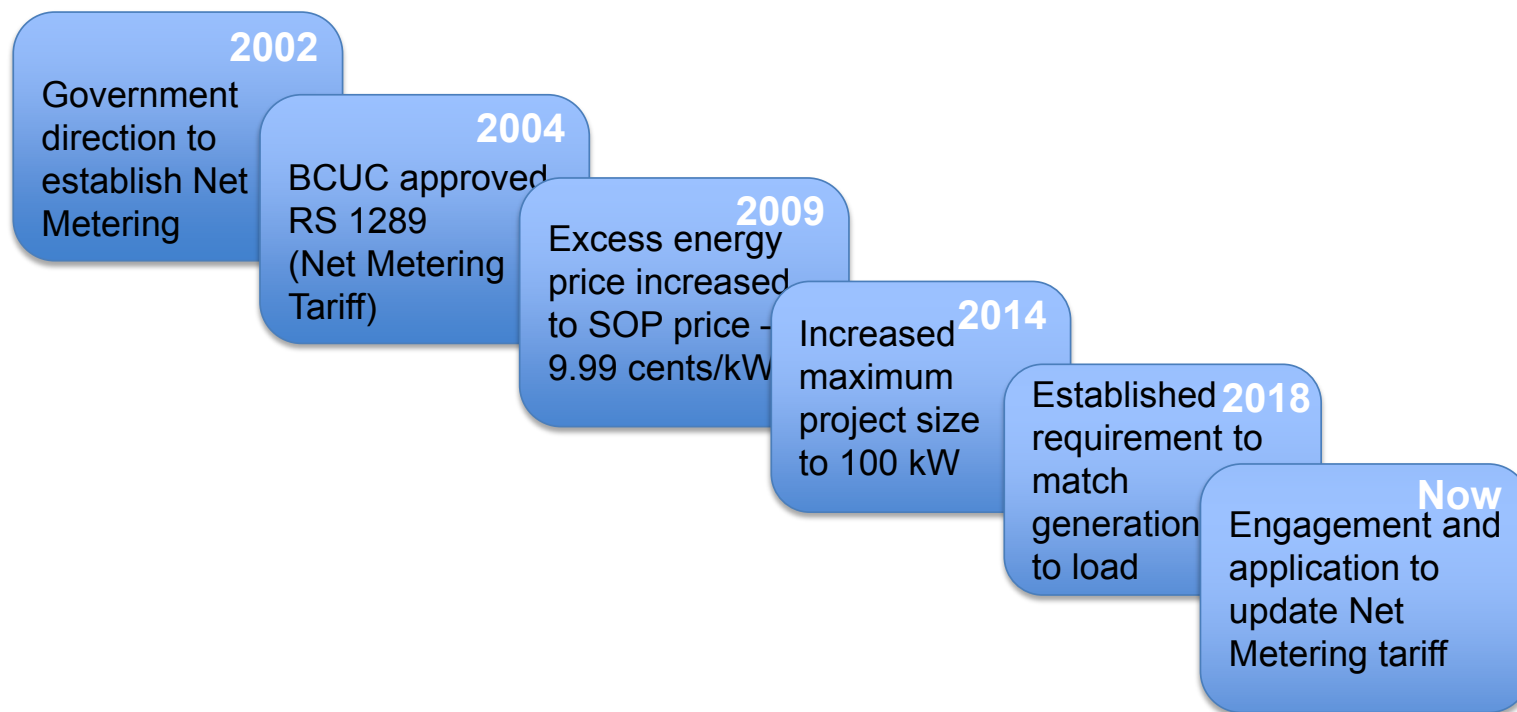
Net Metering Program Background

Net Metering Program Objectives

The intent of the Net Metering program was to be a load offset program that:

- allows customers to generate their own electricity to reduce their supply from BC Hydro;
- provides a safe process to connect to BC Hydro's system;
- is fair to participating and non-participating customers; and
- offers an accessible and streamlined process for participation.

Evolution of Net Metering Program



Net Metering by the Numbers

As of March 1, 2019

1,851 customers

13 MW installed capacity

1,817 solar PV (98%)

16 Hydro

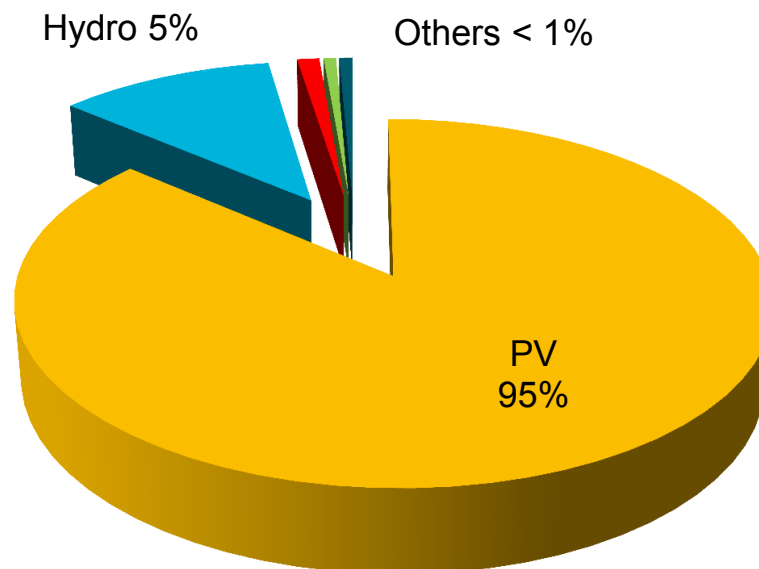
9 Wind

6 Wind & PV

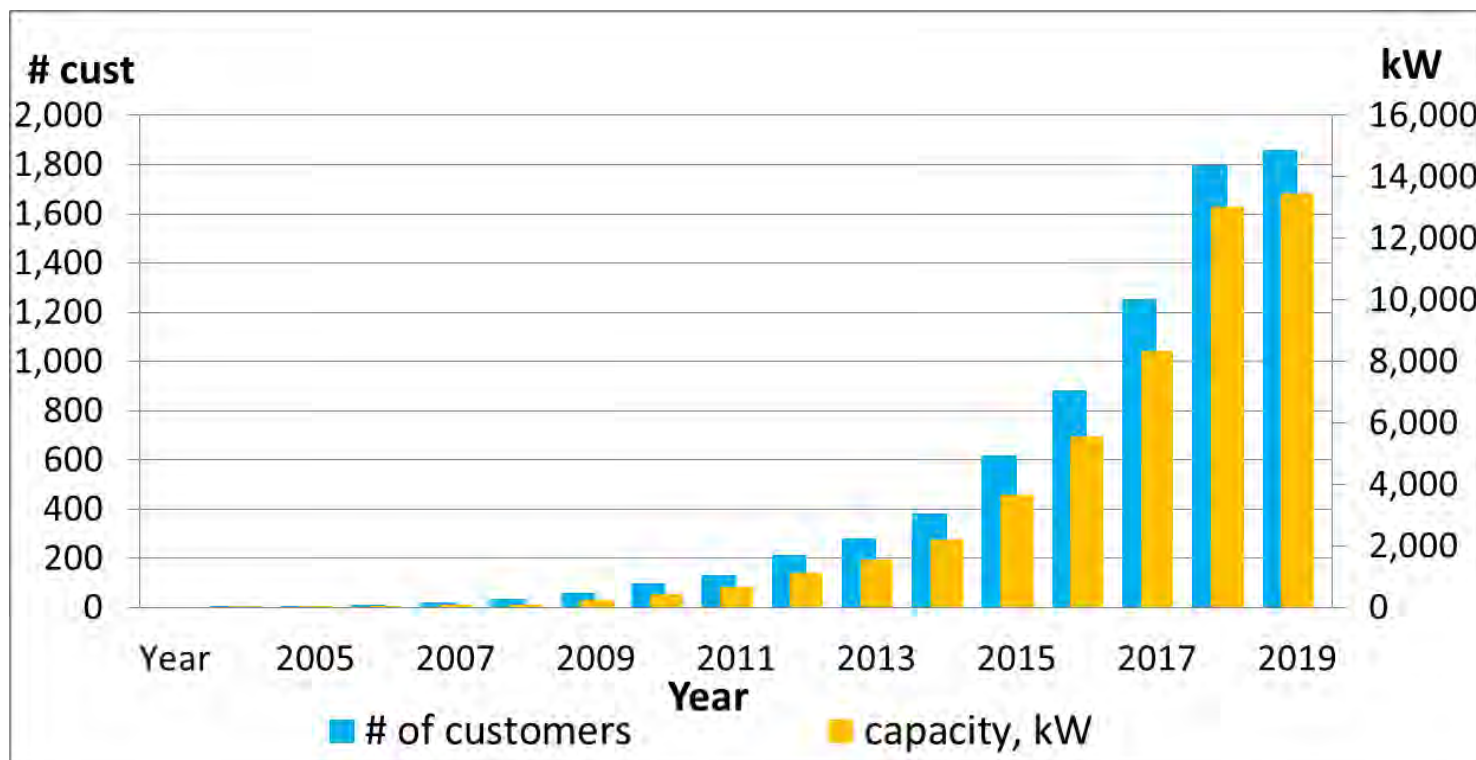
1 Biogas

2 Hydro & PV

By Installed Capacity



Net Metering Program Growth



as of March 1, 2019

7

Annual Payment for Excess Energy

Based on stats in F2018

Out of **1,300** Net Metering customers, BC Hydro purchased 3.2 GWh of energy from **250** customers (~19%).



Total annual payout was ~\$324K.

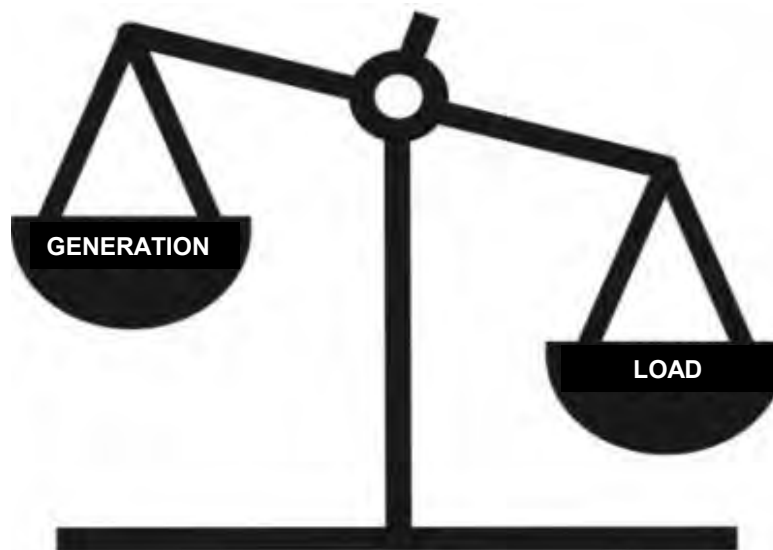
Out of **250** customers, **five** customers represented 2.4 GWh (~0.4% of total **1,300**)



Five customers were paid ~\$244K or 75% of the total annual payout.

April 2018 Interim Changes

- Require customers to size their generation to match their load requirements
- Aligns with the intent of providing an opportunity for customers to offset their own load



Post April 2018 Regulatory Activities

- **June 1, 2018** - BCUC approved these amendments on an interim basis with direction to file our application by **December 15, 2018**.
- **October 10, 2018** - BC Hydro applied to the BCUC for an extension until **July 31, 2019**.
- **January 7, 2019** - BCUC directed BC Hydro to file its application by **April 30, 2019**.

Proposed Scope of Application

1. Examine payout price for excess energy
2. Explore oversized generation solution
3. Consider various payment terms
4. Review grandfathering provisions

Objectives of the Proposed Changes

- Maintain the Net Meeting program as a load offset program
- Provide customers with increased opportunities to offset their load
- Review the price for excess energy to reflect the regional wholesale electricity market
- Update the tariff to reflect existing program practices
- Improve fairness between participating and non-participating customers

Topic 1: Excess Energy Price

Price for excess energy should reflect its value to BC Hydro's system

Options for consideration:

1. Revise the price for excess energy to reflect the price BC Hydro could sell the electricity for on the regional wholesale market, or
2. Allow customers to bank their credits for 5 year period, after which credits expire.

Topic 2: Interim Solution to Address Oversized Generation

Interim solution to limit excess generation had some unintended consequences

Options for consideration:

1. Keep interim solution with greater flexibility, or
2. No load-to-generation ratio (dependent on other program changes)

Topic 3A: Revise Payment Terms – Anniversary Date

Allowing customers to choose their anniversary date could provide increased opportunities to offset consumption

Options for consideration:

1. Set common anniversary date for all customers (e.g. March 1st); or
2. Allow customers to choose their anniversary date one time.

Topic 3B: Revise Payment Terms – True-up Period

Modifications to the true-up period could provide customers with increased opportunities to offset their consumption

Options for consideration:

1. Retain current 12 months true-up period; or
2. Extend true-up period from current 12 months to 24 months or longer

Topic 4: Grandfathering

The proposed changes discussed in topics 1-3 may have different impacts depending on customer type

Option for consideration:

- Grandfather existing customers for a period up to 5 years and commit to review the grandfathering provision after the selected term expires.

Next Steps

March 18, 2019 and April 1, 2019

- Webinars for customers and interested parties
- Survey on proposed changes available

April 9, 2019

- Deadline to complete Net Metering survey

April 30, 2019

- Application filed with BCUC (with consideration of feedback from webinar/survey participants)
- BCUC directed process to follow

Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

Appendix E

Engagement Survey Results

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1 Engagement Survey Results

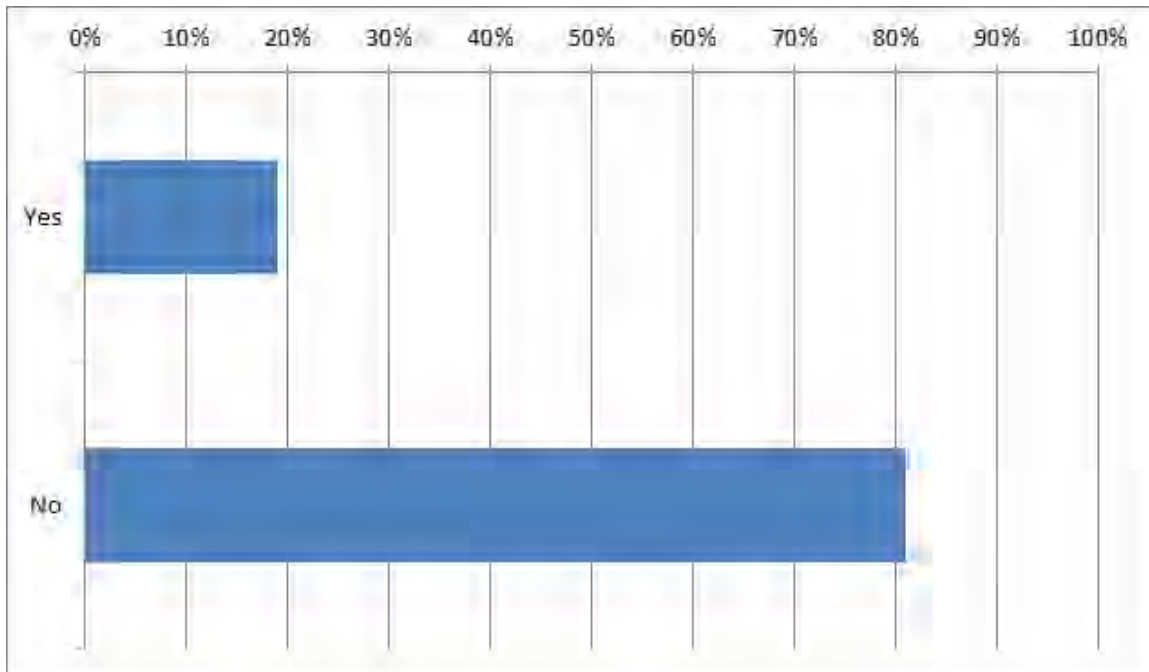
1.1 Introduction

To inform the Application, BC Hydro engaged with customers and stakeholders through two webinars (March 18, 2019 and April 1, 2019) and an online survey. There were a total of 301 participants in the webinars and BC Hydro received 706 survey responses. The engagement materials are provided in Appendix D and the survey and responses are summarized below.

1.2 Profile of Participants

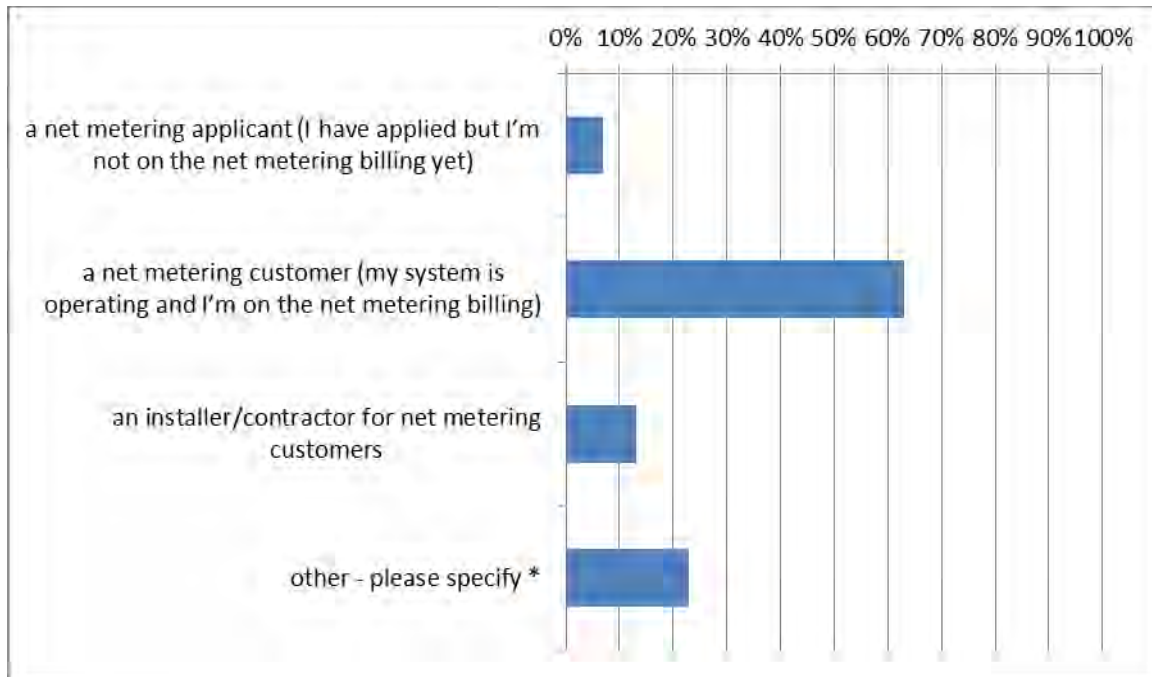
1.2.1 Did you participate in a Net Metering webinar?

Figure E-1 Engagement Survey Results - Did you participate in a Net Metering webinar?



1.2.2 Which of the following best describes your interest in Net Metering?

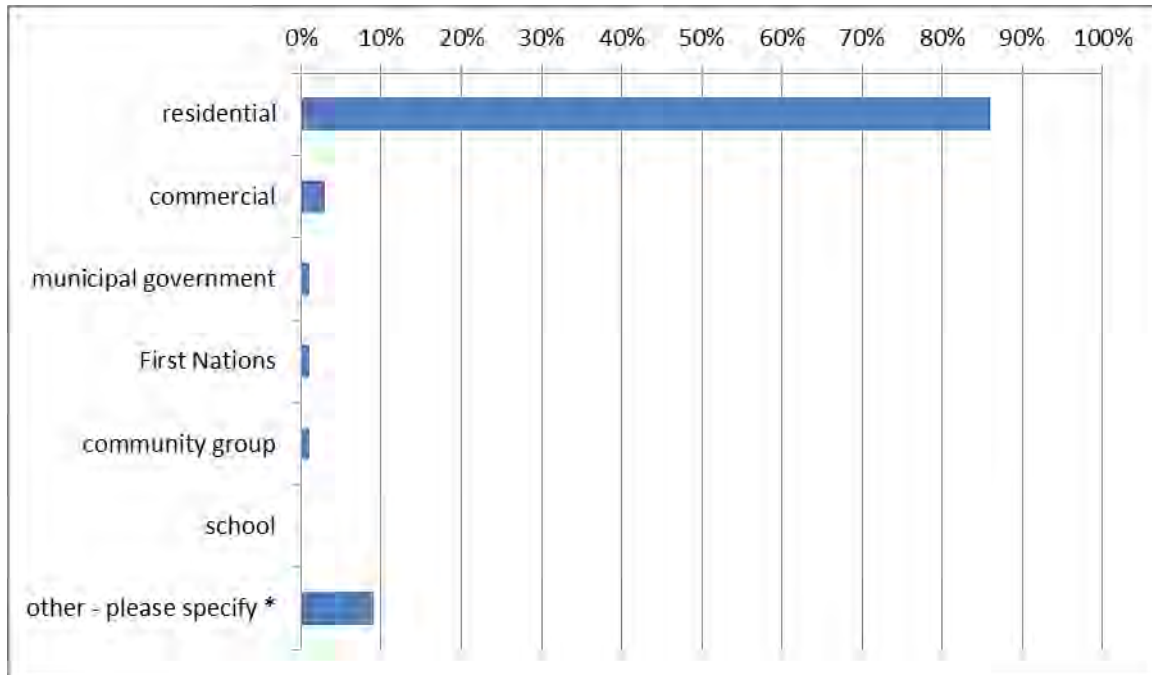
Figure E-2 Engagement Survey Results – Which of the following best describes your interest in Net Metering?



* Most participants who selected "other" provided written comments indicating that they were either interested in becoming a net metering customer in the future, a supporter of net metering or a consultant/developer involved with net metering.

1.2.3 If you are an existing customer, what type of customer are you?

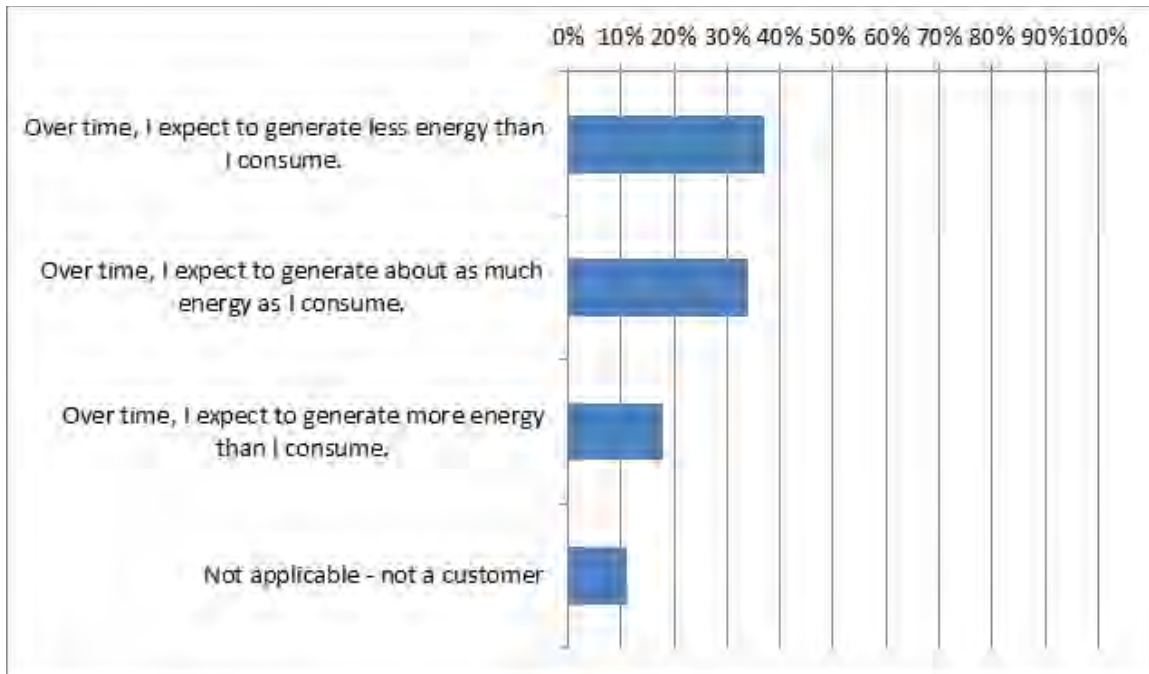
Figure E-3 Engagement Survey Results – If you are an existing customer, what type of customer are you?



* Most participants who selected “other” provided written comments indicating that they were either interested in becoming a net metering customer in the future or were a contractor, installer, consultant or supplier.

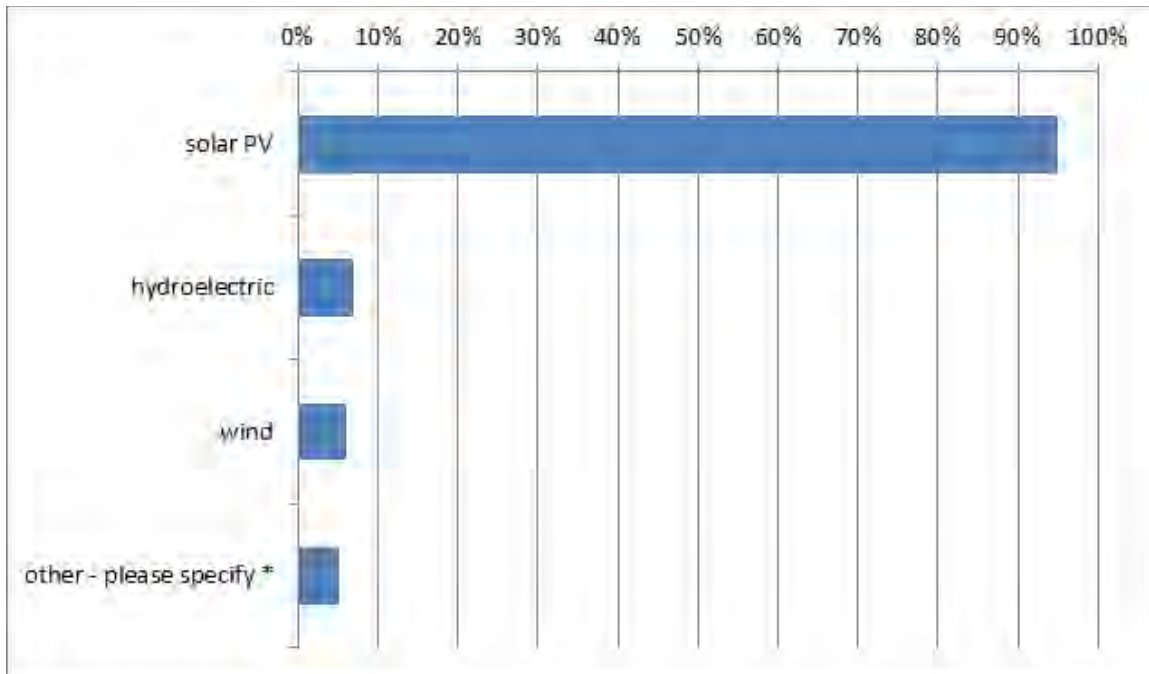
1.2.4 Please indicate which of the following statements is most applicable to you

Figure E-4 Engagement Survey Results – Please indicate which of the following statements is most applicable to you



1.2.5 What generation technologies do you use or are planning to install?

Figure E-5 Engagement Survey Results – What generation technologies do you use or are planning to install?



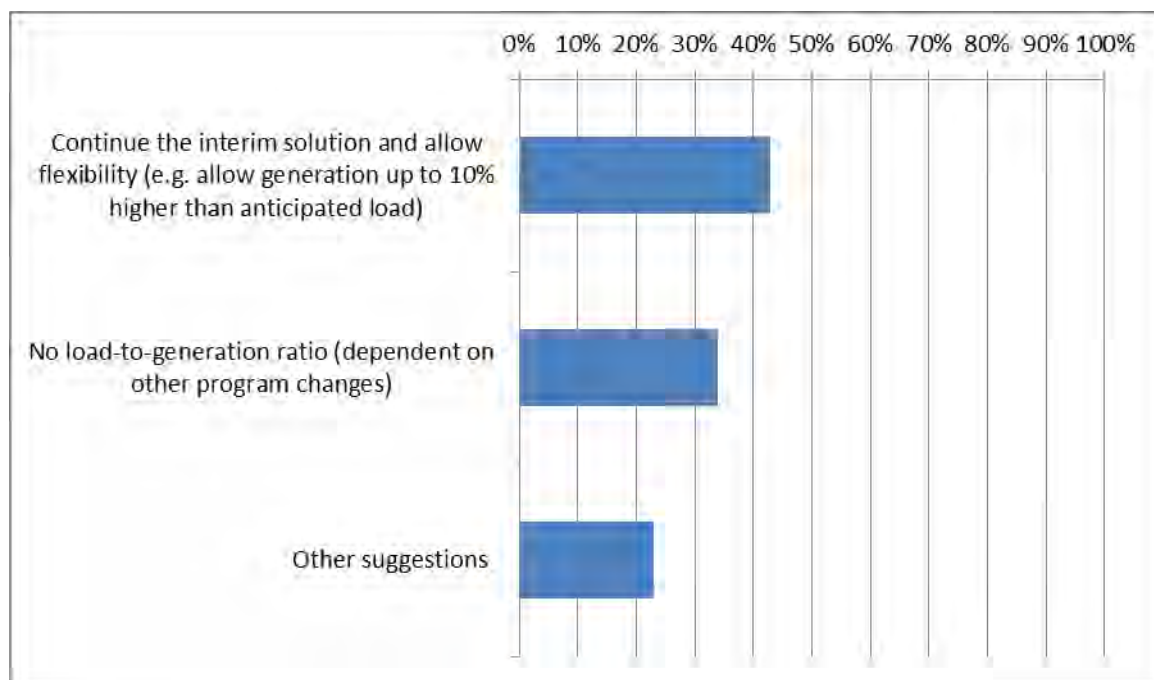
* Most participants who selected “other” provided written comments indicating that they used or were planning to install solar technology. Other technologies mentioned including biomass/biogas (four responses), geothermal (three responses), energy storage/battery (two responses) co-generation (one response), waste to energy (one response and hydroelectric (one response).

1.3 Participant Responses Regarding Potential Changes to the Net Metering Program

1.3.1 Addressing Oversized Generation

In April 2018, BC Hydro made interim changes to require new applicants to size their proposed generation so that it is no greater than their electricity consumption. While this change prevents new customers from installing oversized generation, it also created some unintended consequences. For example, under the current rules, a customer who plans to purchase an electric vehicle may not be able to offset their future additional load. To accommodate these customers while maintaining the Net Metering program as a load offset program, BC Hydro is considering changes to this approach. Of the options below, which one would you prefer?

Figure E-6 Engagement Survey Results – Addressing Oversized Generation



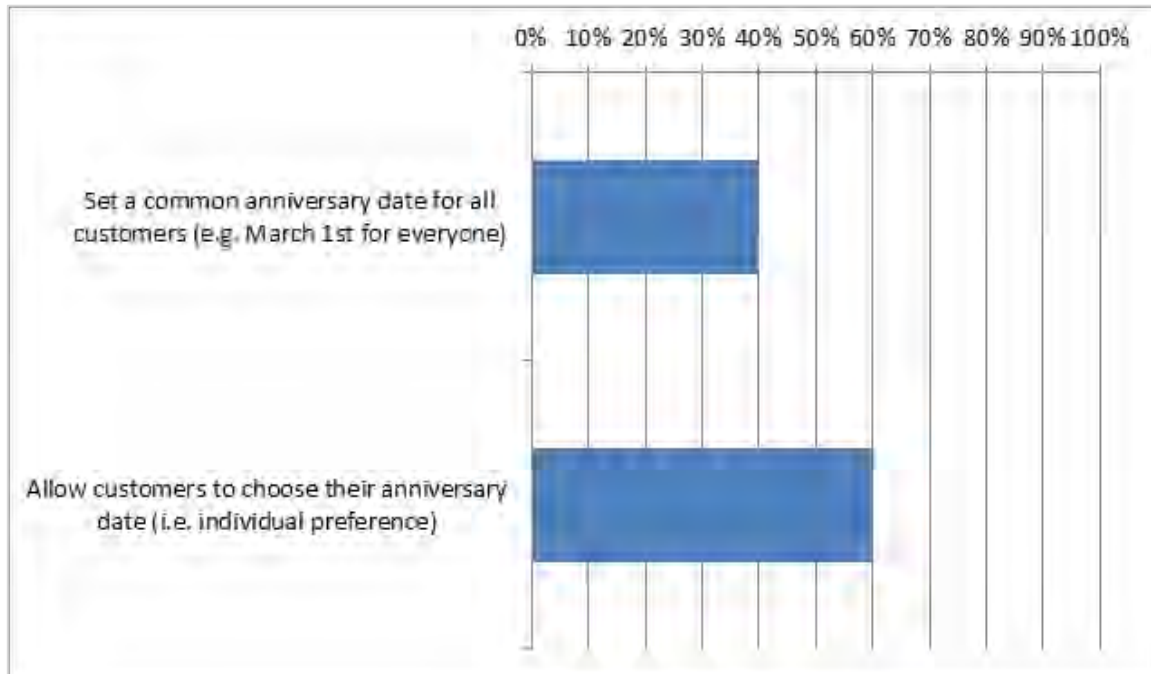
1 Of the 23 per cent of participants that selected the Other Suggestions option:

- 2 • Approximately 44 per cent of responses expressed general opposition to the
3 proposed changes or advocated for having no requirement for the size of a
4 customer's Generating Facility;
- 5 • Approximately 42 per cent of responses indicated potential support for making
6 the 2018 Amendment Application permanent, with suggestions to provide
7 additional flexibility to meet customer needs. Specifically, these responses
8 suggested that additional flexibility be considered to allow for future increases
9 to Annual Load, particularly as a result of purchasing an electric vehicle (refer to
10 section 2.5 of the Application);
- 11 • Approximately 7 per cent of responses suggested revisions to the Program
12 payment terms; and
- 13 • The remaining responses either provided no suggestions, indicated that they
14 did not understand the question, expressed support for virtual net metering
15 (refer to section 7.2 of the Application) or suggested that BC Hydro should stop
16 the Program.

17 **1.3.2 Options for Payment Terms – Anniversary Date**

18 Under the current net metering tariff, any excess energy credits remaining after a
19 customer's anniversary date (the anniversary of BC Hydro's authorization to
20 connect) are paid out every 12 months (known as the true-up period). BC Hydro is
21 considering different options relating to the setting of the anniversary date in order to
22 maximize the use of credits to offset their consumption. Which option would you
23 prefer?

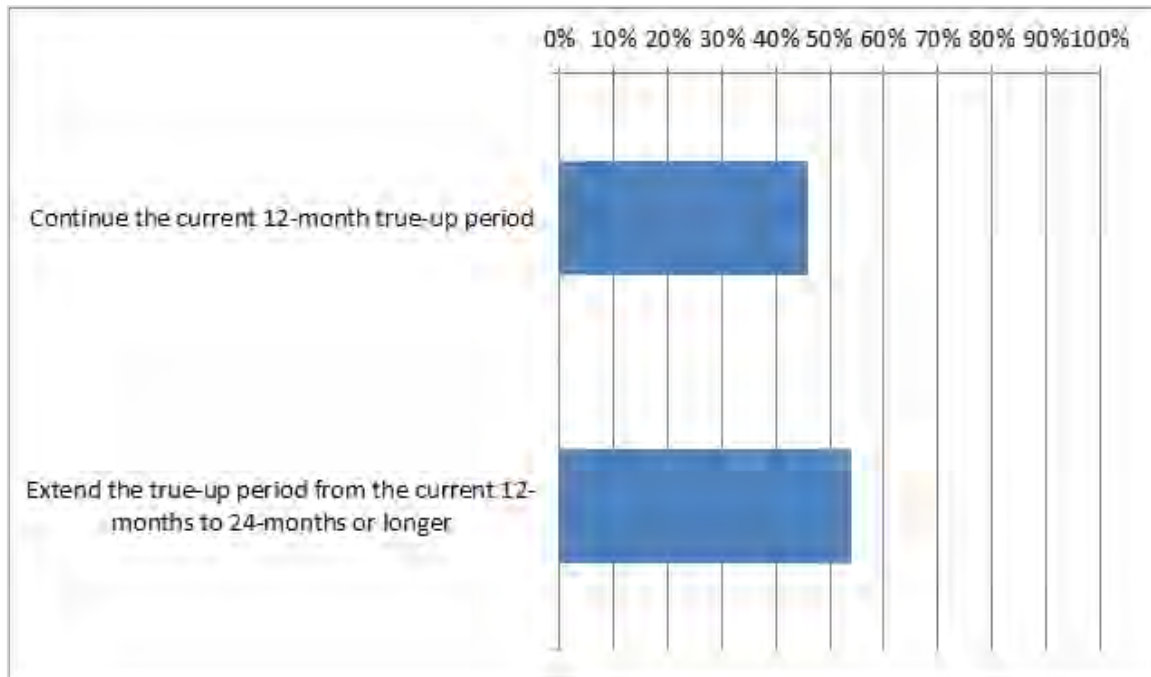
**Figure E-7 Engagement Survey Results –
Anniversary Date**



1.3.3 Options for Payment Terms – Extending the Period Between Surplus Energy Payments

BC Hydro is considering extending the true-up period or allowing customers to bank their credits. This would provide customers with increased opportunities to use their credits to offset their consumption. Which option would you prefer?

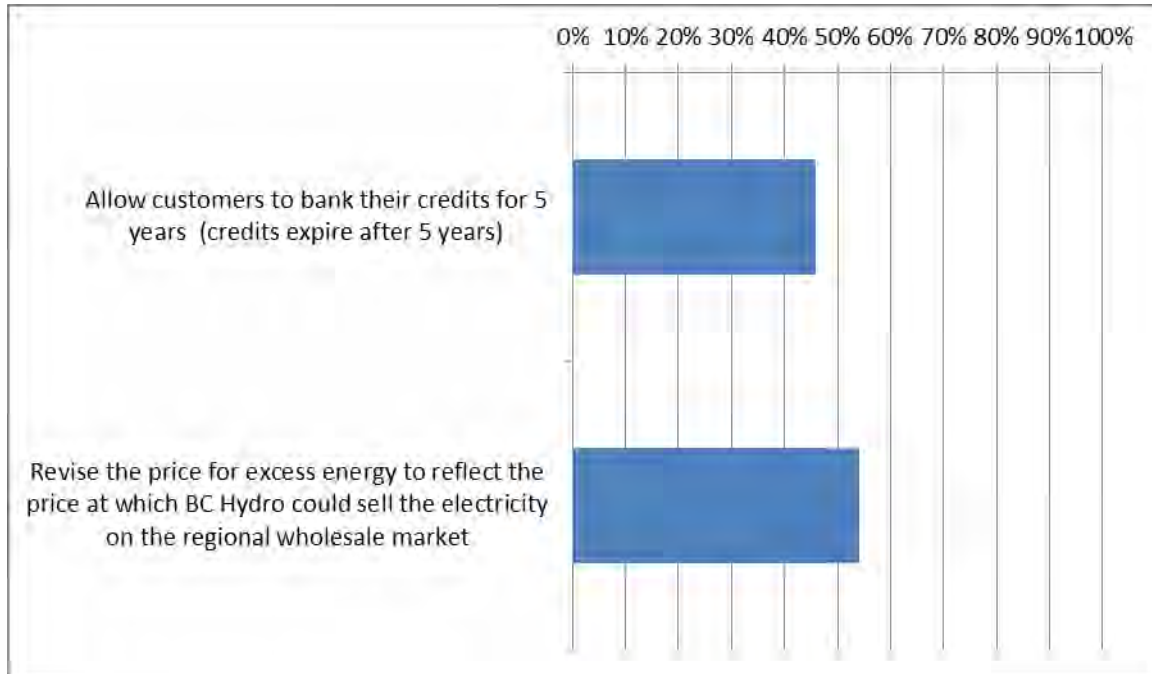
Figure E-8 Engagement Survey Results – Extending the Period between Surplus Energy Payments



1.3.4 Energy Price

BC Hydro is considering changes to the price customers receive for excess generation so that the price paid would reflect the price that BC Hydro could sell the electricity for on the regional wholesale market. This reflects the principle of the Net Metering program as a load offset program for customers wishing to offset their consumption and reduce their electricity bills. Which option would you prefer?

Figure E-9 Engagement Survey Results – Energy Price

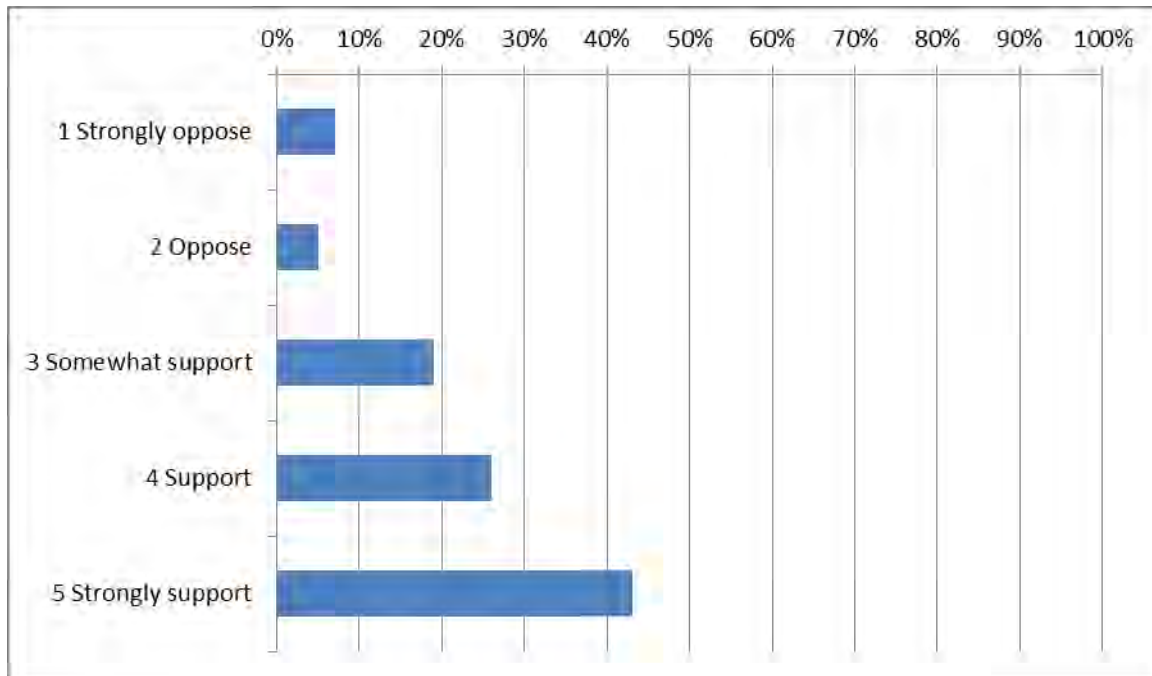


1.3.5 Transitional Energy Price

BC Hydro is considering a grandfathering provision for existing net metering customers. Please indicate your support for the following proposal:

- Grandfather existing customers for a period up to five years and commit to review the grandfathering provision after the selected term expires.

**Figure E-10 Engagement Survey Results –
Transitional Energy Price**



Participants were provided with an opportunity to provide additional comments or suggestions with regards to a transitional Energy Price for existing customers.

252 responses were received:

- Approximately 45 per cent either indicated concern about the ability of existing customers to recover their initial investment or suggested the current Energy Price be maintained for existing customers for a longer or indefinite period;
- Approximately 7 per cent indicated general support for the transitional Energy Price proposal;
- Approximately 7 per cent either opposed a transitional Energy Price for all existing customers or opposed a transitional Energy Price for those existing customers who had received significant Surplus Energy Payments; and

-
- The remaining responses were either neutral or not specifically related to providing a transitional Energy Price.

1.3.6 Additional Comments

Participants were asked if there were any other comments they would like to provide on the proposed changes to the Net Metering program. 325 responses were received:

- Approximately 22 per cent of responses expressed general opposition to any changes to the Program;
- Approximately 19 per cent of responses provided other ideas for consideration. The most common suggestions included providing incentives or rebates to encourage net metering and/or distributed generation, providing increased flexibility around the requirements for the size of a customer's Generating Facility (refer to section 2.5 of the Application), exempting Generating Facilities with a capacity limit below a certain threshold from the size requirement (refer to section 2.7 of the Application) and adopting rate design changes, such as time-of-use rates;
- Approximately 16 per cent of responses expressed support and encouragement for distributed generation resources;
- Approximately 12 per cent of responses expressed opposition to any requirement regarding the size of a customer's Generating Facility (refer to section 2.5 of the Application and section [1.3.1](#) of this appendix which provides the responses from all survey participants on this specific issue);
- Approximately 10 per cent of responses expressed opposition to updating the Energy Price (refer to section 4.4 of the Application and section [1.3.4](#) of this appendix which provides the responses from all survey participants on this specific issue); and

-
- The remaining responses either provided neutral comments, expressed opposition to the Site C Project, expressed support for virtual net metering (refer to section 7.2 of the Application), expressed general support for the proposed changes to the Program, expressed support for grandfathering existing customers (refer to section 6.2 of the Application and section [1.3.5](#) of this appendix which provides the responses from all survey participants on this specific issue) or indicated they did not understand the questions or did not see their preferred option(s) offered.

1.3.7 Written Submissions

Customers and stakeholders also provided feedback on the proposed changes to BC Hydro through written submissions. BC Hydro received written submissions from the Canadian Solar Industries Association, Clean Energy BC and individual stakeholders.

In summary, the Canadian Solar Industries Association suggested that:

- The Energy Price should be the market price and that if this change is made, there should be no requirement with regards to the size of a customer's Generating Facility;
- If there are requirements with regards to the size of a customer's Generating Facility, Generating Facilities with a capacity size of 8 kW or less should be exempt and allowances should be made for anticipated future consumption, particularly with regards to electric vehicles;
- Customers should be able to choose their own Anniversary Date and BC Hydro should set an optimized default Anniversary Date of March 1; and
- The period between Surplus Energy Payments should be extended to 36 months.

-
- A transitional Energy Price should be provided to customers with Oversized Generating Facilities for a period of five years, with a commitment to explore Virtual Net Metering.

In summary, Clean Energy BC suggested that:

- The Energy Price was a “material and substantial” part of decisions by existing customers to enter the Program and should be maintained for existing customers;
- BC Hydro explore a net zero concept for the residential market;
- The Program should be “dramatically revamped” for the commercial sector to “shape the demand side” by providing incentives that match BC Hydro’s requirements; and
- The review of the Program is trying to “tweak an already outdated system” and the Application deadline should be extended to allow additional time for a more detailed review.

In summary, individual stakeholders made the following suggestions and comments:

- That the Program be designed as a “use it or lose it” system where customers are allowed to size their Generating Facilities as they wish, with a five-year period to apply any excess generation against their consumption before the credits expire, with no Surplus Energy Payment;
- Expressed general opposition to the proposed changes and suggested that the Program be expanded;
- Expressed general opposition to updating the Energy Price, emphasized the value of the Program to BC Hydro and noted the initial and ongoing investments made by customers in the Program;

-
- 1 • Expressed general opposition to extending the period between Surplus Energy
2 Payments;
 - 3 • Expressed a desire to expand the Program to include more strata and
4 commercial properties; and
 - 5 • Expressed concern regarding the proposed transitional Energy Price for
6 existing customers.

**Application to Amend Rate Schedule (RS) 1289 for
Net Metering Service**

Appendix F

Net Metering Evaluation Report No. 4



Fred James

Chief Regulatory Officer

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April 26, 2017

Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Sixth Floor – 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)
Application to Amend Rate Schedule (RS) 1289
for Net Metering Service (the Application)
Compliance with Commission Order No. G-104-14 Directive 6
Net Metering Evaluation Report No. 4**

BC Hydro writes in compliance with Commission Order No. G-104-14 Directive 6 to provide its Net Metering Evaluation Report No. 4.

For further information, please contact Gordon Doyle at 604-623-3815 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

Fred James
Chief Regulatory Officer

Is/ma

Enclosure (1)



**Rate Schedule (RS) 1289 for Net Metering Service
Compliance with Commission Order No. G-104-14
Directive 6**

Net Metering Evaluation Report No. 4

April 26, 2017

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1 Executive Summary

This is the fourth Net Metering Evaluation Report BC Hydro has provided the British Columbia Utilities Commission (**Commission or BCUC**) since the Net Metering rate was established in 2004. It describes the developments in BC Hydro's Net Metering program from April 1, 2013 to March 31, 2016 and identifies trends and considerations for the future of the program.

Over the three years covered by this report, participation in the Net Metering Program more than quadrupled from 154 customers at the end of Fiscal 2013 with 1.1 MW of aggregate capacity to 640 customers with 3.8 MW at the end of Fiscal 2016. BC Hydro expects participation in the program to continue to grow and plans to monitor this growth, as well as any impacts it may have on BC Hydro's costs and operations going forward and address them if necessary in the next Rate Design Application review expected in F2018.

BC Hydro's Net Metering customers and stakeholders tell us they are satisfied with the program and it meets their needs. We are not currently considering modifications to the Net Metering program, however we may wish to make modest clarifications to RS 1289 in the future.

2 Introduction

BC Hydro's Net Metering program is designed for our customers to generate electricity for their own use. When the customer generates more electricity than they need, once a year, on the customer's anniversary date, BC Hydro purchases the excess electricity at the rate of 9.99 cents per kWh. The Net Metering rate, known as Rate Schedule 1289 – Net Metering Service (**RS 1289**), was established in 2004 to allow BC Hydro's residential and commercial customers to meet all or part of their electricity needs through small clean or renewable distributed generation (**DG**) facilities at their premises. Since then, over 640 customers have participated in

BC Hydro's Net Metering program as at March 31, 2016, with over 95 per cent of those customers choosing to install solar photovoltaic systems.

On July 25, 2014, the Commission issued Order No. G-104-14, Directive 6, directing BC Hydro to file a progress report on the RS 1289 Net Metering Rate and the Micro-Standing Offer Program (**Micro-SOP**) by April 30, 2017 (**Directive 6**).

Directive 6 specified that the progress report include the issues listed as requirements for the 2013 Net Metering Evaluation Report (**2013 Report No. 3**) as well as the requirements included in the decision attached to Order No. G-104-14. This report reflects a similar format as the 2013 Report No. 3 but also includes new sections and updated information. The report is filed in accordance with Directive 6 and is the fourth net metering evaluation report filed with the Commission since RS 1289 was established.

3 Regulatory and Policy Background

In November 2003, BC Hydro applied for approval of a new rate schedule, RS 1289 - Net Metering Service, and in 2004 the Commission approved the new tariff by Order No. G-26-04. Some key aspects of RS 1289 at the time included a 50 kW limit on generator nameplate capacity, the requirement that customer generation be "clean", and the payment of an Energy Price of 5.40 cents per kWh for surplus customer generation on an annual basis. The rate is based on a "netting" of energy deliveries (deliveries by BC Hydro to the customer minus deliveries by the customer to BC Hydro).

In its 2004 Order, the Commission directed BC Hydro to file a monitoring and evaluation report on the Net Metering program one year after the rate was approved and BC Hydro filed that report on June 1, 2005.

Subsequently, the B.C. Government released the 2007 BC Energy Plan. Policy Action No. 11 of the 2007 BC Energy Plan provided that the price paid for net annual surpluses of generation acquired by BC Hydro under RS 1289 should be generally

consistent with prices paid under the Standing Offer Program (**SOP**). As a result, in 2008 BC Hydro applied to increase the Energy Price to 8.16 cents per kWh, based on the 2006 SOP prices and the Commission approved the increase by Order No. G-4-09. In its 2009 Order, the Commission directed BC Hydro to submit a second Net Metering evaluation report after the completion of the next review of the SOP.

In January 2011, BC Hydro released its *Report on the SOP 2-Year Review* which included revised SOP pricing. In September 2011, BC Hydro filed an application with the Commission to, among other things, increase the RS 1289 Energy Price to 9.99 cents per kWh, consistent with the revised SOP pricing. BC Hydro also filed its second Net Metering evaluation report.

In 2012, the Commission issued Order No. G-57-12, directing BC Hydro to file a third Net Metering report. On April 30, 2013, BC Hydro submitted the 2013 Report No. 3 in accordance with Directive 4 of Commission Order No. G-57-12 addressing the issues identified in that Order and providing a future direction for the Net Metering program, including a list of recommended actions (refer to section [4](#)).

Subsequently, on February 28, 2014 BC Hydro filed an application with the Commission to amend RS 1289 to increase the Net Metering capacity limit for a generating facility from 50 kW to 100 kW for all eligible customers. BC Hydro also proposed to amend RS 1289 to allow it to recover incremental interconnection-related costs from Net Metering customers incurred as a result of allowing the larger more complex projects.

On July 25, 2014, the Commission issued Order No. G-104-14 approving the proposed capacity limit increase to 100 kW for a generating facility and the ability to recover from Net Metering customers any incremental costs incurred by BC Hydro for interconnecting generating facilities with a nameplate greater than 50 kW. In Directive 6 of the Order, the Commission also directed BC Hydro to provide a

1 progress report (fourth evaluation report) on RS 1289 and the Micro-SOP by
2 April 30, 2017.

3 On June 26, 2015, to help expand Net Metering participation and in consideration of
4 Commission Order No. G-7-15 (Order No. G-7-15 provided regulatory exemptions
5 for leasing entities involved in providing electricity from small-scale solar and wind
6 generation eligible for the Net Metering program), BC Hydro applied for approval to
7 amend RS 1289 to allow customers to either own or lease a generating facility for
8 the purpose of generating electricity to serve all or part of their electricity
9 requirements under the Net Metering program. The Commission issued
10 Order No. G-116-15 on July 9, 2015 approving BC Hydro's proposed amendments
11 to RS 1289 (refer to section [9.1.1](#) for further discussion on leasing).

12 **4 Update on Recommended Actions from** 13 **2013 Report No. 3**

14 The table below summarizes the outcomes of the recommended actions included in
15 the 2013 Report No. 3.

Action	Description	Outcome	Date completed
A1.	Increase the Net Metering cap from 50 kW to 100 kW for General Service rate customers.	BC Hydro's application approved by Commission. Order No. G-104-14	July 2014
A2.	Automate and improve billing practices to increase accuracy, enhance online accessibility and ensure consistency with other customer programs	Automated Net Metering billing for residential and small commercial class of customers (over 90 per cent of all customers)	August 2013
A3.	Continue to promote Net Metering through BC Hydro's website, and by implementing the actions identified in BC Hydro's Marketing and Communications plan for the Net Metering program	Regular website updates and marketing through presentations/webinars.	Ongoing

Action	Description	Outcome	Date completed
A4.	Work with local government, contractors, installers and customers on educational materials to enhance understanding of the impacts of solar PV on the urban environment.	Number of in-person presentations and webinars	Ongoing
B1.	Design a streamlined acquisition process that supports small-scale DG projects (50 kW to 1 MW).	Micro-SOP for Communities and First Nations launched	March 2016
B2.	Identify opportunities to work collaboratively with industry associations to standardize interconnection equipment for small-scale DG projects.	Participated in IEEE 1547A (Standard for Interconnecting Distributed Resources with Electric Power Systems) Working Group.	December 2013
B3.	Explore the replacement of revenue meters with Smart Meters to reduce costs for both customers and BC Hydro.	Micro-SOP projects will utilize smart meters wherever possible	March 2016
B4.	Explore the implementation of a flat fee for interconnection studies for small DG projects (less than 1 MW).	Implemented a flat fee for screening studies	March 2016
B5.	Explore the possibility of deferring the cost of upgrades until projects have reached commercial operation.	BC Hydro is not currently pursuing this as no customers have requested this option	N/A
B6.	Create optional contract lengths (five, ten, 15 and up to 40 years) for small-scale projects.	Micro-SOP developers have the flexibility of choosing a contract term from 5 to 40 years	March 2016
B7.	Explore how BC Hydro applies energy price escalation rates for small-scale projects and determine if an alternative approach may be appropriate.	BC Hydro is currently reviewing the SOP pricing and program terms which could impact this action item.	Ongoing

5 Communication and Education

BC Hydro's consultation and communication objective is to increase the awareness of the Net Metering program, through engagement and communication, and to obtain feedback about our customers experience with Net Metering. The following is a list of some engagement and communication activities we have been involved with:

- From April 2013 to end of March 2016, BC Hydro delivered nearly 20 presentations on the Net Metering program.
- BC Hydro hosted and participated in a series of webinars on the Net Metering program to a variety of customer and non-customer stakeholders.
- In February 2014, we also gave a presentation on BC Hydro's Net Metering program at a workshop hosted by Canadian Standards Association (**CSA**) and National Resource Canada (**NRCan**). The workshop included a separate discussion with Provincial representatives to provide updates on Canadian trends related to DG.
- BC Hydro regularly participates in events held by the Canadian Solar Industry Association (**CanSIA**), including their national conference where BC Hydro delivered a presentation in December 2014. Our involvement with CanSIA allows us to keep abreast of developments at the national level, and learn about emerging trends/issues in other jurisdictions.

One key area of focus for the Net Metering team has been on enhancing and building relationships with the solar installer community in B.C. as we see this group as a critical and direct conduit to our customers. We have observed that when the solar industry understands our process, timelines and the impact a solar installation can have on customers' bills, the knowledge is transferred to our Net Metering customers. Installers are in a position to educate our customers on how a solar installation might look; how it may impact their lifestyles; what to expect for a rate of

1 return on investment, and so on. The upfront time we spent with the installers has
2 proven to pay off over the long term. With this in mind, we made four presentations
3 to solar installers and electricians; and have made appearances and given
4 presentations at two green energy workshops.

5 In addition, we delivered the following presentations to First Nations, and local
6 governments on the Net Metering program and other DG opportunities at BC Hydro:

- 7 • University of Victoria's First Nation Energy Forum on DG opportunities within
8 BC Hydro;
- 9 • Kamloops' Community workshop on solar and Net Metering program, and
- 10 • Vancouver Island Mayors roundtable on DG opportunities for Municipalities at
11 BC Hydro.

12 As a part of our education and awareness campaign, BC Hydro has featured "How
13 to" videos and stories on our website, as well as posting stories featuring Net
14 Metering customers who have demonstrated leadership and implemented
15 sustainable energy solutions for themselves and their communities. These stories
16 can be found on our website and include:

- 17 • December 2014 - Dawson Creek Net Metering customer
18 https://www.bchydro.com/news/unplug_this_blog/2014/dawson-creek-solar-offic
19 [e.html](https://www.bchydro.com/news/unplug_this_blog/2014/dawson-creek-solar-offic);
- 20 • February 2015 - Video on how net metering works
21 <https://www.youtube.com/watch?v=CJwJI-PdVRw> ;
- 22 • March 2015 - Salt Spring solar on high school
23 [https://www.bchydro.com/news/conservation/2015/gulf-islands-secondary-solar.](https://www.bchydro.com/news/conservation/2015/gulf-islands-secondary-solar)
24 [html](https://www.bchydro.com/news/conservation/2015/gulf-islands-secondary-solar);

-
- 1 • November 2015 - Kamloops customer
2 <https://www.bchydro.com/news/conservation/2015/kamloops-woman-generates>
3 [-own-electricity.html](https://www.bchydro.com/news/conservation/2015/kamloops-woman-generates); and
4 • October 2015 - Story on solar
5 <https://www.bchydro.com/news/conservation/2015/selling-electricity.html>.

6 Our customers' stories reflect the diversity of projects people are developing and
7 what motivated them to install solar PV on their residences, workplaces or local
8 schools. Whatever the reasons, they tell us they found the process to be relatively
9 simple and straightforward and are seeing the benefits of offsetting their electricity
10 load. By sharing these stories more broadly, we hope to educate and inspire others
11 to learn more about the Net Metering program and perhaps even install a generator
12 at their home or business.

13 While we continue our efforts to highlight and promote the Net Metering program, we
14 understand there is still more that could be done. Based on feedback from our
15 survey, BC Hydro is considering three further actions:

- 16 • Host or participate in more workshops, webinars, and community events;
17 • Periodically include advertisement of the Net Metering program on BC Hydro
18 bill for all eligible customers; and
19 • Continue to work with municipalities and local governments to provide support
20 and education on the benefits of net metering.

6 RS 1289 - Customer Data

BC Hydro provides the following information concerning Net Metering customers.

6.1 Summary of Inquiries

From April 2013 to March 2016, BC Hydro responded to 616 phone calls and 401 emails. The following is a summary of the most frequent types of inquiries related to Net Metering.

	F2014 April 2013 to March 2014		F2015 April 2014 to March 2015		F2016 April 2015 to March 2016	
	Phone	Email	Phone	Email	Phone	Email
How net metering works	85	87	107	81	212	96
Available incentives	7	5	11	6	15	9
Installer/equipment references	8	12	18	13	19	13
Eligibility requirements (e.g., energy source, technical requirements, service type, load size)	65	31	90	29	77	49
Change of anniversary date*	0	0	1	1	1	0
Community solar/virtual net metering	5	0	5	1	5	9
Leasing	0	0	0	2	3	0
Options for projects over 100 kW	14	2	6	1	16	4
Total inquiries**	184	137	238	134	348	180
No. of calls or emails	155	122	203	119	258	160

* Additional eight emails were received on this topic in F2017.

** Please note that in some cases, a single phone call or email may contain multiple inquiries.

6.2 Net Metering Project Summary

As of March 31, 2016, BC Hydro's Net Metering program had a total of 640 projects installed with approximately 3.8 MW of aggregate capacity. The generation type breakdown is as follows: 96 per cent solar PV, 2 per cent micro-hydro, 1 per cent wind, and 1 per cent wind/PV, biogas, wave and hydro/PV combined, as reflected in [Table 1](#) below. This table also provides a regional overview of the projects currently in the Net Metering program.

1 **Table 1 Net Metering Projects by Region**

	Generation Type	Number of Projects	Capacity (kW)
Central Interior	PV	24	111
	Wind	1	2
	Wind & PV	1	8
East Kootenay	Hydro	1	25
	PV	26	129
Kelly/Nicola	Hydro	2	8
	PV	28	128
	Wind	1	2
Lower Mainland	Biogas	1	20
	Hydro	4	177
	Hydro & PV	1	4
	PV	173	1,036
	Wind	1	5
	Wind & PV	1	5
North Coast	PV	20	92
	Wind	1	3
Peace River	Hydro	1	100
	PV	17	77
South Interior	Hydro	3	112
	PV	54	286
	Wind	3	15
Vancouver Island	Hydro	2	56
	PV	271	1,381
	Wind	1	3
	Wind & PV	2	7
Total		640	3,794

2 [Table 2](#) provides a summary of the customers that applied for Net Metering or had
 3 projects that came into service in F2014 through F2016.

1
 2

**Table 2 Net Metering Activities for
F2014 through F2016**

Net Metering Activity for F2014					
	Generation Type	Reached In-Service		Applications Received	
		No. of Projects	Capacity (kW)	No. of Projects	Capacity (kW)
Central Interior	PV	3	13	4	21
	PV	2	29	7	51
Kelly/Nicola	PV	3	14	3	16
Lower Mainland	Biomass			1	10
	Hydro	1	100		
	PV	27	186	28	116
	Wind	1	5	1	5
	Wave			1	5
North Coast	PV	2	7	3	9
	Wind & PV			1	3
Peace River	Hydro			1	100
	PV	1	5	2	10
South Interior	Hydro	1	50	1	50
	PV	8	26	12	73
	Wind			1	4
Vancouver Island	Hydro	1	45		
	PV	26	103	30	112
Total		76	583	96	583

Net Metering Activity for F2015					
	Generation Type	Reached In-Service		Applications Received	
		No. of Projects	Capacity (kW)	No. of Projects	Capacity (kW)
Central Interior	PV	3	21	7	39
East Kootenay	PV	6	37	8	58
	PV	3	27	3	27
	Other			1	0
Lower Mainland	Biogas			1	100
	Hydro	1	4		
	PV	21	93	31	178
North Coast	PV	1	5	1	5
Peace River	PV	2	16	3	17
South Interior	PV	12	81	10	72
	Wind	1	4		
	PV	67	352	91	486
	Wind & PV			1	1
Total		117	640	157	983
Net Metering Activity for F2016					
	Generation Type	Reached In-Service		Applications Received	
		No. of Projects	Capacity (kW)	No. of Projects	Capacity (kW)
Central Interior	PV	8	54	9	62
East Kootenay	PV	7	33	5	93
Kelly/Nicola	PV	8	37	10	78
	Wind	1	2	1	2
Lower Mainland	Hydro			2	200
	PV	54	367	79	602
	Wind			1	5
North Coast	PV	5	48	7	88
Peace River	Hydro	1	100		
	PV	7	27	7	27
South Interior	PV	13	92	22	152
Vancouver Island	Bio-oil			1	10
	Hydro			1	100
	PV	114	623	130	842
	Wind			1	3
Total		218	1,383	276	2,263

Figure 1 shows the growth of the Net Metering program from the program's inception to F2016.

Figure 1 Project Growth

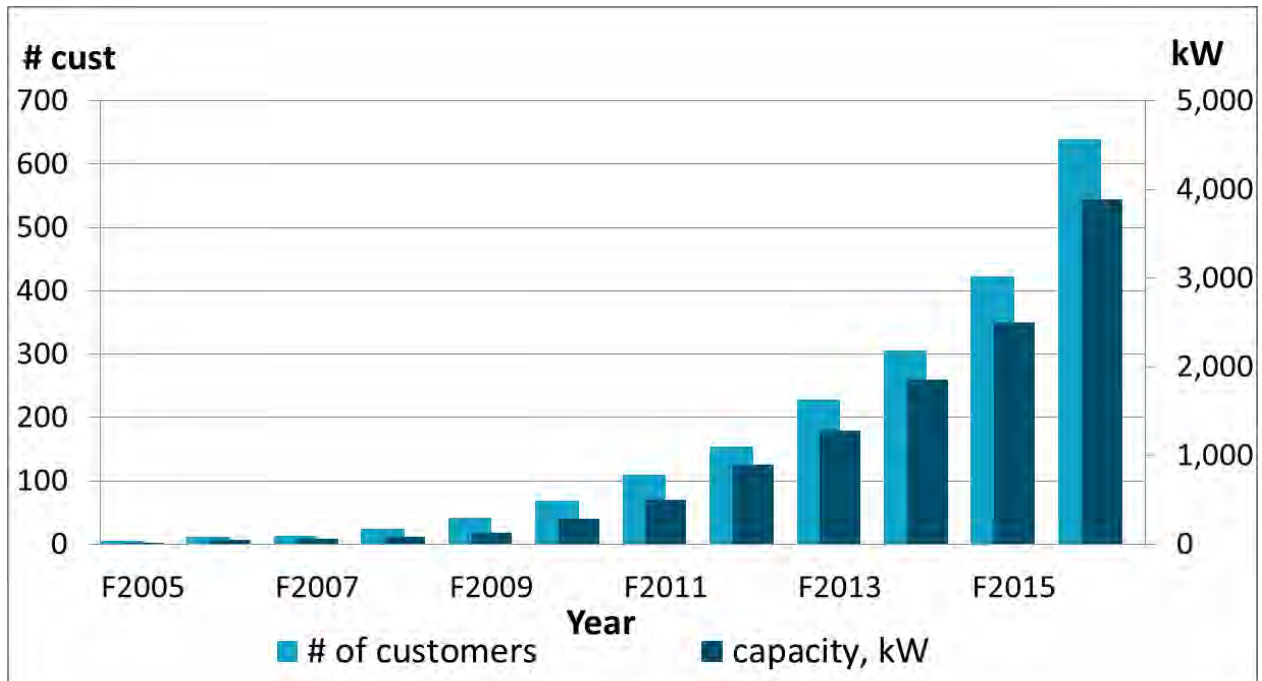
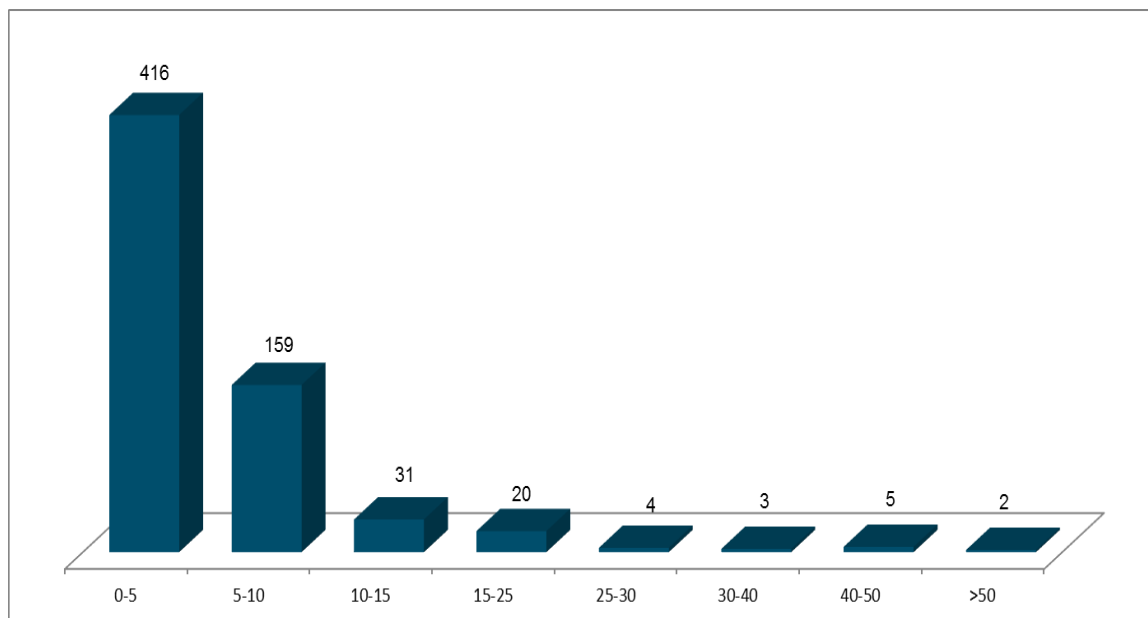


Figure 2 shows the distribution of the Net Metering project sizes. Since BC Hydro increased the maximum size of Net Metering projects to 100 kW, we have not seen a significant increase in larger projects. Ninety per cent of the Net Metering projects are 10 kW or less. This reflects the fact that most Net Metering customers are installing small solar PV systems to offset their load.

1

Figure 2 Project Size Distribution (kW)



2 **6.3 Net Metering Energy Deliveries, Credits and Payments**

3 In F2016, the volume of energy associated with Net Metering customers has grown
4 in comparison to the volumes reported in 2013 Report No. 3.

	F2012	F2016
Number of NM customers	154	640
Total installed generation capacity, MW	0.9	3.8
BC Hydro delivered to Net Metering customers, MWh	29,545	163,543
Energy credits, MWh*	107	2,748

5 * Generation delivered to BC Hydro over and above the customer's load at the time of delivery and applied
6 against the customer's energy charges.

	F2012	F2013	F2014	F2015	F2016
Number of customers	13	14	24	63	104
Surplus energy, MWh**	529	763	850	1,651	1,722

7 ** Any excess Energy Credits (surplus energy) at the customer's anniversary date is paid at the Energy Price.
8 The surplus energy purchases would include some energy delivered in the previous fiscal year.

7 RS 1289 - Costing Data

[Table 3](#) below reflects BC Hydro's costs to administer the Net Metering program. The costing data reflects the timeframe for F2014 to F2016.

Table 3 Net Metering Costing Data

Activity	Estimated Costs (\$000)			
	F2014	F2015	F2016	Total
Administration	68	71	85	224
Technical Review	5	6	12	23
Billing	3	5	8	16
Marketing	0	0	1	1
Engagement (external)	4	6	3	13
Evaluation Report Preparation	3	0	0	3
Transformer Heavy-Up	0	7	3	10
Total Cost	83	95	112	290

[Table 3](#) illustrates the rising costs to administer the Net Metering program. A few highlights explaining these changes are noted below:

- Due to the growth of the Net Metering program, costs to administer the program have increased from one to two people to process applications, respond to telephone and email inquiries, and deliver presentations and outreach to Net Metering customers;
- Due to higher volume of applications, total technical review costs have also increased, while the costs per application have not appreciably changed;
- Billing automation in F2014 saw costs associated with billing dropping from \$21,000 in F2013 (230 customers) to \$3,000 in F2014 (300 customers). Due to the increase in customer projects from F2014 to F2016, billing automation costs have now increased to \$8,000 in F2016 (nearly 700 customers);
- Bill processing costs associated have increased over the past three years, due to the higher levels of participation; and

1 • Marketing costs related to website/collateral material like post cards have
2 declined, however, renewed emphasis on engagement and promotion through
3 presentations have increased seeing these costs nearly double in F2016.

4 New in this report is the introduction of transformer heavy-up costs that are currently
5 being incurred by BC Hydro. Transformer heavy-up costs may be incurred when a
6 new Net Metering customer' installs a generator that fits within their existing
7 electrical service, but is larger than the existing BC Hydro distribution transformer.
8 BC Hydro funds transformer upgrade work out of our minor capital budget. For
9 example, a rural customer has a 100 Amp service that is supplied by a 10 kVA
10 distribution transformer. The customer installs an 18 kW solar PV system, which
11 does not require an electric service upgrade; however, a BC Hydro distribution
12 transformer heavy-up is required and is funded by BC Hydro. If this same customer
13 were to install a 40 kW solar PV system, they would need to upgrade their electrical
14 service to 200 Amp and they would be responsible for the cost of the larger
15 transformer. BC Hydro is tracking the costs associated with Net Metering-related
16 transformer heavy-ups.

17 **8 Energy Credit and Energy Price Methodology**

18 The "Energy Credit" and "Energy Price" under RS 1289 continue to be of interest to
19 Net Metering customers. This section of the report discusses these topics.

20 **8.1 Value of RS 1289: Avoided Cost and Load-Resource Balance** 21 **(LRB)**

22 It is important to understand the economic value and cost of the energy generated
23 by Net Metering customers to BC Hydro and its non-participating customers.

24 Generally speaking, the economic value of customer self-generation to BC Hydro
25 and non-participating customers is measured in terms of the amount of RS 1289
26 energy purchased by BC Hydro that can be used to defer purchasing new energy. In
27 addition to the avoided energy value, customer generation may also allow BC Hydro

1 to avoid or defer system costs or regional transmission, such as upgrades to
2 enhance the reliability of the system in a particular area.

3 The cost to non-participating customers increases as BC Hydro sees greater
4 participation in the Net Metering program. A sustained increase in the number of Net
5 Metering customers will contribute to a decline in base customer revenues which
6 could result in upward rate pressure to BC Hydro and its customers.

7 RS 1289 affects the load in the BC Hydro LRB to the extent that a current RS 1289
8 customer's generation reduces the amount of energy delivered by BC Hydro to such
9 customers (and the amount of energy billed at the customer meter). However, the
10 impact of RS 1289 customer generation on the load forecast is very small, given the
11 size of BC Hydro's system and the amount of installed RS 1289 generation
12 (3.8 MW) at the end of F2016. On the supply side, BC Hydro does not include
13 surplus RS 1289 electricity in its LRB given the nature of RS 1289 and the
14 associated small volume of energy. For example under RS 1289, customers are not
15 obligated to generate any electricity, and in F2016, the total energy surplus from Net
16 Metering customers was about 1.7 GWh.

17 To BC Hydro's knowledge, there are no material system costs that have been
18 avoided or deferred due to RS 1289 generation.

19 At this time, the installed capacity of RS 1289 generators and the volume of energy
20 generated by those customers is simply too small to result in any appreciable
21 avoided cost benefits to BC Hydro and other ratepayers, both in terms of the impact
22 on BC Hydro's LRB and avoided system costs. As participation in RS 1289 expands
23 and the energy volumes grow, BC Hydro will continue to monitor the value of
24 RS 1289 electricity to BC Hydro and non-participating customers and consider its
25 impact on the LRB and other costs.

26 The remainder of this section of the report discusses the Energy Credit and the
27 Energy Price applicable to RS 1289.

8.2 Energy Credit

The primary purpose of RS 1289 is to allow a customer to install and interconnect small, clean DG to meet the customer's own electricity requirements. From an economic perspective, the main benefit to most Net Metering customers is avoided electricity payments to BC Hydro.

The majority of customers under the Net Metering program are either receiving electricity service from BC Hydro under the residential service or small general service rate schedule in Rate Zone I. As of April 1, 2017 (F2018), the residential service rate is 8.58 cents¹ per kWh for the first 1,350 kWh for customers billed bi-monthly and 12.87 cents¹ per kWh for any additional energy consumption and the small general service rate is currently 11.39 cents¹ per kWh.

BC Hydro is only able to estimate the average Energy Credit benefit realized by residential or commercial customers because BC Hydro does not directly meter how much electricity the customer generates or the amount of electricity the customer uses. BC Hydro only meters the amount of electricity that is exported from the customer to BC Hydro's system, and the amount of electricity that BC Hydro delivers to the customer. As such, the following analysis assumes an "average" RS 1101 (residential service) and RS 1300 (small general service) customer load. For simplicity, the calculations assume a flat load and generation profile throughout the year.

Average residential customer consumption in F2016 was approximately 10,000 kWh per annum or 1,660 kWh bi-monthly. [Table 4](#) below shows a simple example of estimated bill amounts at different percentages of customer self-generation to load percentage for the Energy Charge² portion only (before any applicable taxes) for the

¹ Rate Schedule information is based on interim F2018 rates in the BC Hydro's Fiscal 2017 to Fiscal 2019 Revenue Requirements Application.

² Energy Charge is defined in RS 1289 as: Charges for Net Energy consumed by the Customer will be in accordance with the Rate Schedule under which the Customer is receiving Service from BC Hydro. The term Energy Charge and Energy Credit is used interchangeably in the context of Net Metering.

- 1 average residential customer under RS 1101 with a bi-monthly load of 1,660 kWh.
2 The table also shows the value of the Energy Charge/Credit, expressed in
3 \$ per kWh.

4 **Table 4 Bill Example for Residential Service**
5 **Customer**

	Net Metering Energy Charge/Credit and Analysis RS 1101 Residential Service Customer				
Percentage of Customer Self-Generation to Load (%)	0	25	50	75	100
Customer Bi-monthly Load (kWh)	1,660	1,660	1,660	1,660	1,660
Customer Bi-monthly Self-Generation (kWh)	0	415	830	1,245	1,660
Customer Bi-monthly Load Net of Self-Generation (kWh)	1,660	1,245	830	415	0
RS 1101 Energy Charge Step 1 – first 1,350 kWh (\$0.0858/kWh)	116	107	71	36	0
RS 1101 Energy Charge Step 2 (\$0.1287/kWh)	40	0	0	0	0
Bi-Monthly RS 1101 Energy Charge Total (\$)	156	107	71	36	0
Annual RS 1101 Energy Charge Total (\$)	936	642	426	214	0
Estimated RS 1289 Energy Charge/Credit per Annum (\$)³	0	294	510	722	936
Estimated RS 1289 Energy Charge/Credit (\$/kWh)⁴	0	0.118	0.102	0.097	0.094

- 6 Average small general service customer consumption in F2016 was approximately
7 22,000 kWh per annum or 3,640 kWh bi-monthly. [Table 5](#) below shows a simple
8 example of an estimated bill amount for the Energy Charge³ portion only (before any
9 applicable taxes) for the average Small General Service customer under RS 1300
10 with a bi-monthly load of 3,640 kWh.

³ Calculated as the difference between Annual RS 1101 Energy Charge Total (\$) at 0 per cent self-generation and the Annual RS 1101 Energy Charge Total (\$) self-generated, e.g. For 25 per cent self-generation it would be \$936 - \$694 = \$294.

⁴ Unit value (\$/kWh) calculated as the Estimated RS 1289 Energy Charge/Credit per Annum (\$) divided by Customer Bi-monthly Self Generation (kWh) multiplied by six billing periods in a year, e.g. For 25 per cent self-generation it would be \$294/(415 kWh X 6 billing periods) = \$.0118/kWh.

1 **Table 5** **Bill Example for Small General Service**
2 **Customer**

	Net Metering Energy Charge/Credit and Analysis RS 1300 Small General Service Customer				
Percentage of Customer Self-Generation to Load (%)	0	25	50	75	100
Customer Bi-monthly Load (kWh)	3,640	3,640	3,640	3,640	3,640
Customer Bi-monthly Self-Generation (kWh)	0	910	1,820	2,730	3,640
Customer Bi-monthly Load Net of Self-Generation (kWh)	3,640	2,730	1,820	910	0
RS 1300 Energy Charge (\$0.1139/kWh)	415	311	207	104	0
Bi-Monthly RS 1300 Energy Charge Total (\$)	415	311	207	104	0
Annual RS 1300 Energy Charge Total (\$)	2,488	1,866	1,244	622	0
Estimated RS 1289 Energy Charge/Credit per Annum (\$) ⁵	0	622	1,244	1,866	2,488
Estimated RS 1289 Energy Charge/Credit (\$/kWh) ⁶	0	0.114	0.114	0.114	0.114

3 The above tables demonstrate, based on some simple assumptions, that a typical
4 residential customer would enjoy an Energy Credit of between 9.4 cents per kWh to
5 11.8 cents per kWh, depending on the amount of energy generated and small
6 general service customers would receive an Energy Credit equivalent to the same
7 11.4 cents per kWh rate they pay for electricity.

⁵ Calculated as the difference between Annual RS 1300 Energy Charge Total (\$) at 0 per cent self-generation and the Annual RS 1300 Energy Charge Total (\$) self-generated, e.g. For 25 per cent self-generation it would be \$2488 - \$1866 = \$622.

⁶ Unit value (\$/kWh) calculated as the Estimated RS 1289 Energy Charge/Credit per Annum (\$) divided by Customer Bi-monthly Self Generation (kWh) multiplied by six billing periods in a year, e.g. For 25 per cent self-generation it would be \$622/(910kWh X 6 billing periods) = \$.0114/kWh.

8.3 Energy Price

The Energy Price is paid to Net Metering customers when they are left with an excess generation credit on their anniversary date of joining the program. As stated in section [6.3](#), in F2016, BC Hydro purchased approximately 1.7 GWh of surplus generation from 104 Net Metering customers.

Driven by BC Hydro's commitment to the 2013 10 Year Rates Plan, our system needs, the changing energy market and the declining cost of some technologies, we are currently reviewing the SOP energy price, which we anticipate will be lower than the current price. Since this review is still underway, we have decided to maintain the existing RS 1289 Energy Price. BC Hydro calculated the RS 1289 Energy Price of 9.99 cents per kWh⁷ in accordance with B.C. Government policy and the overarching principle of rate simplicity. Specifically, Policy Action No. 11 of the 2007 BC Energy Plan provides that Net Metering prices should be "generally consistent" with SOP prices. The Energy Price is the same for all Net Metering customers – this is consistent with the government's policy of "postage stamp" rates. Depending on the outcome of the SOP pricing review, BC Hydro may want to align RS 1289 Energy Price accordingly.

⁷ Consistent with the 2011 SOP Report, BC Hydro used the SOP starting price of \$117.76 per MWh (2009\$). No deductions or additions were made for losses, network upgrades, or the cost of incremental firm transmission. BC Hydro used the non-firm energy price of \$48.84 per MWh (2009\$) and applied the SOP assumption that energy is 70 per cent firm and 30 per cent non-firm. All amounts were adjusted for inflation to 2011\$. The price of 9.99¢/ kWh was calculated as follows: $(0.7) * (\$117.76) + (0.3) * (\$48.84)$, adjusted to 2011\$.

9 Current Trends and Benchmarking Analysis

A review of the current market shows that net metering is prevalent in North America (Please refer to [Appendix C](#) for a list of net metering programs in North America). The growth in BC Hydro's Net Metering program as shown in [Figure 1](#) mirrors the steep decline in the cost of solar PV equipment that has occurred since 2009. BC Hydro continues to stay informed of net metering developments and issues in North America through periodic jurisdictional reviews, attendance at conferences, and more broadly by participating in North American webinars. In particular BC Hydro has observed the following trends: leasing of DG systems, the recovery of fixed utility infrastructure costs, increasing system constraints, Non-Integrated Areas (NIA), Virtual Net Metering (VNM), unauthorized connections, and Net Metering anniversary dates to optimize payback to the customer. These are each discussed in the following sections.

9.1 Current Trends

9.1.1 Leasing Solar Equipment

While interest continues to grow in Net Metering, the upfront costs associated with the purchase of solar PV or wind equipment remains high for the majority of customers. In addition to direct ownership, leasing solar equipment may become a desirable option which allows customers to equalize the capital costs over the lifetime of the equipment used to generate electricity.

Initiated by Vancouver Renewable Energy Cooperative (VREC), the Commission supported BC Hydro's Application to Amend RS 1289 and issued Order No. G-116-15 on July 9, 2015 to allow Net Metering customers to partner with leasing companies like VREC. This arrangement reduces the barriers to enter into the Net Metering program enabling customers to take economically efficient steps to build generation capacity. As a result, we expected to see an increase in participation by customers in our Net Metering program. However, at this time, we

1 have only one customer who is taking advantage of leasing and we understand that
2 one more project is in the planning stages.

3 As shown in the table in [Appendix D](#), in addition to B.C., only Alberta and Nova
4 Scotia currently allow leasing in their net metering program and Ontario is
5 undertaking a review of this policy.

6 **9.1.2 Recovery of Fixed Infrastructure Costs**

7 As solar generation becomes more accessible, BC Hydro expects to see greater
8 participation in the Net Metering program. A sustained increase in the number of Net
9 Metering customers will eventually contribute to a decline in base customer
10 revenues which could result in upward rate pressure. At some point, this may
11 become a significant issue for BC Hydro, as these partially self-sufficient customers
12 still require energy from BC Hydro on demand. Yet, under our current rate structure,
13 they would not pay their proportionate share of the utility's infrastructure cost as
14 BC Hydro recovers the majority of its fixed demand related costs through the
15 variable energy rate. This means the majority of our infrastructure costs and
16 upgrades may be borne by a declining number of non-participating customers.

17 This is evidenced in numerous other jurisdictions, such as California, Nevada,
18 Arizona, and Hawaii. For example, in December 2015, the Nevada Public Utilities
19 Commission found that high growth rates in net metering has shifted the cost of
20 rooftop solar to non-participating customers. The Nevada Public Utilities
21 Commission added a small energy charge and created a separate customer class
22 for residential rooftop solar producers because their impact on the system is different
23 from that of other residential customers. Other utilities are considering imposing
24 similar charges, e.g., fixed charges, demand charges, grid access charges, installed
25 capacity fees or standby fees as well.

26 Although not concerned yet, as the participation in the Net Metering program
27 increases we may need to review the recovery of fixed infrastructure costs from

BC Hydro's Net Metering customers and apply appropriate charges to these customers as necessary.⁸

9.1.3 System Constraints

Certain areas of the BC Hydro electrical grid are becoming constrained due to the number and size of generators that are injecting energy back into our grid. BC Hydro has had to signal to Independent Power Producers (**IPPs**) and potential Net Metering customers that we need to carefully manage the number and size of the generation being installed in some areas on our grid. At this time, the majority of these constraints are caused by larger IPPs that inject power into the distribution grid and are not the result of a high penetration of Net Metering customers.

If more generation is added at these locations, even small Net Metering projects could require the replacement of substation transformers. BC Hydro is currently reviewing individual Net Metering applications on a case by case basis at certain substations and is contemplating either rejecting applications, or in some cases, limiting project sizes to reduce power injection into the grid to avoid overloading equipment. This review involves undertaking a thorough technical assessment of all generation applications, including Net Metering applications received for projects located in a constrained area and determining an available generation capacity for the area. While all Net Metering project applications require acceptance from BC Hydro to proceed, BC Hydro may decide to amend the language in RS 1289 to more clearly state that BC Hydro has the ability to reject a project application of any size or complexity if it triggers substantial costs not recoverable by RS 1289 or creates safety and/or risk to BC Hydro's system.

As the number of Net Metering customers increases along with the amount of DG installed under other power procurement offers, we expect to see a greater number of locations in the system that will reach the capacity limit, as described in the

⁸ As March 31, 2017, BC Hydro has approximately 920 Net Metering customers. This is a growth rate of 44 per cent since March 31, 2016.

1 previous paragraph. Adding more generation at these locations will require capital
2 upgrades such as new distribution feeders, upgrading substation equipment, or even
3 building new substation or transmission facilities. The cost of these upgrades must
4 either be borne by BC Hydro ratepayers or the customer who is adding the
5 generation. Where feeder generation capacity is already restricted, customers may
6 be unable to connect generation at their chosen location. Going forward, it may be
7 useful to identify generation capacity restrictions at the feeder level, to provide an
8 early signal to customers so that they do not develop projects that are not
9 economically feasible to interconnect and to prevent BC Hydro from being pressured
10 by Net Metering customers in areas that require costly upgrades to complete those
11 upgrades at the cost of other ratepayer.

12 According to BC Hydro's benchmarking review, nearly all other Canadian utilities
13 include some type of feeder generation capacity limit in their net metering programs
14 to manage the amount of generation connected to each feeder to prevent equipment
15 from being overloaded, to maintain power quality, ensure correct operation of
16 system devices, and to eliminate capital upgrades.

17 For example in Ontario, capacity limits are usually managed by the Local Distribution
18 Company and are set to a percentage of the existing load on a feeder. Also,
19 because Ontario has a net metering program that does not pay for excess
20 generation, customers tend to limit the size of their system to their annual electrical
21 consumption.

22 Based on our benchmarking analysis, BC Hydro is the only utility that pays almost
23 the entire cost to connect generators to our system (we pay all costs associated with
24 connection to our system except for customers who utilize a synchronous generator,
25 take service at a primary potential, or have projects over 50 kW). All other Canadian
26 utilities require the customer to pay the full costs to connect, with the exception of
27 Alberta, which in some circumstances gives the utility the ability to be reimbursed if

the costs are considered to be extraordinary. This is an area we will continue to monitor.

9.1.4 Non-Integrated Areas

BC Hydro performs a thorough technical review of all Net Metering applications received for projects located in our NIA. Since the NIA systems are balancing a small regional load against a variety of generation resources (including diesel, existing or proposed IPP renewable generation and new intermittent renewable energy via Net Metering), it requires a comprehensive and more detailed review of each individual Net Metering application to ensure that BC Hydro continues to provide reliable and cost-effective electricity to its NIA customers. To manage expectations in these constrained areas, BC Hydro has recommended that NIA customers not purchase their generating equipment until their Net Metering application is accepted by BC Hydro as we may be required to reject applications.

9.1.5 Virtual Net Metering

VNM refers to a system that allows bill crediting across multiple customers for a shared net metering project. Essentially VNM allocates credits to each subscriber's electric bill for excess energy produced by their share of the net metering project. Currently the following jurisdictions that have policies and/or incentives that allow VNM in North America are: Nova Scotia, California, Colorado, Connecticut, Delaware, Hawaii, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New York, Vermont, Washington State, Washington D.C. Some of the implications/issues for BC Hydro with VNM is that our current billing process requires a bill to be associated with a single customer premise; the notion of sharing the credits of a project installation would require us to dramatically overhaul our billing process to allow VNM. While we have received several requests to support this type of program, we have responded to these requests by suggesting that one customer "own" the net metering installation and perform the administrative task of sharing any energy offsets between the participating customers.

BC Hydro views VNM as a growing trend that is starting to gain popularity with community groups, in particular island and coastal communities who see the merits of a cooperative type of solar installation, we will also continue to monitor this trend.

9.1.6 Unauthorized Generator Connections

Some BC Hydro customers have installed generation at their residences or businesses without BC Hydro's knowledge or approval. This unauthorized generation may pose a safety hazard to BC Hydro employees and other customers, and can negatively impact power quality and reliability. In one case a solar PV system was installed with inverters that were not approved for use in Canada, which could have resulted in a serious safety issue. To address this issue, BC Hydro may consider revising the language in the Electric Tariff to clarify that customers must seek and receive approval to connect generation under RS 1289 or have a signed interconnection agreement. Our Distributed Generation Interconnection Practices graphic in [Appendix B](#), under the Other Program Type category, outlines the process to be followed by customer generation projects that do not fit into the suite of DG offers.

9.1.7 Net Metering Price

The SOP is currently undergoing a third party review that includes a review of existing pricing and program terms. It is anticipated that given technological advancements (in particular with wind and solar PV) and our changing system needs, prices will be reduced under the SOP. Any changes to the pricing structure under the SOP will need to be reviewed against the pricing structure in the Net Metering tariff to ensure it is aligned. The SOP review is expected to be completed by fall 2017.

9.1.8 Anniversary Date

Typically, BC Hydro sets the customer's anniversary date based on the connection date of their generating system. At that time, we also establish a generation account for each customer. If net energy is negative for that billing period, BC Hydro will credit the net energy amount to the customer's generation account. If net energy is positive, any credit balance in the customer's generation account will be applied to the positive net energy amount for that billing period until the net energy amount is reduced to zero. This practice is repeated, so that after six billing periods (if customer is billed bi-monthly) or at the end of the 12th billing period (if customer is billed monthly), the account is reconciled as prescribed by RS 1289. If any credit balance remains in the generation account following the anniversary date, BC Hydro will pay the customer for that electricity at 9.99 cents per kWh.

Customers with an anniversary date in summer months and as late as early Fall, face a payout of their generation credits as the summer months are when the majority of the credits are earned. This doesn't allow them to apply these credits to the months with higher consumption (fall/winter) and effectively prevents them from applying the generation credits against the higher Step 2 rate. What we are hearing is that customer's value the ability to offset their load (particularly during high consumption months) as opposed to receiving a payout at 9.99 cents per kWh. In the past year, BC Hydro has received eight requests to change the net metering anniversary date to a date that optimizes the customer's load offset. BC Hydro has also received suggestions to allow Net Metering customers to pick their anniversary dates rather than make them dependent on their connection date.

Currently, approximately 10 to 15 per cent of customers are affected by a summer/early fall anniversary date. As the program continues to grow, we will continue to monitor this issue and explore possible options to address.

9.2 Benchmarking Analysis

In this report, we limited the number of jurisdictions to include in our benchmarking analysis to only Canadian utilities located in British Columbia, Ontario, Saskatchewan, Manitoba, Alberta, Quebec, and Nova Scotia as these programs are more comparable to BC Hydro's situation and face similar challenges. Furthermore, net metering programs in the United States are generally not comparable to Canadian programs as they are larger in terms of participation rate often because they are subsidized at both the state and federal level.

Our current benchmarking analysis looked at topics that were particularly relevant to the feedback we received through the survey, webinars and presentations, and in the day-to-day requests. The key findings of our analysis have been incorporated into the emerging trends sections above and have been summarized in [Appendix D](#).

10 Survey Results Summary

In February 2017, BC Hydro sent an invitation to nearly 1,800 stakeholders to participate in a survey. A copy of the survey is included in [Appendix A](#). We received a total of 232 responses, 162 of which were from customers and 40 were from installers, and 30 were from other stakeholders.

The key areas we sought feedback on were barriers, overall satisfaction with the program, and concerns/improvements for the program. The section below summarizes what we heard.

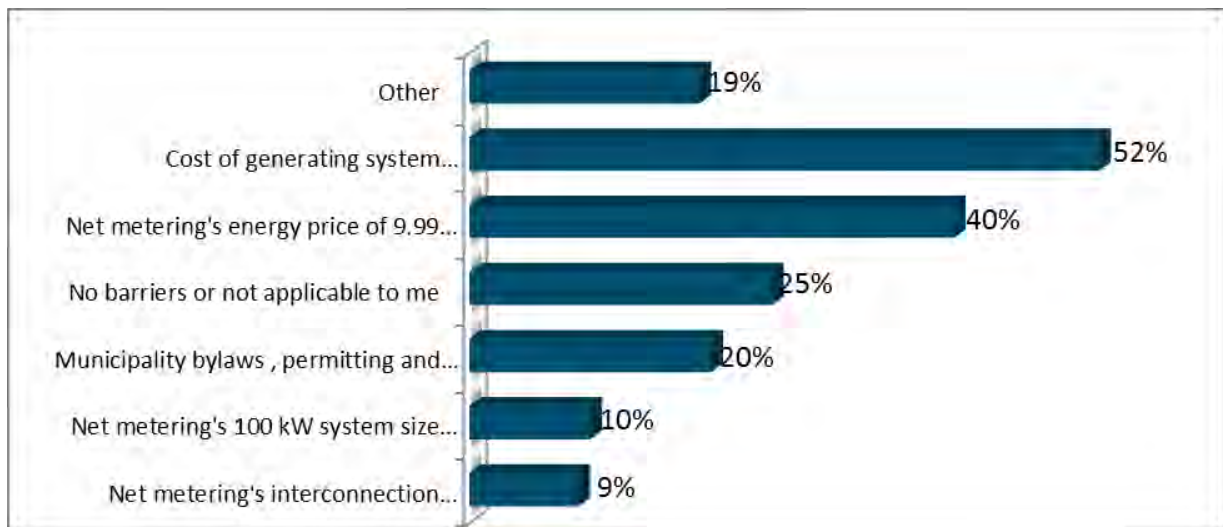
10.1 Survey Feedback

We asked the survey participants to identify any barriers to their ability to connect an electricity generator to our distribution system and receive compensation for their generation. [Figure 3](#) shows that 52 per cent of respondents viewed the cost of generating systems as the biggest barrier, followed by 40 per cent of respondents who viewed that the Energy Price paid by BC Hydro is the biggest barrier as they

considered it too low. Twenty-five per cent of respondents felt that there were no barriers to their participation in the Net Metering program.

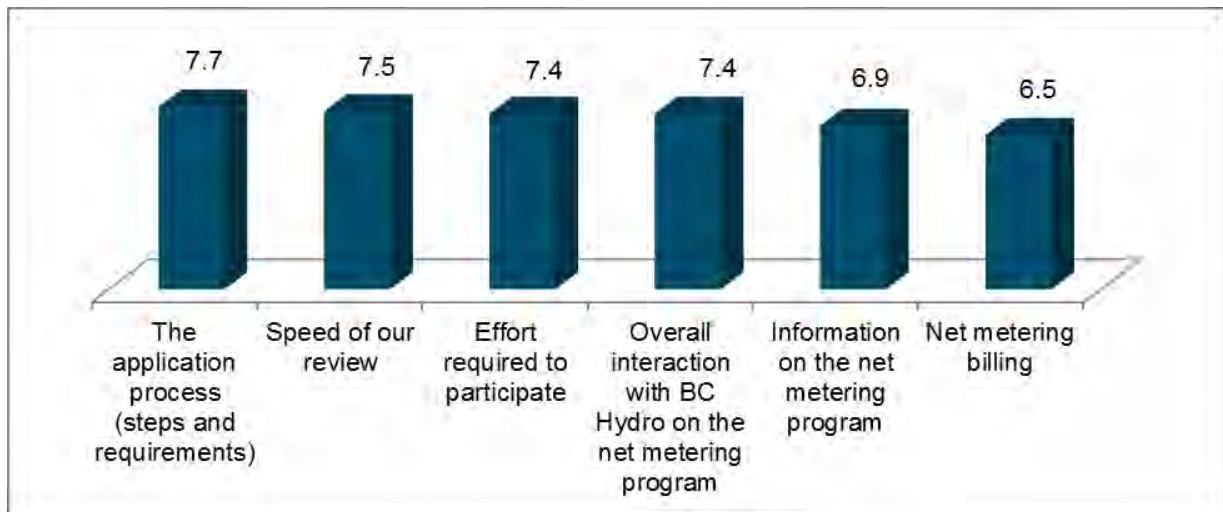
Additionally, only 10 per cent of the respondents commented on the 100 kW system size as a barrier.

Figure 3 Barriers

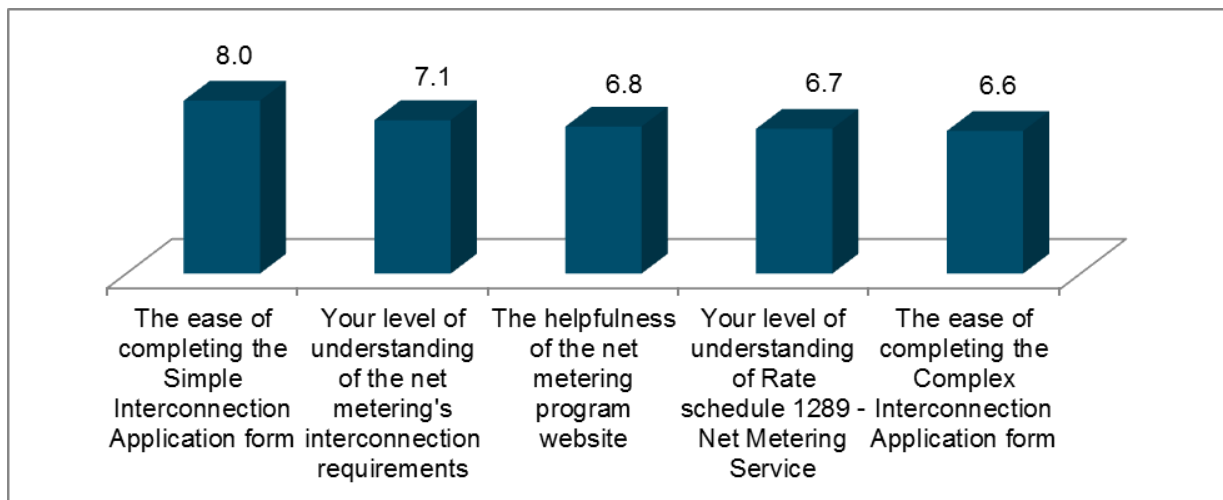


The survey also asked respondents about their experience with the process and the level of information/material available to explain Net Metering. On a scale of 1 to 10 (with 10 being the highest), [Figure 4](#) and [Figure 5](#) illustrate that satisfaction rates are high among customers and installers.

1 **Figure 4 Satisfaction with Experience**



2 **Figure 5 Satisfaction with Information**



3 The final section was an open-ended question and asked respondents what
 4 improvements to the Net Metering program they would like to see. Three main
 5 themes were identified: a) Energy Price is not high enough (32 per cent), b) lack of
 6 incentives (22 per cent) and, c) more promotion/education needed (18 per cent).
 7 It is interesting to note that only a small percentage of respondents commented on
 8 anniversary date, VNM, and project size (i.e., the trends described in section 9).

Based on the survey results BC Hydro considers that the Net Metering program in its current state is meeting the needs of the majority of customers and stakeholders participating in this area of DG development.

11 Distributed Generation Update

The approved 2013 Integrated Resource Plan included a Clean Energy Strategy that directed BC Hydro to broaden opportunities through standing offers for clean energy and promoting clean energy opportunities for First Nations. Based on this direction and on feedback we received from First Nations and communities during the Net Metering engagement and the 2014 SOP Review, we developed the Micro-SOP specifically for First Nations and Communities for projects between 100 kW and 1 MW, complementing the existing DG programs.

Launched in March 2016, the Micro-SOP is a simpler more streamlined process within the SOP. The offer aims to reduce costs to the developer and provide greater certainty around interconnection study costs and associated upgrade costs.

As of March 31, 2017, there were three accepted Micro-SOP applications; including a 300 kW biogas project, a 1 MW hydro project, and a 1 MW solar PV project. We continue to meet with First Nations, communities and groups who are interested in developing potential Micro-SOP projects.

As participation in the program is still ramping up, currently it is not possible to provide an analysis of the results of the program. BC Hydro does not expect to make any further changes to the Micro-SOP with exception of any changes that may result from the SOP pricing review.

The table below compares some of the key features of the three programs currently included in BC Hydro's integrated DG approach.

Program	Net Metering	SOP	Micro-SOP
Launched	2004	2008	2016
Project Size	Up to 100 kW	100 kW to 15 MW	100 kW to 1 MW
Eligibility	Open to BC Hydro customers	Open to clean energy producers and BC Hydro customers (net of load)	Open to First Nations and community projects*, including BC Hydro customers
Eligible meter	Smart Meter	IPP Meter	Smart Meter or IPP meter
Energy Price	Load displacement plus Net Metering Energy Price paid for annual excess	Single price energy price varies at time of delivery	Single energy price for all energy

1 * As defined in the Micro-SOP Rules.

2 This integrated DG approach is intended to offer a program or process for different
3 developers. Increasing the Net Metering project threshold size to 100 kW and new
4 Micro-SOP program remove barriers for residential, municipal, and First Nations
5 communities who have faced challenges under BC Hydro's existing processes. It will
6 help customers and small developers reduce their bills, enhance their
7 self-sufficiency, and provide greater control over their energy use.

8 Questions we have received include how the DG programs interact with one
9 another, how the requirements for each program are different, and how the costs
10 associated with studies and interconnections apply to the various offers.

11 In response to these questions and to the Commission's request for greater clarity
12 on how these programs fit together, BC Hydro developed the graphic "BC Hydro
13 Distributed Generation Interconnection Practices" which has been updated and
14 posted on our website, and can be found in [Appendix B](#) of this report.

15 BC Hydro believes that by removing barriers and streamlining the interconnection
16 processes, coupled with the decreasing cost of DG technologies, BC Hydro will see
17 a modest growth in the Net Metering program participation rate and an increased
18 interest in small-scale DG projects.

12 Program Developments and Future Considerations

12.1 Net Metering Program Developments

The following are key developments with the Net Metering program:

- On July 25, 2014, the Net Metering program received approval to expand its project size from 50 kW up to 100 kW. As of March 31, 2016, we had one project in-service that fell within the 51 to 100 kW range,⁹ with a few more applications under review. However, the number of applicants has been less than what was anticipated as compared to the level of interest in the Net Metering filing in 2014.
- On July 9, 2015, BC Hydro amended RS 1289 to allow Net Metering customers to lease solar and wind equipment. As a result of the amendment, we anticipated an increase in the number Net Metering applications where customers lease equipment, however at this time, we have only one such project in-service.
- Currently, under RS 1289, BC Hydro is able to recover any incremental costs for larger and complex (51 kW to 100 kW, synchronous generators and/or primary service) Net Metering projects. Although all project applications require acceptance from BC Hydro to participate in the Net Metering program, the wording in RS 1289 could more clearly state that BC Hydro has the ability to reasonably reject any application if the project is expected to trigger substantial costs not recoverable by RS 1289 or creates safety and/or risk to BC Hydro.
- Unauthorized generation is a serious issue for BC Hydro as it may pose a safety hazard to BC Hydro employees and other customers and may impact power quality and reliability. BC Hydro may revise the language in the Electric Tariff text to clarify that customers need to have approval to connect generation under RS 1289 or have a signed interconnection agreement with BC Hydro.

⁹ As at March 31, 2017 we had four projects in-service that fall within the 51 to 100 kW range.

1 BC Hydro is working to develop a process to identify and remove unauthorized
2 generation.

- 3 • With the deployment of smart meters, in the last two years, BC Hydro has a
4 small number of customers with a Legacy Meter wanting to participate in Net
5 Metering. While RS 1289 requires a bi-directional meter, we have had
6 customers challenge this requirement claiming that Legacy Meters are also
7 bi-directional. The wording in the RS 1289 metering section could be improved
8 to clarify that only bi-directional Smart Meters are required. This would eliminate
9 any confusion that may arise regarding Legacy Meters.

10 **12.2 Future Considerations**

11 BC Hydro offers the following future next steps and considerations to improve the
12 existing Net Metering program in either the next Rate Design Application review
13 expected in F2018 and/or in a separate Net Metering filing in the future as required:

- 14 1. Leasing – while this is still a new opportunity in BC, it is too early to determine if
15 it will contribute to a significant growth in Net Metering customers. BC Hydro will
16 continue to monitor the Net Metering participation rates.
- 17 2. Recovery of Fixed Infrastructure costs – we will continue to monitor the growth
18 rate of Net Metering participation and the costs being paid by Net Metering
19 customers to determine whether changes to the RS 1289 are needed for the
20 recovery of fixed infrastructure costs from BC Hydro's Net Metering customers.
- 21 3. System constraints – BC Hydro will consider modifying tariff RS 1289 in the
22 future to clarify our ability to reject projects that trigger significant costs to
23 BC Hydro or could be a safety or risk to BC Hydro's operating systems.
- 24 4. Non-Integrated Areas – we have already adopted a practice identifying those
25 areas that are constrained and recommending that customers not purchase any
26 generation equipment before their Net Metering application is accepted by

-
- 1 BC Hydro. We will consider modifying RS 1289 in the future to clarify
2 BC Hydro's ability to reject applications in the NIA.
- 3 5. Virtual Net Metering – given that this is a relatively new trend, and we've only
4 received a few inquiries, BC Hydro will continue to monitor the level of interest
5 and policy development in other jurisdictions.
- 6 6. Unauthorized connections – consider modifying the Electric Tariff to clarify the
7 treatment of unauthorized generator connections by stating that customers
8 need to have approval to connect generation under RS 1289 or have a signed
9 interconnection agreement with BC Hydro.
- 10 7. Net Metering Energy Price – based on the results of the SOP pricing review,
11 the Net Metering Energy Price will be reviewed to ensure alignment with
12 changing technological advancements and our changing system needs.
- 13 8. Anniversary date – given the low interest at this time, we will monitor this issue
14 and explore possible options to address.
- 15 9. Smart Meter – consider modifying RS 1289, eligibility and metering section in
16 the future to clarify that the Net Metering program is available only to customers
17 with acceptable installed smart metering equipment.

18 **13 Conclusion**

19 As outlined in this report, BC Hydro's Net Metering customers and stakeholders
20 have indicated that they are satisfied with the program and it meets their needs.
21 BC Hydro has identified several potential future actions and considerations to
22 improve the program and address emerging trends but we are not currently
23 considering any immediate changes to the Net Metering program and rate.
24 BC Hydro, however, plans to continue to monitor the program and will assess any
25 future changes to the program and rate through the next Rate Design Application
26 review expected in F2018, and/or in a separate RS 1289 filing in the future as
27 required.


**Rate Schedule (RS) 1289 for Net Metering Service
Compliance with Commission Order No. G-104-14
Directive 6**

Net Metering Evaluation Report No. 4

Appendix A

Net Metering Survey

YOUR POWER POLL



YOUR PROGRESS

As a part of our efforts to monitor our progress and improve on the net metering program as a regulated rate, [Rate Schedule 1289 – Net Metering Service](#), BC Hydro will be preparing the next Net Metering Evaluation Report for submission to the BC Utilities Commission (BCUC) by April 30, 2017.

So we'd like to ask for your feedback through this survey to help us understand your experience with the net metering program and identify areas for improvements. Your responses will also be summarized and included in the evaluation report to the BCUC and will not be identifiable to you.

This survey should take you 10-20 minutes to complete, depending on how much you want to share. Thanks for taking the time to help influence and shape the net metering program.

The net metering program is BC Hydro's fastest growing customer generation program with over 900 customers generating their power and 200 more on the way. We are proud of the net metering program and of our customers who demonstrate leadership by installing clean or renewable energy resources at their homes or businesses to offset their electricity use.

BC Hydro is collecting your opinion for the purposes of understanding your experience with the net metering program and identifying areas for improvements, and to fulfill its mandate under the Hydro and Power Authority Act and the Utilities Commission Act. If you have any questions regarding the information collected in this survey, please contact Marc Beauchemin, Net Metering Program Administrator, at 604-623-4096 or at net_metering@bchydro.com.

Next

Who you are

1. We need to know a little on who you are so we can better understand your responses. Select all that apply. I'm:

- ☐ a net metering applicant (I have applied but I'm not on the net metering billing yet)
☐ a net metering customer (my system is operating and I'm on the net metering billing)
☐ an installer/contractor for net metering customers
☐ other, please specify

2. What motivations are there to become a net metering customer?

Your barriers

3. We'd like to know of any barriers to your ability to connect an electricity generator to our distribution system and to receive compensation for your generation. Please select from the list below.

- ☐ Cost of generating system (equipment and installation)
☐ Municipality bylaws , permitting and costs
☐ Net metering's 100 kW system size limit
☐ Net metering's interconnection requirements
☐ Net metering's energy price of 9.99 cents per kWh
☐ No barriers or not applicable to me
☐ Other, please specify

Your experience

4. Using a scale from 1 to 10 where 1 is not at all satisfied and 10 is very satisfied, how would you rate your satisfaction with the following aspects of net metering?

- Information on the net metering program
- The application process (steps and requirements)
- Speed of our review
- Effort required to participate
- Net metering billing
- Overall interaction with BC Hydro on the net metering program

Use the space below if you'd like to explain any of your ratings in more details

Our Information

5. Using a scale from 1 to 10 where 1 is not at all satisfied and 10 is very satisfied, how would you rate your satisfaction with the following...

- Your level of understanding of Rate schedule 1289 – Net Metering Service
- The ease of completing the Simple Interconnection Application form
- The ease of completing the Complex Interconnection Application form
- Your level of understanding of the net metering's interconnection requirements
- The helpfulness of the net metering program website

Use the space below if you'd like to explain any of your ratings in more details

6. What information are you interested in reading on our website? Please select all that apply.

- ☐ Net metering program changes and updates
- ☐ Success stories
- ☐ Statistics e.g., number of participants, generator type and size, location
- ☐ Upcoming net metering program filings with the BCUC
- ☐ Other, please specify

Moving Forward

7. What are the aspects of the net metering program that you like?

8. What improvements to the net metering program would you like to see?

9. What type of customer are you? Please select one response only.

- ☐ Residential
- ☐ Commercial
- ☐ Municipal government
- ☐ First Nation or community group
- ☐ Schools
- ☐ Hospitals

**Rate Schedule (RS) 1289 for Net Metering Service
Compliance with Commission Order No. G-104-14
Directive 6**

Net Metering Evaluation Report No. 4

Appendix B

**BC Hydro Distributed Generation
Interconnection Practices**


BC Hydro Distributed Generation Interconnection Practices (distribution-connected projects only)**

	Program Type	Interconnections					
		Size	Required Studies	Study Costs	Agreements	Customer Upgrades	Interconnection and System Upgrades
BC Hydro Offered Programs – Clean or Renewable Generation	Net Metering (RS 1289) <ul style="list-style-type: none">open to BC Hydro customersload displacement plus NM energy price paid for annual excesstariffed process (Rate Schedule 1289)	0 kW to 50 kW	Simple Net Metering: None Required ¹ Complex Net Metering: Technical screen	\$0 ²	No Interconnection Agreement (terms and conditions are in RS 1289)	Customers are required to upgrade their service at their cost.	System upgrades are paid by BC Hydro
		Over 50 kW to 100 kW	Technical screen ³	Incremental costs ⁴			System upgrades are paid by the Customer ⁵
	Micro-SOP <ul style="list-style-type: none">for First Nations and community projectssingle energy price for all energysimplified Electricity Purchase Agreement	Over 100 kW to 1 MW	Basic Distribution Information Request.	First two requests per year – free. Additional requests – \$200	Simplified Interconnection Agreement	Customers are required to upgrade their service/build their interconnection facilities at their cost.	<ul style="list-style-type: none">Customers will provide a deposit of \$7,500 with their Distribution Micro-Generator Project Design Application, which will be refunded when we receive the security (Letter of Credit) for the estimated network upgrade costsCustomers provide security (Letter of Credit) in the amount of the estimated network upgrades costs.BCH covers \$150,000 per MW of installed capacity.Reduction of security is governed by the applicable Interconnection Agreement. See also Interconnection Security Methodology posted at https://www.bchydro.com/assets/efiling/energy-electrical-connections/generator-interconnections.htmlNetwork upgrades costs and construction schedules are project-specific. Estimates of costs and schedules will be provided in the design stage during the interconnection process.
			Screening Study	\$5,000 flat fee			
			If the project passes the screens in the Screening Study, then the project proceeds to the next step: the Distribution micro-generator project design stage application form. If the project fails the screens in the Screening Study, then the project proceeds through the standard generator interconnection process. ⁶	\$7,500 deposit. Deposit is refunded when Letter of Credit (LOC) is received for the network upgrades			
	SOP <ul style="list-style-type: none">open to clean energy producers and BC Hydro customers (net of load)energy price varies at time of deliveryElectricity Purchase Agreement	Over 1 MW to 15 MW	Basic Distribution Information Request	First two requests per year – free. Additional requests – \$200	Standard Interconnection Agreement	Customers are required to upgrade their service/build their interconnection facilities at their cost.	
			Screening Study (optional)	\$5,000 flat fee			
			System Impact Study	\$20,000 - \$80,000 ⁷			
			Facilities Study	\$40,000 - \$75,000 ⁷			
	Other	Other Customer Generation Projects <ul style="list-style-type: none">for projects that do not fit into programs aboveopen to research, pilot/educational projects, projects generating intermittent energy as a result of existing industrial processno payment for energy	Up to 100 kW	Technical Screen	Same as Net Metering incremental costs ⁸	Simplified Interconnection Agreement	Customers are required to upgrade their service at their cost.
Over 100 kW to 1 MW			Same as Micro-SOP	Same as Micro-SOP	Simplified Interconnection Agreement	Customers are required to upgrade their service/build their interconnection facilities at their cost.	
Over 1 MW to 15 MW			Same as SOP	Same as SOP	Standard Interconnection Agreement		

* This table is intended as an overview of current practices only. Project specific requirements may vary.

** Interconnection requests for transmission-connected projects follow the Standard Generator Interconnection Procedures found in Appendix M-2 of BC Hydro's Open Access Transmission Tariff (OATT). For more information, see <https://www.bchydro.com/assets/efiling/energy-electrical-connections/transmission-generator-interconnections.html>

1. Basic technical screen – no detailed studies. For areas of high penetration, BC Hydro may reject project.

2. For synchronous generators and customers connected at a primary potential and customers with generating facilities with a nameplate rating greater than 50 kW, customers are responsible for incremental costs.

3. Technical Screen scope for DG >50 kW includes a review of power flows and BC Hydro equipment ratings, a comparison of generator size to minimum feeder section load, a check of total generation on the feeder, and a short circuit study and protection review.

4. Typical range of interconnection review costs for Net Metering applications up to 50 kW, other than at primary potential or with synchronous generators.

Project Type	Technical Review
Simple Projects	Minimal
Complex Projects	\$500-\$1,000

5. Costs are dependent on location, generator size, feeder available capacity, condition/limitations of the substation. Note: There are no pioneer rights.

6. Projects that fail any of the screens will be required to complete the System Impact Study and/or Facilities Study.

7. Costs may be less or greater depending on project specifics.

BC Hydro Distributed Generation Interconnection Practices

Version 1.01 – August 2016

Link to document:

<https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/independent-power-producers-calls-for-power/standing-offer/distributed-on-interconnection-practices-august-2016.pdf>.

Rate Schedule (RS) 1289 for Net Metering Service Compliance with Commission Order No. G-104-14 Directive 6

Application to Amend Rate Schedule (RS) 1289
for Net Metering Service

**Rate Schedule (RS) 1289 for Net Metering Service
Compliance with Commission Order No. G-104-14
Directive 6**

Net Metering Evaluation Report No. 4

Appendix C

Net Metering In North America

Table C-1 Net Metering Programs (Canada)

Implementing Sector	Province
Alberta Energy	Alberta
BC Hydro	British Columbia
Fortis BC	British Columbia
Manitoba Hydro	Manitoba
NB Power	New Brunswick
Newfoundland and Labrador Hydro (Under Development)	Newfoundland and Labrador
Northwest Territories Power Corporation	Northwest Territories
Nova Scotia Power	Nova Scotia
Hydro One	Ontario
Alectra Utilities (Powerstream)	Ontario
Toronto Hydro	Ontario
Waterloo North (Under Development)	Ontario
Maritime Electric	Prince Edward Island
Hydro Quebec	Quebec
SaskPower	Saskatchewan
Yukon Energy Corporation (Under Development)	Yukon Territories

Table C-2 Net Metering Programs (U.S.)

Implementing Sector	State/Territory
State	AK
State	AR
State	AS
Salt River Project	AZ
State	AZ
Los Angeles Department of Water and Power	CA
State	CA
State	CO
State	CT
State	DC
State	DE
State	FL
State	GA
State	GU
State	HI

Implementing Sector	State/Territory
State	IA
Idaho Power	ID
Rocky Mountain Power	ID
Avista Utilities	ID
State	IL
State	IN
State	KS
State	KY
State	LA
City of New Orleans	LA
State	MA
State	MD
State	ME
State	MI
State	MN
State	MO
State	MP
State	MS
Montana Electric Cooperatives	MT
State	MT
Blue Ridge EMC	NC
State	NC
State	ND
State	NE
State	NH
State	NJ
Farmington Electric Utility System	NM
State	NM
Valley Electric Association	NV
State	NV
PSEG Long Island	NY
State	NY
State	OH
State	OK
Ashland Electric	OR
EWEB	OR

Implementing Sector	State/Territory
State	OR
State	PA
State	PR
State	PW
State	RI
State	SC
Austin Energy	TX
Green Mountain Energy Renewable Rewards Program	TX
City of Brenham	TX
El Paso Electric	TX
San Antonio City Public Service (CPS Energy)	TX
City of St. George	UT
Murray City Power	UT
Washington City Power	UT
State	UT
State	VA
City of Danville	VA
State	VI
State	VT
Grays Harbor PUD	WA
State	WA
State	WI
State	WV
State	WY

**Rate Schedule (RS) 1289 for Net Metering Service
Compliance with Commission Order No. G-104-14
Directive 6**

Net Metering Evaluation Report No. 4

Appendix D

Benchmarking Analysis

Table D-1 Benchmarking Analysis – March 2017

Topic	Question	Jurisdictional Review
Project size	What is the maximum size allowable under each Net Metering program?	BC: FortisBC – 50kW, BC Hydro - 100 kW AB: 150 kW SK: 100 kW MB: 200 kW ON: 500 kW (currently under review) QC: Generating capacity must not exceed the estimated capacity required to meet all or part of the customer's power needs, or 50 kW (whichever is less) NS: 100 kW (was previously 1,000 kW)
Leasing	Which jurisdictions allow leasing of equipment?	BC: Yes AB: Yes SK: No MB: Information not available ON: No (currently under review) QC: No NS: Yes
System constraints	What are the system capacity constraints in each Jurisdiction?	BC: BC Hydro is looking to modify RS 1289 to be able to reject applications in constrained areas (including NIAs) AB: Service size and transformer SK: Service size and transformer MB: Systems that are funded are limited by the consumption, and service size and transformer ON: Constraints are per LDC, typically 15 per cent of daily load. QC: For a single-phase meter - 20 kWh, for a three-phase meter - 50 kWh, for Self-Generation without compensation, more than 50 kW is possible. NS: The system must be sized to not exceed the annual energy consumption of the property.

Topic	Question	Jurisdictional Review
Cost Recovery to connect customer	Who is responsible for paying for costs to connect and under what conditions?	<p>BC: BC Hydro covers the cost to connect.</p> <p>AB: The owner of the electric distribution system is responsible for the costs of connection to the system. If, in the opinion of the owner of the electric distribution system, the costs of connecting a particular micro-generation generating unit are extraordinary, it may require that the customer to directly reimburse it for the extraordinary portion of the costs.</p> <p>SK: The Generator owner is responsible for the total cost of the interconnection facilities required to integrate the generator facilities into the SaskPower distribution system.</p> <p>MB: The Generator Owner is obligated to pay for the actual cost of constructing all of the facilities as well as any other costs associated with accommodating the interconnection</p> <p>ON: A distributor may bill a customer for incremental metering and other costs incurred in order to connect the eligible generator's generation facilities to its distribution system in accordance with the Board's Distribution System Code</p> <p>QC: Hydro-Quebec is responsible for the cost of connection.</p> <p>NS: The customer is responsible for all costs incurred by Nova Scotia Power to deliver the net metering service that are beyond standard connection costs to regular customers.</p>
VNM	Which jurisdictions have VNM?	<p>BC: No</p> <p>AB: No</p> <p>SK: No</p> <p>MB: No</p> <p>ON: No (currently under review)</p> <p>QC: No</p> <p>NS: Yes (The Nova Scotia Department of Energy will be piloting a community solar program shortly)</p>

Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

Appendix G

Jurisdictional Review

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1 Jurisdictional Review

To inform the Application, BC Hydro conducted a jurisdictional review of the Net Metering Programs at the following eight utilities (**Jurisdictional Review**). Where information was not publicly available or was unclear, BC Hydro conducted interviews with utility representatives to obtain and verify the required details.

- EPCOR
- FortisBC Inc.
- Hydro One
- Hydro Quebec
- Newfoundland Power
- Nova Scotia Power
- SaskPower
- Xcel Energy

[Table G-1](#) below provides the findings of the Jurisdictional Review.

Table G-1 Jurisdictional Review Findings

Utility	Generating Facility Requirements	Anniversary Date	Period Between Surplus Energy Payments	Energy Price for Surplus Energy Payments
EPCOR	Annual Energy Output must match Annual Load	N/A	Monthly	Retail rate (updated monthly)
FortisBC Inc.	Customers must only intend to partially or fully offset their own load on an annual basis	March 31	12 months	RS 3808 Tranche 1 rate

Utility	Generating Facility Requirements	Anniversary Date	Period Between Surplus Energy Payments	Energy Price for Surplus Energy Payments
Hydro One	No requirement	Based on the month that the Generation Account Balance accumulates	12 months	\$0 (No Surplus Energy Payment)
Hydro Quebec	Annual Energy Output must match Annual Load	Customer choice and optimized default date	24 months	\$0 (No Surplus Energy Payment)
Newfoundland Power	Annual Energy Output up to 110% of Annual Load	Based on when the customer joins the Net Metering program	12 months	Retail rate which is based on current gas market prices
Nova Scotia Power	Annual Energy Output up to 110% of Annual Load	Customer choice	12 months	Retail rate
SaskPower	No requirement	Customer choice and optimized default date	36 months	\$0 (No Surplus Energy Payment)
Xcel Energy	Annual Energy Output up to 120% of Annual Load	Based on when the customer joins the Net Metering program	Indefinite or every 12 months (customer's choice)	Utility's average hourly incremental cost

Application to Amend Rate Schedule (RS) 1289 for Net Metering Service

Appendix H

Glossary of Terms and Abbreviations

Glossary of Terms and Abbreviations

A

2018 Amendment Application	The application to amend Rate Schedule 1289 for Net Metering Service submitted to the BCUC on April 20, 2018.
Anniversary Date	The date when a customer's Generation Account Balance is cleared through a Surplus Energy Payment from BC Hydro for any remaining credits. Currently, the Anniversary Date is the date that a customer joined the Net Metering Program. BC Hydro is proposing amendments with regards to the Anniversary Date in the Application. For further information, refer to section 3 of the Application.
Annual Energy Output	The amount of electricity generated by a customer's Generating Facility in a given year.
Annual Load	The amount of electricity consumed by a customer in a given year.
Application	This application to amend Rate Schedule 1289 for Net Metering Service, submitted to the BCUC on April 29, 2019.

B

BCUC	British Columbia Utilities Commission
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C

Capacity Limit	The maximum nameplate capacity of a Generating Facility.
Comprehensive Review	Phase One of the Comprehensive Review of BC Hydro, which concluded February 14, 2019.

Customer Generation Account	An account that accumulates credits as a Net Metering customer generates more energy than they consume over the course of a billing period.
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E

Energy Price	The unit price received by a customer for any remaining Generation Credit Balance, at the time that they receive a Surplus Energy Payment from BC Hydro. The current Energy Price is \$91.99 cents per KWh. In the Application, BC Hydro is proposing an amendment with regards to the Energy Price. For further information, refer to section 4 of the Application.
Engagement Survey	The online survey made available by BC Hydro to all Rate Schedule 1289 customers and other interested parties from March 18, 2019 to April 9, 2019.
Engagement Survey Results	The results from the Engagement Survey, as presented in Appendix D to the Application.
EPA	Electricity Purchase Agreement
Evaluation Report	Net Metering Evaluation Report No. 4, originally submitted to the BCUC on April 26, 2017 and provided as Appendix F to the Application

G

Generating Facility	The energy generation facility installed by the customer.
Generation Account Balance	The balance of credits in a Customer's Generation Account that is available to be applied towards future consumption.

I

IPP	Independent Power Producer
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J

Jurisdictional Review	BC Hydro's review of Net Metering programs at eight other utilities (EPCOR, FortisBC Inc., Hydro One, Hydro Quebec, Newfoundland Power, Nova Scotia Power, SaskPower, Xcel Energy), as provided as Appendix G to the Application.
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M

Marginal Cost Pricing	An approach where customers could buy and sell electricity at its marginal cost. The marginal cost is the incremental cost that must be incurred to meet an incremental demand. A separate fixed system access charge would be required to recover fixed costs associated with a customer's electricity service.
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N

Net Energy	The incremental amount of electricity a customer requires from BC Hydro at a point in time, in addition to the amount supplied by their Generating Facility
Net Energy Purchased	The amount of electricity a customer purchases from BC Hydro in a billing period, after applying their Generation Credit Balance.
Non-Integrated Areas	Areas that are not connected to BC Hydro's integrated electricity system and are served by localized generation resources.
Net Metering Service	Net metering service is designed for residential and commercial customers who wish to connect a small electricity generating unit to the BC Hydro distribution system. When a customer generates more electricity than they consume, they receive a credit which is then applied against future consumption.

O

Objectives	BC Hydro's objectives with regards to the Net Metering Program as set out in section 1.1 of the Application.
Oversized Generating Facility	A Generating Facility that is sized to have an Annual Energy Output that exceeds the customer's Annual Load.

P

Passive House	A building standard that has minimum requirements with regards to space heat demand, pressurization test results and total primary energy demand. For further information, refer to: https://www.passivehousecanada.com/about-passive-house/ .
Program	The Net Metering Program offered by BC Hydro through Rate Schedule 1289

R

Rate Schedule	A schedule that sets out BC Hydro's approved rates for service.
RS 1289	Rate Schedule 1289 for Net Metering Service

S

SOP	Standing Offer Program
Surplus Energy Payment	A payment from BC Hydro to a Net Metering customer for any remaining Generation Credit Balance in the Customer's Generation Account at the Anniversary Date, at the Energy Price.

V

Virtual Net Metering	A system that allows bill crediting across multiple customers for a shared net metering project by allocating credits to each subscriber's electric bill for excess energy produced by their share of the project.
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