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February 13, 2020

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

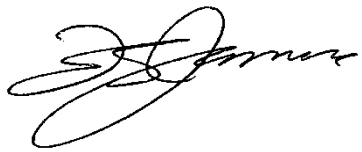
Dear Mr. Wruck:

RE: Project No. 1599004
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
Responses to BCUC and Interveners Information Request No. 3

BC Hydro writes in compliance with BCUC Order No. G-293-19 to provide as Exhibit B-15 its responses to BCUC and Interveners Information Request No. 3 on BC Hydro's Rebuttal Evidence.

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)

27.0 Topic: New Net Metering Customers

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A1, Figure 1: Number of Customers in the Program (F2016 to F2020 To-date), pp. 2-3

On April 20, 2018, BC Hydro applied to the Commission for approval to amend the Net Metering Rate Schedule (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, effective April 20, 2018.

On June 1, 2018, the Commission issued Order G-100-18 approving the proposed amendments on an interim basis, until such time as the BCUC rules on the next BC Hydro Net Metering application or orders otherwise. The Order provides in part:

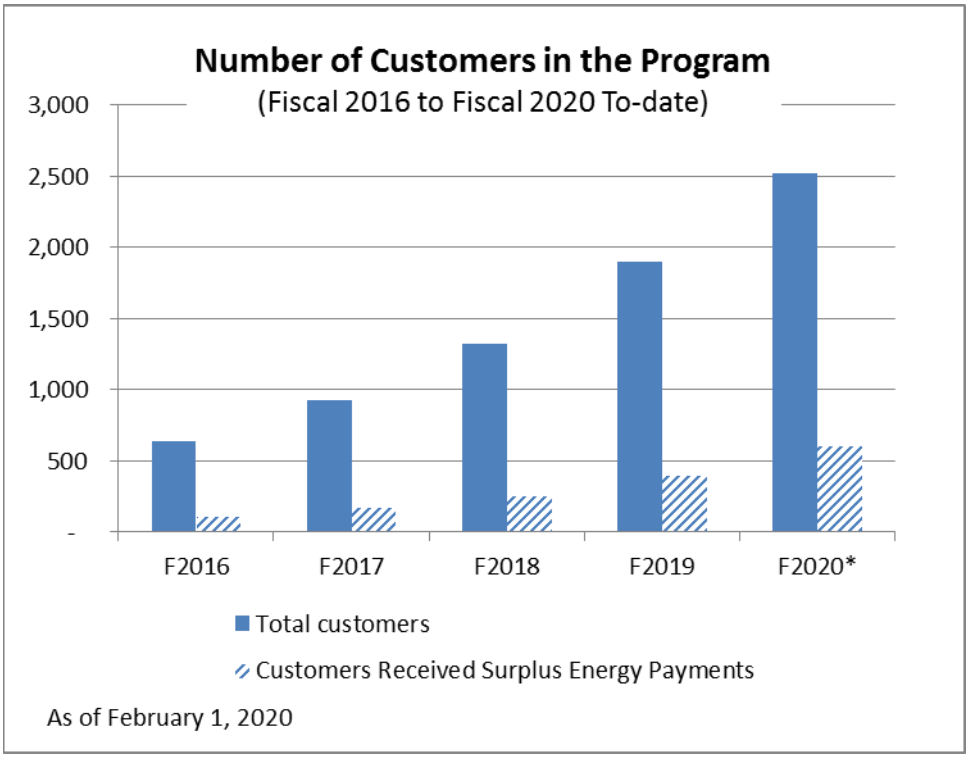
> "2. BC Hydro is to defer the review of all Net Metering applications that are proposing a generating facility sized to generate an estimated annual energy output that is greater than their estimated annual load until the BCUC rules on its next Net Metering application or orders otherwise. All other Net Metering applications received from prospective net metering customers are to be reviewed in accordance with the interim tariff."

In the Rebuttal Evidence, BC Hydro says that 582 customers joined the Net Metering Program from April 1 to December 31, 2019 (i.e., F2020 to-date). BC Hydro states, "while there are still three months remaining in fiscal 2020, the number of customers that have joined the Program in this fiscal year has already exceeded the totals from each of the previous two fiscal years." BC Hydro concludes, "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program."

3.27.1 Please provide a graph and table similar to Figure 1 showing the number of Net Metering customers who produced annual net surplus generation, by year from F2016 to F2020 (to-date).

RESPONSE:

The graph and table below show the number of customers who received Surplus Energy Payments in each fiscal year, from fiscal 2016 to fiscal 2020 (as of February 1, 2020), as well as the median Surplus Energy Payment for each fiscal year.



Fiscal Year	Number of Customers who Received a Surplus Energy Payment	Median Surplus Energy Payment ($)
2016	**104**	**104.85**
2017	**167**	**125.77**
2018	**249**	**139.96**
2019	**400**	**129.42**
2020 (as of February 1, 2020)	**602**	**127.27**

27.0 Topic: New Net Metering Customers

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A1, Figure 1: Number of Customers in the Program (F2016 to F2020 To-date), pp. 2-3

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In the Rebuttal Evidence, BC Hydro says that 582 customers joined the Net Metering Program from April 1 to December 31, 2019 (i.e., F2020 to-date). BC Hydro states, "while there are still three months remaining in fiscal 2020, the number of customers that have joined the Program in this fiscal year has already exceeded the totals from each of the previous two fiscal years." BC Hydro concludes, "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program."

3.27.2 How many Net Metering applications proposing a generating facility sized to generate an estimated annual energy output that is greater than their estimated annual load has BC Hydro approved since April 20, 2018?

RESPONSE:

In accordance with the interim amendments approved by BCUC Order No. G-100-18, BC Hydro has not accepted any applications since April 20, 2018 from customers proposing a Generating Facility with an estimated Annual Energy Output that is greater than their estimated Annual Load.

27.0 Topic: New Net Metering Customers

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A1, Figure 1: Number of Customers in the Program (F2016 to F2020 To-date), pp. 2-3

On April 20, 2018, BC Hydro applied to the Commission for approval to amend the Net Metering Rate Schedule (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, effective April 20, 2018.

On June 1, 2018, the Commission issued Order G-100-18 approving the proposed amendments on an interim basis, until such time as the BCUC rules on the next BC Hydro Net Metering application or orders otherwise. The Order provides in part:

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In the Rebuttal Evidence, BC Hydro says that 582 customers joined the Net Metering Program from April 1 to December 31, 2019 (i.e., F2020 to-date). BC Hydro states, "while there are still three months remaining in fiscal 2020, the number of customers that have joined the Program in this fiscal year has already exceeded the totals from each of the previous two fiscal years." BC Hydro concludes, "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program."

3.27.3 How many Net Metering applications has BC Hydro deferred under section 2 of Order G-100-18?

RESPONSE:

Since April 20, 2018, BC Hydro has deferred the review of 24 applications in accordance with BCUC Order No. G-100-18. This includes one application for an expansion of an existing Generating Facility.

If a customer proposed a Generating Facility with an estimated Annual Energy Output that was greater than the estimated Annual Load, BC Hydro provided that customer with two options:

1. **Defer the review of their application until the BCUC's decision on the Application; or**
2. **Re-submit their application with a Generating Facility sized so that its estimated Annual Energy Output will not exceed the estimated Annual Load.**

28.0 Topic: Net Metering Generation and Emergency Power at Customer Site

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A2, pp. 3-5

In Q2 and A2, BC Hydro says "For the following three reasons, BC Hydro does not believe that RS 1289 should consider the supply of emergency power either within a customer's site or to other customers on the BC Hydro distribution feeder."

3.28.1 Would BC Hydro agree that a Net Metering customer can safely and properly configure his or her generation facility (including inverter and switches) to provide emergency power to the customer when the grid fails?

RESPONSE:

It is possible for a customer to design, install, and operate a generating facility in accordance with the Electrical Safety Regulation and the BC Electrical Code, to safely provide emergency power to their loads when grid power is not available. The system would need to be designed so that it would be able to maintain adequate voltage and frequency to the customer while disconnected from the grid.

29.0 Topic: Delivery of Net Metering Excess Energy

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A3, pp. 5-6

In response to a quoted assertion by NMRG, BC Hydro states:

> "Excess energy from a customer in the Program can be delivered to the neighbouring customer, to other customers on a distribution feeder or to the substation or transmission system, depending on the amount and location of load and generation on the feeder."

3.29.1 Does BC Hydro disagree with NMRG's assertion that "In general, that means that neighbours of Net Metering customers are the most likely consumers of any excess generation," bearing in mind the underline qualifiers? If so, why?

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 1.21.3 where we explain that BC Hydro's system is managed as a whole and that energy received from a customer is not attributed to a particular use.

From a technical perspective, excess energy generated by Net Metering customers may be used by neighbouring customers; however, as described in BC Hydro's response to NMRG IR 1.5.2, this is not true in all cases.

In BC Hydro's view, the statement "[e]nergy from Net Metering excess production will be consumed by customers who are closest in physical proximity to them on BC Hydro's system"[1] is an over-simplification of power flows on the BC Hydro distribution system. BC Hydro's response to NMRG IR 2.22.1 shows simplified cases where Net Metering excess energy is not all used by neighbouring customers.

[1] **Exhibit C23-8, page 23.**

29.0 Topic: Delivery of Net Metering Excess Energy

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A3, pp. 5-6

In response to a quoted assertion by NMRG, BC Hydro states:

> "Excess energy from a customer in the Program can be delivered to the neighbouring customer, to other customers on a distribution feeder or to the substation or transmission system, depending on the amount and location of load and generation on the feeder."

3.29.2 Would BC Hydro agree that its postage stamp rate argument is not dependent on where Net Metering excess energy is delivered after it enters the grid?

RESPONSE:

BC Hydro agrees that Rate Schedule 1289, a postage stamp rate, is not dependent on where excess electricity generated by customers in the Program is generated or delivered to BC Hydro.

Please refer to BC Hydro's response to BCSEA IR 1.21.3 where we explain that BC Hydro's system is managed as a whole and that energy received from a customer is not attributed to a particular use.

30.0 Topic: System Benefits of Generation Near Load

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A3, pp. 5-6

"There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro."

3.30.1 At what level of installed capacity and volume of excess energy from Net Meting would BC Hydro realize material system benefits?

RESPONSE:

BC Hydro has not identified a specific level or point in time where material system benefits could be realized. As discussed in BC Hydro's response to BCUC IR 1.18.4, while the Program has grown in recent years, it is still relatively small. BC Hydro intends to review its assumptions with regards to the growth and inclusion of Net Metering in resource planning in its next Integrated Resource Plan.

30.0 Topic: System Benefits of Generation Near Load

Reference: Exhibit B-12, BC Hydro Rebuttal Evidence, Q&A3, pp. 5-6

"There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro."

3.30.2 Would BC Hydro agree that the potential system benefits of Net Metering generation being located near load are a rationale to allow new intentional annual net excess generation at a value-based Energy Price?

RESPONSE:

Please refer to BC Hydro's response to BCUC IR 1.10.2 for the reasons why BC Hydro believes that excess generation from customers in the Program should be based on the market value.

As discussed in section 7.3 of the Application, over time, as participation in the Program increases, BC Hydro may be able to recognize certain additional benefits from the Program.

BC Hydro will consider potential amendments to further improve cost recovery from Program participants and to reflect potential benefits from the Program, as necessary, in future applications.

1.0 Reference: GENERAL
Exhibit B-12, pp. 2, 3; Order G-100-18; Exhibit B-1, Appendix C, Appendix B, p. 1
Program Growth to Date

BC Hydro states on page 2 of its Rebuttal Evidence that:

> As of April 30, 2019 (the date the Application was filed with the BCUC), the total number of participants in the Program was 1,951. As of December 31, 2019, the total number of participants in the Program was 2,480. In other words, the number of participants in the Program has increased by 27 per cent over the approximately eight months since the Application was filed.

BC Hydro further states on page 3 that "the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program."

By Order G-100-18 dated June 1, 2018, the BCUC approved tariff amendments proposed in Appendix B of the Application to Amend Net Metering Service under Rate Schedule 1289 dated April 20, 2018 on an interim basis effective April 20, 2018, until such time as the BCUC rules on the next BC Hydro Net Metering application or orders otherwise.

Appendix B of the Application to Amend Net Metering Service under Rate Schedule 1289 dated April 20, 2018 includes the following regarding availability of the program:

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.

3.1.1 Please confirm, or otherwise explain, that the new participants enrolled into the Net Metering Program between April 30, 2019 and December 31, 2019 are evaluated based on the tariff approved by order G-100-18, which includes the criteria that the customer has an Annual Load that is equal to or exceeds the Generating Facility's Annual Energy Output.

RESPONSE:

Confirmed.

34.0 Exhibit B-12, pages 3-4

Q2. BCCSC states that "Net Metering generators have the ability to incorporate clean emergency back-up power when the grid fails"[5] and that "the Panel must consider the ability for projects within Net Metering RS1289 to supply secure emergency power".[6] What is your response?

A2. For the following three reasons, BC Hydro does not believe that RS 1289 should consider the supply of emergency power either within a customer's site or to other customers on the BC Hydro distribution feeder.

- First, customers can connect back-up generation with clean energy sources via a transfer switch or by using an inverter with a stand-alone output that is not interconnected with the BC Hydro system.[7] However, in these cases, the back-up generation is for the sole use of the customer and does not provide any benefits to other ratepayers.
- Second, while RS 1289 limits the nameplate rating of a customer's Generating Facility, it does not limit the total amount of generation that can be installed at a customer's site. This means that a customer can install a Generating Facility with separate inverters for the utility connection and for the load requiring a back-up supply. In this scenario, only the utility inverter size would be subject to the requirements of RS 1289 and the back-up supply inverter could be sized to meet the back-up power needs required by the customer.
- Third, BC Hydro has used distributed generators to improve reliability on a distribution feeder section, where traditional wires based solutions are not economical. These systems are referred to as "intentional islands" or "microgrids".

3.34.1 Please confirm the CEC's understanding from the above that net metering could capably be used to provide clean emergency back-up for a distribution feeder section, and that BC Hydro provides a similar function through two methods, traditional wires-based solutions or "intentional islands"/"microgrids".

RESPONSE:

To clarify, "traditional wires-based solutions" are projects that do not involve distributed generation. An example would be a feeder tie where BC Hydro would install an automated switch and a length of conductor to tie a distribution feeder to an adjacent distribution feeder.

On their own, Net Metering customers are not capable of providing back-up for a distribution feeder section.

Intentional islands can only be formed when the distributed generation is capable of maintaining adequate voltage and frequency to the loads within the island for the duration of the islanding event. This has been done at BC Hydro with larger distributed generation resources which are designed to be capable of load following and which are adequately sized for the segment of the distribution feeder planned for islanding. Segmentation of the distribution feeder requires investment in automated switches or crew resources to open manual switches. This is required to isolate the distribution feeder section from the fault and other feeder segments too large to be part of the island. Investments in switching may not be worthwhile for an island that is too small or if the outage duration is too short. Furthermore, depending on the availability of the generation resource, islanding may or may not be possible.

The majority of Net Metering customers have solar only generation. These installations are connected through grid-interactive inverter systems conforming to CSA C22.2 107.1 standards. Such inverters are designed and tested to operate in parallel with the grid. Please refer to BC Hydro's response to NMRG IR 3.27.9 for a discussion on the use of CSA C22.2 107.1 in an intentional island.

Due to the costs involved in creating an intentional island, distributed generation for emergency back-up is only done in targeted areas. Please refer to BC Hydro's response to NMRG IR 3.27.1 for a discussion on how BC Hydro prioritizes reliability investments.

34.0 Exhibit B-12, pages 3-4

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3.34.1.1 Does BC Hydro have complete coverage for its clean emergency back-up or are there areas that are not covered by either of BC Hydro's two solutions? Please explain.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 3.34.1 where we explain that the use of distributed generation for emergency back-up is only done in targeted areas.

34.0 Exhibit B-12, pages 3-4

Q2. BCCSC states that "Net Metering generators have the ability to incorporate clean emergency back-up power when the grid fails"[5] and that "the Panel must consider the ability for projects within Net Metering RS1289 to supply secure emergency power".[6] What is your response?

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3.34.1.2 If there are areas that are not covered, please explain if BC Hydro could successfully utilize net metering to improve reliability in those areas.

RESPONSE:

Please refer to BC Hydro's response to NMRG IR 3.27.9 for a discussion on the application of CSA C22.2 107.1 in an intentional island.

34.0 Exhibit B-12, pages 3-4

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- Third, BC Hydro has used distributed generators to improve reliability on a distribution feeder section, where traditional wires based solutions are not economical. These systems are referred to as "intentional islands" or "microgrids".

3.34.1 Please confirm the CEC's understanding from the above that net metering could capably be used to provide clean emergency back-up for a distribution feeder section, and that BC Hydro provides a similar function through two methods, traditional wires-based solutions or "intentional islands"/"microgrids".

3.34.1.3 Could BC Hydro potentially cost-effectively replace its 'intentional islands', either in the future or at present, with net metering? Please explain.

RESPONSE:

At the present time, it is not cost effective or feasible to replace the existing intentional islands with Net Metering generation because:

- **The intentional island capital investments would become stranded; and**
- **As discussed further in BC Hydro's response to CEC IR 3.34.1, Net Metering generation may not be suitable for intentional islanding.**

34.0 Exhibit B-12, pages 3-4

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3.34.1.3 Could BC Hydro potentially cost-effectively replace its 'intentional islands', either in the future or at present, with net metering? Please explain.

3.34.1.3.1 If yes, please quantify any cost-benefits that could be available.

RESPONSE:

Please refer to BC Hydro's response to CEC IR 3.34.1.3 where we explain that transitioning from the existing intentional islands to an island using Net Metering generation would not be cost effective.

35.0 Exhibit B-12, page 5-6

> There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro.[10]

3.35.1 Please discuss the size of programs that would be needed to achieve material savings in capacity benefits and an order of magnitude $ value estimates of the savings.

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

35.0 Exhibit B-12, page 5-6

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3.35.1 Please discuss the size of programs that would be needed to achieve material savings in capacity benefits and an order of magnitude $ value estimates of the savings.

3.35.1.1 Please also provide any ballpark timeframes that are relevant to the practical achievement of the $ savings identified. For instance, BC Hydro maintains its transmission and distribution infrastructure to meet current and expected future load most of which is largely already in place. Assuming there could be reductions in forecast transmission and distribution capital costs with net metering, would it likely require a decade or more before the potential capital cost savings could be realized?

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

35.0 Exhibit B-12, page 5-6

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3.35.1 Please discuss the size of programs that would be needed to achieve material savings in capacity benefits and an order of magnitude $ value estimates of the savings.

3.35.1.2 Is it fair to say that BC Hydro would likely be unable to realize significantly reduced capital requirements for transmission and distribution even in the event of an increased program size because realization of the cost savings require that the net metering benefits are dependable and reasonably within BC Hydro's control? Please explain.

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

35.0 Exhibit B-12, page 5-6

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3.35.2 Please discuss the size of programs that would be needed to achieve material savings in distribution and losses and an order of magnitude $ value estimate of the savings.

3.35.2.1 Please also provide any ballpark timeframes that are relevant to the practical achievement of the $ savings identified.

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

35.0 Exhibit B-12, page 5-6

> There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro.[10]

3.35.3 Please discuss the types of reliability benefits that could potentially be realized and where these might be applicable. i.e. Are they localized?

RESPONSE:

In general, generation located near load can increase system adequacy or resiliency. However, for there to be reliability benefits, additional investments may be required. Please refer to BC Hydro's response to CEC IR 3.34.1 where we explain how distributed generation is used for reliability in targeted areas.

35.0 Exhibit B-12, page 5-6

> There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro.[10]

3.35.4 Please discuss the size of programs that would be needed to achieve material improvements in reliability.

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

35.0 Exhibit B-12, page 5-6

> There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro.[10]

3.35.5 Please provide an order of magnitude $ value estimate of the improvements in reliability if available.

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

35.0 Exhibit B-12, page 5-6

> There are three potential system benefits associated with having generation near load: a reduction in distribution and transmission losses, capacity benefits (i.e., reduced capital requirements for transmission and distribution infrastructure), and reliability benefits. However, at this time, BC Hydro does not realize these benefits because the installed capacity and volume of energy generated by customer Generating Facilities in the Program is too small to result in any appreciable avoided cost benefits to BC Hydro.[10]

3.35.5 Please provide an order of magnitude $ value estimate of the improvements in reliability if available.

3.35.5.1 Please also provide any ballpark timeframes that are relevant to the practical achievement of the reliability savings identified.

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.1 Please confirm that unless and until the Net Metering Program amendments proposed in the Application are approved by the BCUC, and are implemented in accordance with a timetable that may be determined by the BCUC, such amendments remain speculative and are not in effect.

RESPONSE:

Not confirmed. Some of the proposed amendments were put in effect on an interim basis as part of the 2018 Amendment Application while others, should they be approved, would come into effect following a BCUC decision on the Application.

While both the amendments approved as part of 2018 Amendment Application as well as those proposed in the April 29, 2019 Application are uncertain until such time as the BCUC issues its decision on the Application, BC Hydro expects that customer decisions to enroll in the Program would consider the possibility that the BCUC may approve the proposed amendments.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.2 Acknowledging that the nature, extent and effective timing of *proposed* amendments necessarily remains speculative and uncertain, please explain why BC Hydro suggests that the amendments *may or will* **not** discourage customers from interest or participation in the Net Metering Program in the event that they are approved by the BCUC and implemented by BC Hydro.

RESPONSE:

Please refer to BC Hydro's response to NMRG IRs 3.26.1 and 3.29.3 with regards to the nature of the amendments proposed in the Application.

BC Hydro's statement, referenced in the preamble to the question, was related to the participation level that the Program has experienced since the Application was filed with the BCUC.

Based on these participation levels, any uncertainty around the proposed amendments appears to have had minimal impact in terms of discouraging customers from enrolling in the Program.

BC Hydro expects that this is because the vast majority of program participants do not receive a Surplus Energy Payment, or receive minimal or inconsistent payments from year to year and therefore, are not materially impacted by the proposed amendments to either address Oversized Generating Facilities or update the Energy Price.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

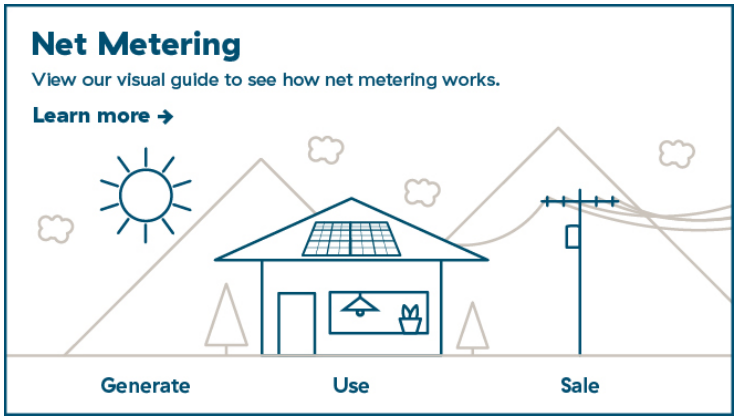
3.26.3 Please provide references to and copies of all BC Hydro communications, including the company website, that alert or notify existing or prospective Net Metering customers of the proposed amendments and the potential harm to those customers' interests.

RESPONSE:

Attachment 1 provides updates to the Net Metering webpage on BC Hydro's website advising viewers of the proposed amendments to the Program.

Attachment 2 contains a copy of emails notifying customers of the proposed amendments to the Program.

Generating your own electricity



Generation options for homes, businesses

Our net metering program is designed for those who generate electricity for their own use. When you generate more than you need, you sell it to us. When you don't generate enough to meet your needs, you buy it from us.

When you sell to us, you get a bill credit towards your future electricity use. If you still have an excess credit at your anniversary date of joining the program, we'll pay you for the electricity at the rate of 9.99 cents per kilowatt hour (kWh). It's that simple.

Read stories about net metering customers.

By the numbers

- Since 2004, over 1,330 customers have been participating in our net metering program.
- Over 95% of customers chose to install a solar photovoltaic system.
- A typical home generally consumes 11,000 kWh/year. A typical solar installation on a residential roof is 4 kilowatt (kW) in size with 16 solar panels, which in B.C., generates 4,400 kWh of electricity over a year.
- On average, solar systems of this size can cost about $14,500. Based on BC Hydro's step 2 of its Residential Conservation Rate, payback on your investment is about 23 years (including savings from the Rate Rider and GST).

Who's eligible

All our customers whose electricity generators meet the following criteria are welcome to participate:

- Be owned or leased by the customer
- Connect to our distribution system
- Use a clean or renewable resource as defined by the *Clean Energy Act* (such as solar, wind, hydro, etc)
- Have an aggregate nameplate capacity of no more than 100 kW
- Generation is sized to meet customer's annual usage

SELL CLEAN ENERGY & CONNECT TO OUR GRID

Generating your own electricity
How to Apply
Micro-SOP for First Nations and Communities
Standing Offer Program
Selling Power Inquiries
Offers in development
Closed offers
Independent Power Projects

Latest updates

Review our latest net metering program updates.

How to reach us

For general Net Metering and Net Metering billing inquiries, please call us at 604 224 9376, or if you're outside the Lower Mainland, at 1 800 BCHYDRO.

For questions on your Net Metering application, please **email us**.

Take a look at the amended Rate Schedule – 1289 Net Metering Service [PDF, 98 KB] for further eligibility requirements.

How to apply

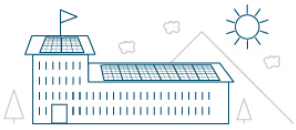
Simple Net Metering

Simple Net Metering

For inverter-based projects up to 27 kW in size with a self-contained revenue meter for service 200A or less

- Application process
- Interconnection requirements [PDF, 596 KB]
- Simple interconnection application form [PDF, 350 KB]
  Trouble viewing the application form?

Complex Net Metering



Complex Net Metering

All other projects up to 100 kW

- Application process
- Interconnection requirements [PDF, 596 KB]
- Complex interconnection application form [PDF, 359 KB] Trouble viewing the application form?
- Sample Single Line Diagram [PDF, 28 KB]
- Sample Site Plan [PDF, 92 KB]
- Electric Tariff: Generating Facility Connections [PDF, 26 KB]

Other resources

Documents

- Rate Schedule 1289 Net Metering Service [PDF, 322 KB]
- How to read your new net metering bill [PDF, 156 KB]
- Distribution Generation Interconnection Practices [PDF, 270 KB]
- Customer generation options at-a-glance [PDF, 54 KB]
- Net Metering Evaluation Report #4 [PDF, 1.0 MB]

Net metering stories, video

See what others have done.

Engagement & presentations

Details on our past and upcoming workshops.

Latest updates

May 17, 2019

For the latest updates on the BC Hydro Application to Amend Net Metering Service under Rate Schedule 1289 please visit the B.C. Utilities Commission website.

April 29, 2019

BC Hydro submitted an application [PDF, 3.4 MB] to the B.C. Utilities Commission for changes to the Net Metering program.

March 26, 2019

Due to high demand, on April 1, 2019, BC Hydro hosted an additional online information session on the proposed changes to the Net Metering program. View the webinar's presentation [PDF, 254 KB].

Please note that this was a repeat of our session delivered on March 18, 2019.

March 19, 2019

BC Hydro is proposing changes to the Net Metering program and will be filing an application to the BCUC by April 30, 2019. To help inform the application, we asked to share your views on proposed changes in the survey. The survey closed on April 9, 2019.

March 4, 2019

On March 18, 2019 BC Hydro hosted the webinar on proposed changes to the Net Metering program. Read about the webinar's presentation [PDF, 253 KB].

October 12, 2018

For the latest updates on BC Hydro Application to Amend Net Metering Service under Rate Schedule 1289 (Project No. 1598958) please visit B.C. Utilities Commission website.

April 20, 2018

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 [PDF, 845 KB] 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.

September 23, 2016

Projects in our Non-Integrated Areas

BC Hydro will be performing a thorough technical review of all net metering applications received for projects located in our Non-Integrated Areas (NIA). Because the NIA systems are balancing a variety of resources against the load (including diesel, existing or proposed IPP renewable generation and new intermittent renewable energy via net metering) it will require a deeper 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. BC Hydro strongly recommends that NIA customers do not purchase their generating equipment until their net metering application is accepted by BC Hydro.

Net metering stories, video

Sun shines on Alert Bay

On the rainy central coast, a small town discovers power of the sun.

Learn more >

Kamloops woman installs solar panels to generate her own electricity

A woman living in Kamloops installed solar panels on her home and in the summer found that she generated more electricity than she used.

Learn more >

Solar panels the top choice in selling electricity back to BC Hydro

Installing solar panels is only one way you can generate your own electricity. And we'll buy any of that energy you don't use.

Learn more >

Generate electricity, and sell some of it to BC Hydro

What you should consider in adding solar generation at your home and connecting to the BC Hydro grid.

Learn more >

Solar panels 'Eliminate' electricity bills at Dawson Creek office

It appears there are significant side effects to getting close to solar power. It's a condition we'll call photovoltaic-itis, and it manifests itself in shrinking electricity bills and the onset of giddiness.

Learn more >

YouTube video: Solar power and BC Hydro net metering

Walk through the process of installing a net metered solar electric system in British Columbia.

Learn more >

From: BC Hydro Net Metering Program <net.metering@bchydro.com>
Sent: 2018, April 20 3:20 PM
To: Net Metering
Subject: Net Metering Update

BC Hydro
Power smart

Net Metering Update

Read this email online

Net metering update

Hi Net Metering,

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

Log in to MyHydro
Outages & Safety
Accounts
Energy Savings
Energy Savings
Unsubscribe

From: net.metering=bchydro.com@bchydro.com on behalf of BC Hydro Net Metering Program <net.metering@bchydro.com>
Sent: 2019, March 04 3:47 PM
To: Net Metering
Subject: Net Metering Program Update - Webinar

BC Hydro
Power smart

Register online now
Read this email online

Net metering update

BC Hydro is hosting an online information session on proposed changes to our **Net Metering program** on March 18, 2019 from 2 p.m. to 4 p.m. To attend, please **register online**.

Register now

Log in to MyHydro
Outages & Safety
Accounts
Energy Savings
Energy Savings
Unsubscribe

From: net.metering=bchydro.com@bchydro.com on behalf of BC Hydro Net Metering Program <net.metering@bchydro.com>
Sent: 2019, March 19 3:47 PM
To: Net Metering
Subject: Take our survey on proposed Net Metering changes

BC Hydro
Power smart

Net metering program survey
Read this email online

Survey

Hi Net Metering,

On March 18, 2019 BC Hydro hosted a webinar on proposed changes to the **Net Metering program**. **View the webinar's presentation** [PDF, 253 KB].

BC Hydro is proposing changes to the Net Metering program and will be filing an application to the BCUC by April 30, 2019. To help inform the application, please share your views on proposed changes by **completing a survey**. This survey should take approximately 10-15 minutes to complete. The survey will close at 5 p.m. on April 2, 2019.

Take the survey now

Thanks,
BC Hydro Net Metering Team

Log in to MyHydro
Outages & Safety
Accounts
Energy Savings
Energy Savings
Unsubscribe

From: net.metering=bchydro.com@bchydro.com on behalf of BC Hydro Net Metering Program <net.metering@bchydro.com>
Sent: 2019, March 26 4:17 PM
To: Net Metering
Subject: Second net metering webinar added; survey extended

BC Hydro
Power smart

Register online now
Read this email online

Net metering update

Due to high demand, BC Hydro is hosting an additional online information session on the proposed changes to our **Net Metering program** on April 1, 2019 from 1 p.m. to 3 p.m. To participate, please **register online**. **View the webinar's presentation** [PDF, 253 KB].

Register now

Please note that this is a repeat of our session delivered on March 18, 2019.

To share your views on proposed changes to the Net Metering program, please **complete a survey**. This survey should take approximately 10-15 minutes to complete. **The time to complete the survey has been extended to 5 p.m. on April 9, 2019.**

Take the survey now

Thanks,
BC Hydro Net Metering Team

Log in to MyHydro
Outages & Safety
Accounts
Energy Savings
Energy Savings
Unsubscribe

From: net.metering=bchydro.com@bchydro.com on behalf of BC Hydro Net Metering Program <net.metering@bchydro.com>
Sent: 2019, April 29 1:32 PM
To: Net Metering
Subject: Net Metering update

BC Hydro
Power smart

Latest net metering changes

Read this email online

Net metering update

We've submitted an **application** [PDF, 3.4 MB] to the BC Utilities Commission for changes to the Net Metering program.

Thanks,
BC Hydro Net Metering Team

Log in to MyHydro
Outages & Safety
Accounts
Energy Savings
Energy Savings
Unsubscribe

From: bchydroregulatorygroup=bchydro.com@bchydro.com on behalf of BC Hydro <bchydroregulatorygroup@bchydro.com>
Sent: 2019, May 22 3:17 PM
To: Net Metering
Subject: BC Hydro 2019 Application to Amend Net Metering Service under Rate Schedule 1289

BC Hydro
Power smart

Application to Amend Net Metering Service

Read this email online

Notice

BC Hydro 2019 Application to Amend Net Metering Service under Rate Schedule (RS) 1289

As a current net metering (Rate Schedule 1289) customer or someone who has expressed interest in changes and updates to our net metering program, you're receiving this email in compliance with Directive 2 of BCUC Order No. G-103-19A (the Order). Please **visit the British Columbia Utilities Commission website** to view:

- **BC Hydro's Application to Amend Net Metering Service under Rate Schedule 1289** [PDF]; and
- **The Order establishing the Regulatory Timetable** [PDF].

Regulatory Compliance & Filings
BC Hydro
bchydroregulatorygroup@bchydro.com

Log in to MyHydro
Outages & Safety
Accounts
Energy Savings
Energy Savings
Unsubscribe

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.4 Please confirm that BC Hydro has done no consultation, workshop or other process that included an objective to determine whether customers believed that the proposed amendments would decrease interest or participation in the Net Metering Program if they are approved and implemented.

RESPONSE:

Through the Webinars and Engagement Survey, BC Hydro received feedback from customers on the proposed amendments. While BC Hydro did not specifically ask customers whether they believed the proposed amendments would decrease interest or participation in the Program, BC Hydro did receive comments that provided customer views on this issue.

Attachment 1 to BC Hydro's response to BCUC IR 1.22.1 provides the 352 comments received by BC Hydro in response to Question 9 of the Engagement Survey which asked, "Are there other comments you would like to provide on the proposed changes to the Net Metering program."

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.5 Please confirm that existing and prospective customers in the Net Metering customers, not BC Hydro, have greater insight into why customers are interested or wish to participate in the Net Metering Program and what specific Program changes may decrease their interest or wish to participate.

RESPONSE:

BC Hydro expects that there are numerous reasons why customers are interested in or wish to participate in the Program and that the proposed amendments, if approved, would have varying impacts to customers depending on their particular circumstances.

Please refer to BC Hydro's response to NMRG IR 3.26.2 where we explain that the vast majority of program participants are not materially impacted by the proposed amendments to either address Oversized Generating Facilities or update the Energy Price and that this may explain why any uncertainty around the proposed amendments appears to have had minimal impact in terms of discouraging customers from enrolling in the Program.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.6 Please confirm that a host of reasons, including many already identified by the BCCSC and NMRG in their respective evidence, may motivate customers to be interested in or wish to participate in the Net Metering Program notwithstanding BC Hydro's proposed amendments.

RESPONSE:

Please refer to BC Hydro's response to NMRG IR 3.26.5.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.7 Please fully explain BC Hydro's methodology and assumptions underlying its conclusion that "…the amendments proposed in the Application do not appear to have discouraged customers from Energy, interest and participation in the Program." Specifically, how did BC Hydro measure the extent to which customers have been discouraged by *potential* changes to the Program that have not been well publicized and have not been approved?

RESPONSE:

Some of the amendments proposed in the Application are already in effect on an interim basis and BC Hydro expects that customers would consider the possibility that the BCUC may approve the amendments proposed in the Application.

Therefore, BC Hydro believes it is reasonable to consider the fact that program participation has continued to increase, at a pace consistent with previous years, when weighing arguments that suggest that the proposed amendments would discourage participation.

Please also refer to BC Hydro's response to NMRG IR 3.26.2 where we explain that the vast majority of program participants are not materially impacted by the proposed amendments to either address Oversized Generating Facilities or update the Energy Price and that this may explain why any uncertainty around the proposed amendments appears to have had minimal impact in terms of discouraging customers from enrolling in the Program.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.8 Please confirm that it is conceivable, or perhaps likely, that customers would be more likely to join a program before the potential approval and implementation of changes that they consider undesirable.

RESPONSE:

Not confirmed. The requirement to match estimated Annual Load to estimated Annual Energy Output, intended to prevent Oversized Generating Facilities, has been in effect since April 20, 2018. As such, customers who have joined the program since that date, have been subject to those requirements.

Further, as discussed in BC Hydro's response to NMRG IR 3.26.2, the vast majority of program participants are not materially impacted by the proposed amendments to either address Oversized Generating Facilities or update the Energy Price which may explain why any uncertainty around the proposed amendments appears to have had minimal impact in terms of discouraging customers from enrolling in the Program.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.9 For Net Metering customer applications for a ***solar*** project what was the shortest, longest and average length of the period between receipt of each application and approval/denial from BC Hydro to enter the Program for each month of calendar years 2018 and 2019?

RESPONSE:

The durations provided in the table below illustrate the length of the period between receipt of a Net Metering application and its acceptance by BC Hydro.

It is important to note that these durations include the time customers may have taken to provide a complete application or to correct errors (e.g., incorrect customer information such as address, account and/or meter numbers or account holder name, nameplate rating of the generating facility, equipment model or information about the customer's load).

Month in which Application was Received	Total Number of Applications Received	Length between Receipt of the Application and Acceptance			Number of Applications that Remain not Accepted
		Shortest (Days)	Longest (Days)	Average (Days)	
January 2018	**38**	**0**	**141**	**16**	**0**
February 2018	**27**	**0**	**88**	**10**	**0**
March 2018	**55**	**1**	**244**	**25**	**1**
April 2018	**84**	**0**	**277**	**30**	**7**
May 2018	**105**	**1**	**384**	**34**	**2**
June 2018	**106**	**0**	**484**	**36**	**20**

Month in which Application was Received	Total Number of Applications Received	Length between Receipt of the Application and Acceptance			Number of Applications that Remain not Accepted
		Shortest (Days)	Longest (Days)	Average (Days)	
July 2018	65	0	334	20	2
August 2018	89	2	173	24	0
September 2018	50	0	64	13	1
October 2018	61	1	151	31	1
November 2018	35	1	239	13	3
December 2018	28	3	172	29	2
January 2019	33	0	113	22	2
February 2019	48	0	218	17	2
March 2019	66	0	148	17	2
April 2019	78	0	184	15	4
May 2019	107	0	98	10	3
June 2019	104	0	125	12	2
July 2019	96	0	136	12	1
August 2019	84	0	121	16	4
September 2019	73	0	119	24	2
October 2019	48	0	75	12	4
November 2019	54	2	78	12	3
December 2019	67	0	50	11	7

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.10 For Net Metering customer applications for a ***micro-hydro*** project what was the shortest, longest and average length of the period between receipt of each application and approval/denial from BC Hydro to enter the Program for each month of calendar years 2018 and 2019?

RESPONSE:

BC Hydro received one Net Metering application for a hydroelectric generating facility in February 2019. The application remains under review.

26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.11 Please provide the number of applications for the Program that are (1) sized acceptably to BC Hydro (i.e. sized to not exceed customer's own load) and received during the 11 month period since the February 2019 implementation of the new size restriction VS. (2) all applications received during the 11 month period prior to the implementation of the new "sized to load" restriction.

RESPONSE:

The effective date of the requirement for a customer's estimated Annual Load to be equal to or greater than the Generating Facility's estimated Annual Energy Output was April 20, 2018.

During the 11-month period since April 1, 2018 (i.e., April 1, 2018 to February 28, 2019), BC Hydro received 652 applications where the customer's estimated Annual Load was equal to or greater than the Generating Facility's estimated Annual Energy Output.

During the 11-month period prior to April 1, 2018 (i.e., May 1, 2017 to March 31, 2018), BC Hydro received 479 applications in total.

26.0 Topic: Program Growth Data

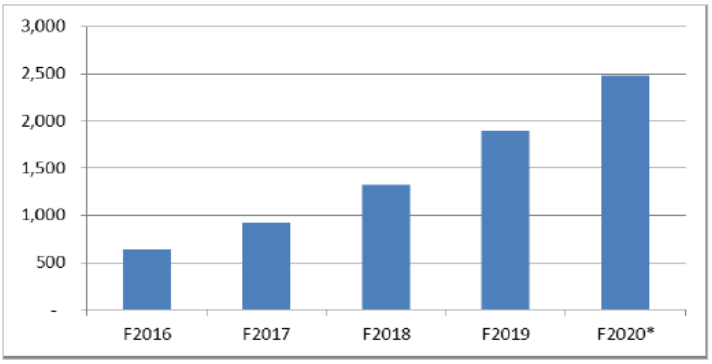
Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.12 To enable accurate comparison with other evidence provided by BC Hydro please provide a graph similar to Figure 1 below that shows the number of new customers added into the Program for each month in ***calendar*** 2019 and ***calendar*** 2020.

Figure 1 Number of Customers in the Program (Fiscal 2016 to Fiscal 2020 To-date)

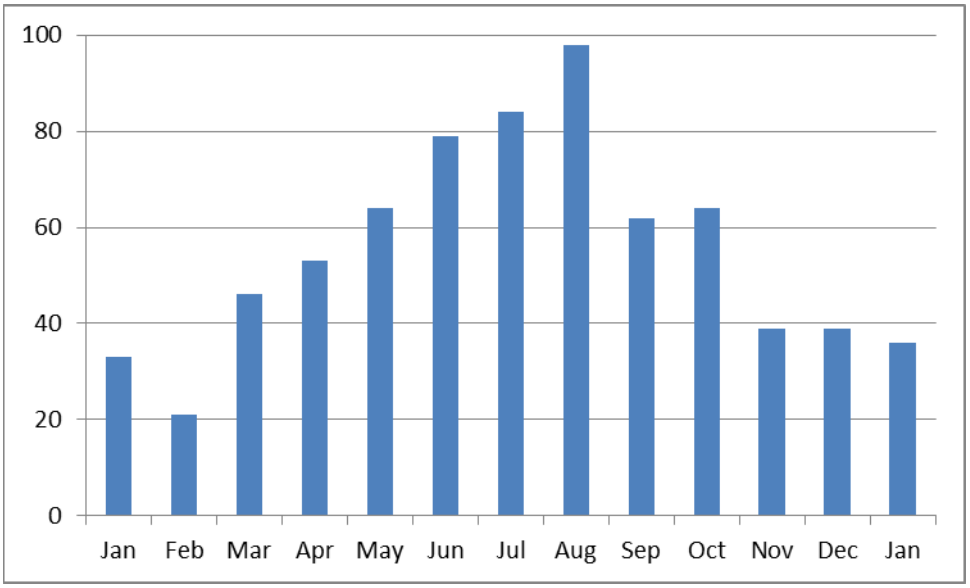


* As of December 31, 2019.

As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program.[4] Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase.

RESPONSE:

The graph below provides the number of customers added into the Program in each month in calendar 2019 and calendar 2020: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26.0 Topic: Program Growth Data

Reference: Exhibit B-12, Q & A 1, PDF 4 to 6

BC Hydro discussion of Net Metering Program growth concludes by stating:

> "As shown by the information provided above, the amendments proposed in the Application do not appear to have discouraged customers from participating in the Program. Rather, as suggested by BCCSC and Riverside Energy, interest and participation in the Program continues to increase."

3.26.13 Please provide another graph similar to that requested in IR 26.12 above that shows the number of Net Metering applications made by customers but denied by BC Hydro for each month in ***calendar*** 2019 and ***calendar*** 2020.

RESPONSE:

BC Hydro has not deferred any applications in calendar 2019 or January 2020.

In accordance with BCUC Order No. G-100-18, if a customer proposed a Generating Facility with an estimated Annual Energy Output that was greater than the estimated Annual Load, BC Hydro provided that customer with two options:

1. **Defer the review of their application until the BCUC's decision on the Application; or**
2. **Re-submit their application with a Generating Facility sized so that its estimated Annual Energy Output will not exceed the estimated Annual Load.**

In calendar 2018, BC Hydro deferred the review of 24 applications including one application for an expansion of an existing Generating Facility.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.1 Please describe BC Hydro's view of its obligations to provide energy reliability.

RESPONSE:

At the portfolio level, BC Hydro makes investments to support reliability, with consideration for the following factors:

- **The appropriate balance among affordability, system performance and risk;**
- **Historical investment levels and the associated system performance; and**
- **Labour resource and plant outage availability.**

When determining the need for sustaining capital investments, BC Hydro considers criteria such as asset health, the significance of the asset to the system, asset redundancy and other issues such as safety and environmental risks.

BC Hydro monitors the system performance indicators as well as the power system data and regularly reviews its Capital Plan to make any required adjustments to the level and composition of sustaining capital investments based on any new system or asset information.

Investments for distribution reliability are identified and prioritized at an individual feeder level to target the worst performing feeders first and to ensure the investment is specifically optimized to address the issues on that feeder. Investment solutions are identified and prioritized based on a balanced approach between investment, performance and risk, considering the expected performance improvements against the investment cost.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.2 Does BC Hydro acknowledge that ratepayers benefit from energy services provided to each of the following:

- hospitals
- emergency centres
- transportation facilities like ferry terminals and charging stations
- neighbours
- food distribution centres (grocery stores)

RESPONSE:

BC Hydro acknowledges that customers and the public benefit from the provision of safe, reliable electricity service to a variety of BC Hydro customers.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.3 Please provide references to and copies of all BC Hydro published advice for adapting to power grid failures.

RESPONSE:

BC Hydro's web site provides guidance to customers and the public regarding electrical service outages and safety. This information is available at the following link: https://www.bchydro.com/safety-outages.html.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.4 Please reconcile BC Hydro's view that

> "Net Metering Generating Facilities that use induction generators or inverters certified to CSA C22.2 No. 107.1 are not designed to operate in an intentional island of their own. For safety reasons, the must cease to inject power when there is a utility outage."

with *Solar Integration: Inverters and Grid Services Basics* published by the United States Office of Energy Efficiency & Renewable Energy, which was attached as an electronic link in Appendix A to Exhibit C18-9 as an electronic link and is attached here as a PDF for convenience, that states in part on page 3:

> "As more solar systems are added to the grid, more inverters are being connected to the grid than ever before. Inverter-based generation can produce energy at any frequency and does not have the same inertial properties as steam-based generation, because there is no turbine involved. As a result, transitioning to an electrical grid with more inverters requires building smarter inverters that can respond to changes in frequency and other disruptions that occur during grid operations, and help stabilize the grid against those disruptions."

RESPONSE:

The two paragraphs referenced in the preamble to the question are discussing separate issues.

The BC Hydro text refers to using grid-interactive inverters certified to CSA C22.2 No. 107.1 to provide power to a section of a distribution feeder after a grid outage occurs. These inverters are designed to stop delivering power when a utility outage occurs. Please refer to BC Hydro's response to CEC IR 3.34.1 where we describe why net metering inverters are not suitable to form intentional islands.

The paragraph from *Solar Integration: Inverters and Grid Services Basics* discusses the use of smart inverters to stabilize the grid "during grid operations". The referenced part of the paper deals with an industry concern about grid frequency regulation deteriorating as new inverters replace synchronous generators that provide mechanical inertia to stabilize the grid frequency. Please refer to BC Hydro's response to NMRG IR 3.27.10 where we discuss the functions of smart inverters.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.5 Please file Section C.2 of the *IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interface* IEEE Std. 1547-2018, which was referenced in BC Hydro's Rebuttal Evidence at PDF 8.

RESPONSE:

Section C.2 of the IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources (DER) with Associated Electric Power Systems Interface (IEEE Standard 1547-2018) is found on page 108 of the standard, and is provided below:[1]

> **C.2 Connecting DER not designed for intentional island or microgrid operation**
>
> **The following examples outline intentional island or microgrid implementations where a DER not designed for intentional island or microgrid operation may be allowed to participate by the intentional island operator (IIO) or microgrid operator (MO):**
>
> - **A generator is able to provide the maximum steady-state load in the intentional island or microgrid island (MI), and has the speed of response to buffer the power transients of the DER not designed for microgrid operation.**
> - **Energy storage is implemented to buffer the power transients of the DER not designed for intentional island or microgrid operation.**

[1] **Adapted and reprinted with permission from IEEE. Copyright IEEE 2018. All rights reserved.**

- **Existing hardware experiments or system operation has proven system stability.**

- **Simulation studies prove system stability.**

- **A device has been fitted that disconnects the DER, not designed for intentional island or microgrid operation, if outside of an acceptable frequency and voltage window. The system has been proven to be stable, with the disconnection device.**

These examples are provided for guidance only; it is the responsibility of the IIO or MO to ensure the desired quality of service in the intentional island or microgrid.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.6 Please describe the most recent BC Hydro intentional island or "microgrid" that used IEEE Std. 1547-2018.

RESPONSE:

As referenced in BC Hydro's response to Q2 in Exhibit B-12, BC Hydro designs intentional islands in accordance with IEEE Std. 1547.4-2011 *IEEE Guide for Design, Operation, and Integration of Distributed Resource Island Systems with Electric Power Systems* (IEEE Std. 1547.4).

The most recent generating facility designed in accordance with IEEE Std. 1547.4 is for a 6 MW run-of-river IPP hydro plant located at the very end of a long radial distribution line. As noted in Exhibit B-12, this generating facility is specifically designed for islanded operation and has appropriate control and protection equipment to ensure safety and power quality.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.7 Please describe any BC Hydro intentional island or "microgrid" currently in design to the IEEE Std. 1547-2018.

RESPONSE:

BC Hydro does not have an intentional island in the design stage at this time.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.8 Do any of BC Hydro's intentional island or "microgrid" use CSA C22.2 No.107.1 certified inverters? If not, please identify the number (in use) and certification type of those other inverters.

RESPONSE:

BC Hydro does not have any intentional islands that use interactive inverters certified to CSA C22.2 No. 107.1.

BC Hydro has an intentional island that uses an inverter and battery bank in the town of Field, BC. The island contains one 1 MW, 1.25 MVA Inverter and a 6 MWh sodium sulfur battery bank. This is a utility installation which follows utility practices, which are different than the interconnection requirements for Net Metering generating facilities.

During grid interactive operation, the inverter is programmed to operate as a UL1741 grid interactive inverter.

During islanded operation (i.e., grid forming), the inverter does not meet the anti-islanding protection requirements of CSA C22.2 No. 107.1 or UL1741. BC Hydro has installed additional protection and controls to ensure safe operation during islanded operation and has work procedures in place for BC Hydro crews.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.9 Could BC Hydro use CSA C22.2 No. 107.1 inverters if they met the examples outlined in C.2 of the IEEE Std. 1547-2018? Please explain.

RESPONSE:

CSA C22.2 No. 107.1 is a standard that covers various types of power conversion equipment. Net Metering customers are required to use inverters "certified to the requirements of CSA C22.2 No. 107.1-01 for utility interconnection." These inverters cannot be used to create an island <u>on their own</u> for two reasons:

1. **Anti-islanding protection prescribed by the standard requires them to shut down during a utility outage. This requirement is for the safety of customers and crews.**
2. **The inverters require a reference voltage and frequency in order to generate into the grid.**

As described in IEEE Std. 1547-2018 C2, these inverters can participate in an intentional island; however, there needs to be additional generation and storage in the intentional island, designed for islanded operation, to meet the maximum steady-state load of the island and buffer any power transients. A separate protection scheme and disconnect device may be required for the generation that is not designed to island.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.10 Does BC Hydro acknowledge that most CSA C22.2 No 107.1 inverters being installed for RS 1289 Net Metering meet the UL 1741SA "Smart Inverter" Standard that give a utility control of the inverter? Please explain.

RESPONSE:

BC Hydro does not require Net Metering customers to use inverters that meet the UL1741SA standard; however, BC Hydro does acknowledge that some customers are installing inverters that meet this standard in addition to CSA C22.2 107.1.

The UL1741SA inverters have the following additional functionality that addresses some limitations with traditional inverters:

1. **Voltage and Frequency ride-through – which allows the inverter to operate with increased disturbance ride-through capabilities, intended to address integration issues associated with higher inverter based distributed energy resources penetration. Such functions allow the inverters to mimic the ride through capabilities of a synchronous generator during transient events to prevent issues with voltage and frequency stability.**
2. **Voltage and Power Regulation functions – which provide additional inverter operating modes such as Volt/VAr and Volt-Watt. Such modes can help regulate reactive power and real power in order to mitigate voltage rise issues caused by high penetration of distributed energy resources and could provide voltage support. Such issues would otherwise limit the amount of generation that could be installed on the system without additional upgrades.**

These advanced functions do not address the limitations of using net metering solar generation to form an intentional island, as discussed further in BC Hydro's response to NMRG IR 3.27.9.

Before BC Hydro would consider taking control over customer inverters, BC Hydro would need to undertake significant work to understand the impacts of doing so.

Although limited control of communications capable inverters may be possible, investments required to establish communications with the inverter would need to be justified. Other autonomous grid support functions, such as the voltage and power regulation functions described above, could be used to mitigate the impact of distributed energy resource installations before communications with the inverter becomes necessary.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.11 Does BC Hydro acknowledge that Smart Inverters are useful for Smart Grid applications, not just for intentional islands or "microgrids"? Please explain.

RESPONSE:

BC Hydro acknowledges that smart inverters could be used in Smart Grid applications. For example, the reactive power capabilities of smart inverters could be part of a Volt-Var optimization scheme.

Please refer to BC Hydro's response to NMRG IR 3.27.10 where we discuss the characteristics of smart inverters and that smart inverter functions do not allow the formation of intentional islands without additional equipment.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.12 In BC Hydro's view are the inverters that meet CSA C22.2 No 107.1 and UL 1741 SA building blocks for intentional islands, "microgrids", or smart grids? Please explain.

RESPONSE:

Please refer to BC Hydro's response to NMRG IR 3.27.9 where we discuss the characteristics of inverters certified to UL 1741SA and their inability to form intentional islands on their own.

Please also refer to BC Hydro's response to NMRG IR 3.27.11 where we discuss how smart inverters can contribute to Smart Grid applications.

27.0 Topic: Net Metering generation provides back up power that benefits ratepayers and non-ratepayers

Reference: Exhibit B-12, Q & A 2, PDF 6 to 8

BC Hydro discusses grid failures and the supply of secure emergency power. As noted in the BCCSC written evidence (Exhibit C18-6, p.10) BCCSC members experienced a community blackout for a 13 day period during the Christmas period of 2018.

3.27.13 Please confirm that electrons are unable to differentiate between an RS 1289 customer and any customer of another rate class. If not, please explain. Is electron flow necessarily determined by proximity to load? Please explain.

RESPONSE:

Electrons are unable to differentiate between an RS 1289 customer and any customer of another rate class.

As stated in BC Hydro's response to NMRG IR 1.5.2, the flow of electric power on a distribution feeder is governed by system impedances, the amount and location of load on the feeder, and the amount and location of generation on the feeder.

28.0 Topic: Value of Local Generation

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.28.1 Please quantify the threshold(s) at which the installed capacity and volume of energy generated by customer Generating Facilities in the Program would be sufficient "…to result in any ***appreciable*** avoided cost benefits to BC Hydro". (emphasis added)

RESPONSE:

Please refer to BC Hydro's response to BCSEA IR 3.30.1.

28.0 Topic: Value of Local Generation

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.28.2 Does BC Hydro count Standing Offer Program (SOP) generation facilities for purposes of its generation planning? If so please identify and state the nameplate generation capacity of all SOP generation facilities that are smaller than the total capacity of all Net Metering facilities. Does BC Hydro consider such smaller SOP generation facilities to contribute to ***appreciable*** avoided cost benefits to BC Hydro? Please explain.

RESPONSE:

Yes, BC Hydro includes Standing Offer Program generation in its planning and this generation results in appreciable avoided system cost benefits to BC Hydro.

As all SOP generation facilities are limited to no more than 15 MW of nameplate capacity, all SOP generation facilities are individually smaller than the current aggregate capacity of Net Metering generation facilities, which is approximately 19 MW.

However, the portfolio contribution, rather than the size of individual generation facilities is the key factor in recognizing the contribution to avoided system costs. As a portfolio, SOP facilities represented a total of 176.8 MW of installed capacity and an estimated 648.8 GWh per year at the end of fiscal 2018.

28.0 Topic: Value of Local Generation

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.28.3 Please confirm that BC Hydro's own run-of-river plant Spillimacheen Generating Station has two 900 kW capacity turbines. Does BC Hydro consider Spillmacheen's nameplate capacity of 1,800 kW sufficient "…to result in any ***appreciable*** avoided cost benefits to BC Hydro"? Please explain.

RESPONSE:

To clarify, there are a total of three turbines at BC Hydro's Spillimacheen Generating Station (one 2.2 MW turbine and two 900 kW turbines). The total nameplate capacity is 4 MW.

The Spillimacheen Generating Facility provides additional grid benefits in the form of Black Start capabilities from one of the turbines. BC Hydro is able to recognize and rely on these additional grid benefits because we have a detailed understanding of the current and historical facility operations, the obligations of the facility through its water use plans, and a long term facility asset plan.

28.0 Topic: Value of Local Generation

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.28.4 Has BC Hydro conducted any study or analysis prior to the Application in 2018 focussed on the avoided cost benefits from small scale distributed generation (DG) such as Net Metering? If so, please provide copies. If not, please explain why such study or analysis was not undertaken.

RESPONSE:

BC Hydro did not conduct an analysis of the avoided cost benefits of small scale distributed generation, such as Net Metering, in British Columbia, prior to the 2018 Amendment Application.

To-date, BC Hydro has not undertaken an analysis of this nature because:

- **There are many studies on this topic available to BC Hydro through free or low-cost subscription services, covering jurisdictions with advanced levels of distributed generation penetration.**
- **The potential contribution, in aggregate, has been too small to warrant the costs associated with conducting a BC Hydro specific study.**

BC Hydro plans to explore the potential contribution of distributed generation resources to the deferral of distribution system investments or other grid benefits, in its next Integrated Resource Plan. For further discussion, please refer to BC Hydro's response to BCUC IR 1.18.4.

28.0 Topic: Value of Local Generation

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.28.5 How much has BC Hydro spent, by fiscal year, to study or analyze avoided cost benefits from small scale DG such as Net Metering?

RESPONSE:

Please refer to BC Hydro's response to NMRG IR 3.28.4.

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.1 What is the "postage stamp rate principle" referenced by BC Hydro? Please provide the source that articulates that principle.

RESPONSE:

Please refer to BC Hydro's response to BCCSC IR 1.6.12 where we explain that "postage stamp rates" are uniform rates that apply to customers in the same rate class, regardless of the specific cost of serving each customer. Postage stamp rates apply across a utility's service territory.

The postage stamp principle of rate making is taken from the terms of postal service where the price for letter delivery is set uniformly regardless of the distance each letter travels. It is a common economic term used in public utility regulation and rate making.

A definition of "postage-stamp rates" can be found in the BCUC publication, "Understanding Utility Regulation; A Participants' Guide to the British Columbia Utilities Commission" which is available at the following link: https://www.bcuc.com/Documents/Guidelines/Participant_Guide.pdf.

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.2 In BC Hydro's view what are all of the attributes of a "postage stamp rate"?

RESPONSE:

In BC Hydro's view, the key attribute of a postage stamp rate is the uniform application of the rate to the rate class. Well-designed postage stamp rates should also be generally consistent with Bonbright rate design principles.

Please also refer to BC Hydro's response to BCUC IRs 1.9.1 and 1.9.3 where we discuss the alignment of BC Hydro's proposed change to the Energy Price with each of the Bonbright rate design principles.

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.3 Does BC Hydro contend that the amendments proposed in the Application would result in a level of simplicity consistent with a well-designed "postage stamp rate"? Please explain how the proposed amendments would achieve or further the simplicity criterion.

RESPONSE:

In BC Hydro's view, the amendments proposed in the Application would result in an appropriate level of simplicity. The proposed amendments:

- **Do not materially change the structure of the Program, which is designed as a simple program;**
- **Set a default Anniversary Date that each customer may change once;**
- **Exempt Generating Facilities with a nameplate rating of five kilowatts or less from assessment of the Customer's Annual Load in the Net Metering Application process;**
- **Allow customers to size their Generating Facility to have an estimated Annual Energy Output of up to 110 per cent of their estimated Annual Load to allow for modest changes in electricity consumption;**
- **Clarify that customers may, upon an approved application, increase the size of their Generating Facility at any time, subject to review of their historical load data (where applicable);**
- **Allow customers who purchase new equipment, such as an electric vehicle, to increase their estimated Annual Load (and Generating Facility size) by the amount of electricity the new equipment is expected to require, without waiting for additional historical load data;**
- **Streamline administration of the Program by eliminating accepted applications that have been inactive for 18 months;**
- **Introduce a simple formula that will annually update the Energy Price so that it reflects the value to BC Hydro and non-participating customers of excess energy generated by customers in the Program; and**

- **Simplify the language in Rate Schedule 1289 to improve clarity and readability and to better reflect current program practices.**

BC Hydro acknowledges that the proposed Transitional Energy Price limits both the uniformity and administrative simplicity of the Rate Schedule 1289 postage stamp rate. Please refer to BC Hydro's response to BCUC IR 1.9.1 where we explain that the proposed Transitional Energy Price is aligned with Bonbright Principle 6. Please also refer to BC Hydro's response to BCUC IR 1.15.1 where we explain that the Transitional Energy Price strikes a fair balance between existing Program customers and other ratepayers.

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.4 What precedent, if any, does BC Hydro rely upon for proposing to use the wholesale market as the basis to determine the Net Metering energy price?

RESPONSE:

There are a number of precedents for relying upon the Mid-C index price. For example:

- **BC Hydro procures wholesale market electricity from Powerex under the terms of the Transfer Pricing Agreement (TPA). The cost of procuring this energy is at the Mid-C index price plus transmission wheeling charges and losses to the B.C. border. The availability of supply and the market prices at Mid-C reflect expected demand and supply conditions in the Pacific Northwest.**
- **As discussed in BC Hydro's response to NMRG IR 1.4.1, the Mid-C price index has been approved by the BCUC on numerous occasions as an appropriate proxy for market value, and is used in the Electric Tariff. For example, Mid-C is used in Rate Schedule 1892 (Transmission Service – Freshet Energy) and Rate Schedule 1253 (Distribution Service – IPP Station Service).**

Please also refer to BC Hydro's response to NMRG IR 3.29.6 where we provide a list of other North American electric utilities that use or have used the wholesale market as the basis to determine the Energy Price for Surplus Energy Payments.

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.5 Is BC Hydro's proposed use of the wholesale market as a reference to determine a Net Metering energy price a completely new and unique proposition?

RESPONSE:

No. For further discussion, please refer to BC Hydro's response to NMRG IR 3.29.4.

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.6 Please provide a list of all other North American electric utilities that use or have used the wholesale market as the basis to determine a Net Metering energy price.

RESPONSE:

Appendix G of the Application provides the results of BC Hydro's Jurisdictional Review, including findings regarding the Energy Price for Surplus Energy Payments. In summary, that jurisdictional review indicates that most utilities surveyed either do not provide Surplus Energy Payments or have an energy price that reflects the market value.

To respond to this information request, BC Hydro conducted additional research using publicly available information and identified additional jurisdictions and utilities in Canada and the United States that currently credit surplus energy from net metering customers at an avoided cost or market price. This list should not be considered comprehensive as there may be additional utilities, not included in the list below, that credit surplus energy at an avoided cost or market price.

Utility	Payout Price for Excess Generation
FortisBC	**Marginal price (for further information, please refer to BC Hydro's response to BCUC IR 1.13.2)**
Newfoundland Power	**Marginal price (based on price of crude oil and updated annually)**
Xcel Energy (operates in Colorado, Michigan, Minnesota, New Mexico, North Dakota, South Dakota, Texas, and Wisconsin)	**Price based on the average hourly incremental cost of electricity from the previous year**
Idaho Falls Power	**Fluctuating market rate**
Louisiana	**Avoided cost rate**
Mississippi Power	**Avoided cost rate (varies based on time of day and year)**
Missouri	**Avoided cost rate**
Nebraska	**Avoided cost rate (varies by type of generation as well as time of year)**
San Diego	**Market price (updated monthly)**

29.0 Topic: RS 1289 Is A Postage Stamp Rate

Reference: Exhibit B-12, Q & A 3, PDF 8 to 9

3.29.7 What is BC Hydro's level of confidence that there will not be any unintended consequences arising from its proposed use of the wholesale market as reference to determine the Net Metering energy price? Please explain.

RESPONSE:

BC Hydro is confident that an update to the Energy Price is required to better reflect the value of excess energy from participants in the Program to BC Hydro and non-participating ratepayers and that the vast majority of program participants will not be materially impacted by the proposed amendments to either address Oversized Generating Facilities or update the Energy Price. For further discussion, please refer to BC Hydro's response to NMRG IR 3.26.2.