

WEISBERG LAW
C O R P O R A T I O N

2730 Ailsa Crescent
North Vancouver BC V7K 2B2
Reply to: Fred J. Weisberg
Telephone:(604) 980-4069
Email: fredweislaw@gmail.com

November 25, 2019

BY ELECTRONIC FILING

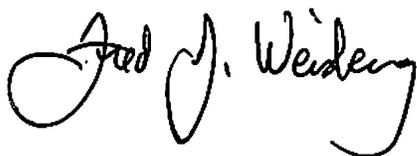
British Columbia Utilities Commission
6th floor, 900 Howe Street
Vancouver, BC V6Z 2N3
Attention: Mr. Patrick Wruck
Commission Secretary and Manager, Regulatory Services

Dear Mr. Wruck:

**Re: British Columbia Hydro and Power Authority
Application to Amend Net Metering Service under Rate Schedule 1289
~ Project No. 1599004
Net Metering Ratepayers Group
Written Evidence**

We attach for filing in the above-captioned proceeding the Written Evidence of our clients the Net Metering Ratepayers Group (NMRG)

Yours truly,



Fred J. Weisberg
Weisberg Law Corporation
Counsel to Net Metering Ratepayers Group

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

WRITTEN EVIDENCE OF
NET METERING RATEPAYERS GROUP

November 25, 2019

TABLE OF CONTENTS

1.	INTRODUCTION	4
2.	BC HYDRO PROMOTED NET METERING PROGRAM AS AN ENERGY BUYING AND POWER ACQUISITION PROGRAM	5
3.	BC HYDRO ACTIVELY ENTICED CUSTOMERS TO JOIN NET METERING PROGRAM	5
4.	BC HYDRO ADDED ADDITIONAL INCENTIVE TO PARTICIPATE IN THE NET METERING PROGRAM BY RAISING THE ENERGY PRICE PAYABLE FOR EXCESS GENERATION – TWICE	7
5.	NO NET METERING PLANTS WERE BUILT BY CUSTOMERS WITHOUT BC HYDRO’S PRE-APPROVAL	8
6.	BC HYDRO PROMISES EXISTING NET METERING CUSTOMERS WON’T BE AFFECTED BY PROPOSED AMENDMENTS – BUT EXPECTS OTHERWISE	8
7.	EVOLUTION OF NET METERING IN BC	
7.1	Net Metering Program From 2004 To Present States Excess Generation To Be Paid Out On Anniversary	11
7.2	Size Of Generation Plant Set By Availability Of Energy Not By Homeowners Load Requirements	13
8.	NET METERING CUSTOMERS HAVE INTERCONNECTION AGREEMENTS WITH INDEFINITE TERM	15
9.	BC HYDRO ACTIVELEY PROMOTED SALE OF EXCESS GENERATION FOR 9.99 cents per kWh – AND STILL DOES	15
10.	SOP PRICE REMAINS RELEVANT TO NET METERING ENERGY PRICE	
10.1	Nexus Between SOP Price and Net Metering Energy Price	15
10.2	Net Metering Energy Price Is Based On SOP 70% Firm Rate and 30% Non-Firm and Adjusted For Inflation	16
10.3	SOP Contracts To Continue For Approximately 17 to 37 Years	17
11.	MID-C PRICE IS NOT APPROPRIATE FOR NET METERING	17
12.	NET METERING PROGRAM CAN BE VERY EXPENSIVE FOR SOME PARTICIPATING CUSTOMERS	18

13.	COST OF NET METERING PROGRAM IS INEXPENSIVE FOR NON-PARTICIPATING CUSTOMERS	20
14.	INVESTMENT CONSIDERATIONS FOR NET METERING HYDROELECTRIC PROJECTS	
14.1	Actual or Contemplated Investment By NMRG Members	21
14.2	Net Metering Hydroelectric Project Customers' Investments Require Long Payback Period	22
14.3	Inflation Effects Vary By Type of Net Metering Generation	23
15.	RATEPAYER AND PUBLIC BENEFITS OF NET METERING	
15.1	Net Metering Excess Generation Is Necessarily Consumed Locally	23
	Figure 1	24
15.2	Environmental And Other Benefits Of Net Metering	25
15.3	Power Quality From Hydroelectric Net Metering Projects	26
15.4	Net Benefits Of Net Metering Surpass Net Costs	26
16.	CONCLUSION	26

1. INTRODUCTION

1. BC Hydro's Application to Amend Rate Schedule (RS) 1289 for Net Metering Service includes proposals that, if approved by the BCUC, will undercut existing Net Metering customers' good faith investments in their own facilities designed and constructed in reliance on the representations and assurances that were made and continue to be made by BC Hydro.

2. Other customers that may be in the process of trying to enter the Net Metering Program, or otherwise may in the future, will be discouraged or prevented from joining the Program if BC Hydro's applied-for proposals are approved.

3. BC Hydro's Application includes express assurances that existing customers will not be affected by the amendments¹, yet those assurances are directly contradicted not only by numerous statements throughout BC Hydro's evidence but most clearly by the relief sought. BC Hydro is proposing amendments seeking to:

- a. Entirely change the methodology for determining the Energy Price credited or paid to participating Net Metering customers²;
- b. Maintain the current Energy Price of 9.99 cents per kWh *only* for all customers with accepted applications as of April 20, 2018 and *only* for a period of five years³;
- c. Impose the risk of limited *detrimental* impacts on *most* customers in the Program⁴; and
- d. Impose BC Hydro's own expectation of a *significant detrimental* impact on *some* customers in the Program with *significant individual customer* financial impacts⁵.

4. It is not possible to reconcile the intended and expected effects of BC Hydro's proposed amendments with its express assurances that existing customers will not be affected.

5. The Net Metering Ratepayers Group (NMRG) is an ad hoc association of six individuals who own and operate five different net metering facilities and two individuals designing and developing a hydro generation project as prospective Net Metering customers. All NMRG members will be directly and significantly harmed if the BCUC approves BC Hydro's Application in this proceeding.

6. The NMRG Written Evidence is intended to provide the BCUC with facts related to the Net Metering Program from a customer's perspective, including explanations of why participating customers choose to enter the Program, what considerations informed that choice, and what expectations and conclusions naturally flow from their reasonable reliance on BC Hydro's promotions and representations – both past and present.

¹ Application, Ex. B-1, p. 16 PDF 22, ll. 10 -11.

² Application, Ex. B-1, p. 52 PDF 58, ll. 8 -9.

³ Application, Ex. B-1, p. 52 PDF 58, ll. 12 -13.

⁴ Application, Ex. B-1, p. 52 PDF 58, ll. 24 - 25.

⁵ Application, Ex. B-1, p. 52 PDF 58, ll. 24 - 25.

2. BC HYDRO PROMOTED NET METERING PROGRAM AS AN ENERGY BUYING and POWER ACQUISITION PROGRAM

7. BC Hydro introduced the Net Metering Program to the public with a simple straight-forward concept – *BC Hydro wanted to buy energy from its customers.*

8. The underlying objective of the Net Metering Program – to buy energy from its customers – must not be forgotten. Nor can it be confused with, or recast as, a load offsetting program. Load offsetting was not the driving consideration when customers made their carefully considered decisions to enter the Net Metering Program. Nothing in BC Hydro’s public promotional material or statements suggested that the point of the Net Metering Program was simply to have customers produce energy sufficient only to offset their own load.

9. BC Hydro’s website, news releases, public statements and promotional materials all created the same public perception. Net Metering Program was about the attractive and exciting concept of buying excess energy produced by its own customers.

10. The Energy Price, currently 9.99 cents per kWh, has been raised twice over the course of the Program. If the primary intent of Net Metering had indeed been load offsetting (i.e. generating no more energy than that same customer consumes) there would have been no need to set an Energy Price and certainly no need to raise that price on two occasions. Participating customers could simply have had their usage and their generation of energy offset, with no need to calculate an Energy Price. Clearly, the Program has always expressly contemplated that customer’s annual generation may exceed their usage. That is precisely why an Energy Price is required – to provide a means to quantify the payments due to customers for any *excess* (relative to their own energy consumption) generation.

3. BC HYDRO ACTIVELY ENTICED CUSTOMERS TO JOIN NET METERING PROGRAM

11. Below are just a few examples of the type of promotions that BC Hydro made – and continues to make – regarding the Net Metering Program. None of these promotions mentioned, alluded to or warned of any limitation requiring participating customers to produce only enough energy to offset their own load.

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.* ⁶(emphasis added)

⁶ The promotion is currently on BC Hydro’s website at https://www.bchydro.com/work-with-us/selling-clean-energy/net-metering.html?WT.mc_id=rd_netmetering#stories

12. The concept certainly sounded simple enough to the NMRG members, and presumably to all customers who ultimately participated in the Net Metering Program. Generate electricity for my own use, and sell what I don't need to BC Hydro at 9.99 cents per kWh. Simple. Nice. Great.

13. To make customers aware of the Net Metering Program BC Hydro features news items highlighting the program, such as this July 4, 2016 piece that is still up on the BC Hydro website:

Generate electricity, and sell some of it to BC Hydro



BC Hydro community rep Kathryn MacDonald drinks in the summer sun after writing about how owners of homes in B.C. equipped with solar panels can easily connect to the electrical grid and *sell excess power to BC Hydro.*⁷ (emphasis added)

14. Net Metering is described as an easy connection to the electrical grid, with no mention of limiting a customer's generation to only offset their own load.

⁷ <https://www.bchydro.com/news/conservation/2016/sell-electricity-at-your-home.html>

15. Still another example of a BC Hydro promotion of the Net Metering Program is this piece on BC Hydro's website:

Sell clean energy & connect to our grid



Independent generation helps us meet B.C.'s energy needs

We buy electricity from Independent Power Producers (IPPs) and *from residents* who have installed small solar generation. We also offer connections to our grid for large commercial operations such as pulp mills.⁸ (emphasis added)

16. The above BC Hydro promotion suggests that participating customers generating more electricity than they used could sell it to BC Hydro and by doing so would help all of B.C. meet its energy needs.

4. BC HYDRO ADDED ADDITIONAL INCENTIVE TO PARTICIPATE IN THE NET METERING PROGRAM BY RAISING THE ENERGY PRICE PAYABLE FOR EXCESS GENERATION – TWICE

17. Over time, BC Hydro made it increasingly more attractive to join the Net Metering Program, by twice raising the Energy Price paid to participating customers for their excess generation.

18. In January 2009, the Energy Price payable under the Net Metering Program was increased from 5.40 cents to 8.16 cents per kWh in response to the 2007 Energy Plan which indicated that the price paid for net annual surpluses of generation under the Program should be generally consistent with the prices paid in the Standing Offer Program (SOP).⁹

19. In May 2012, the Energy Price in RS 1289 was updated from 8.16 cents per kWh to 9.99 cents per kWh, to reflect the updated SOP prices at that time.¹⁰

⁸ <https://www.bchydro.com/work-with-us/selling-clean-energy.html>

⁹ BCUC Order G-4-09

¹⁰ BCUC Order G-57-12

5. NO NET METERING PLANTS WERE BUILT BY CUSTOMERS WITHOUT BC HYDRO'S PRE-APPROVAL

20. The size (i.e. allowable capacity) of each hydroelectric plant was not left to the discretion of the participating Net Metering customer, but was dictated in advance by BC Hydro's pre-approval.

21. BC Hydro's pre-approvals of hydro plants for net metering included:

1. 50 kW pre-approved May 10, 2010;
2. 12kW plant pre-approved December 12, 2011 and pre-approved to be upgraded to 100kW on February 4, 2017;
3. 50kW plant pre-approved to be built 2011 and approved for interconnection (i.e. start generation) December 13, 2013;
4. Following talks, incentives and promotions from BC Hydro to increase to a 100kW plant, addition of a second 50 kW turbine pre-approved 2014 and approval to commence parallel operation of second generator approved March 29 2017; and
5. 50kW plant pre-approved May 9, 2017.

22. NMRG understands there are approximately another 250 Net Metering projects approved by BC Hydro that are annual net suppliers of electricity (i.e. receive a net credit payment at the end of each year).¹¹

6. BC HYDRO PROMISES EXISTING NET METERING CUSTOMERS WON'T BE AFFECTED BY PROPOSED AMENDMENTS – BUT EXPECTS OTHERWISE

23. BC Hydro's Application unequivocally states:

“The *amendments* would apply only to future applicants to the Program and *would have no impact on existing customers in the Program.*”¹² (emphasis added)

24. Yet elsewhere in the Application and other evidence BC Hydro makes clear that it both believes and expects that will *not* be the case. That expected outcome is described in the Application's Conclusion:

“In the Application, BC Hydro is proposing to:

¹¹ Application, Ex. B-1, p.17 PDF 23, reports “256 customers who received a Surplus Energy Payment” for Fiscal 2018.

¹² Application, Ex. B-1, p.16 PDF 22, lines 10 – 11.

Net Metering Ratepayers Group
Written Evidence

- Make the amendments sought in the 2018 Amendment Application ongoing, with adjustments to provide additional flexibility to meet the current and future needs of customers;
- Assign all customers a default Anniversary Date of March 1 and to allow customers to choose their own Anniversary Date once;
- Update the Energy Price from 9.99 cents per kWh to an amount that reflects the price BC Hydro can sell the electricity for on the regional wholesale market;
- Make various minor amendments to improve the clarity, simplicity and safety of the Program and to reflect existing program practices; and
- Maintain the current Energy Price of 9.99 cents per kWh for all customers with accepted applications as of April 20, 2018, for a period of five years.”¹³

25. NMRG observes that BC Hydro suggesting that the Energy Price paid to participating Net Metering customers will simply be “updated” is misleading and incorrect. BC Hydro’s proposed amendments seek to fundamentally change the methodology used to determine the Energy Price credited or paid to participating customers.

26. The underlying rationale - reflecting “the price BC Hydro can sell the electricity for on the regional wholesale market” - draws an unfounded and erroneous conclusion about where Net Metering excess energy is actually sold. Invariably the excess energy generated by participating customers will be sold to and consumed by other customers (e.g. their neighbours) situated closest to them on BC Hydro’s system. BC Hydro’s suggestion that Net Metering excess energy will be sold to the “regional wholesale market” has no basis in fact and is completely unsupported by its evidence.

27. BC Hydro’s proposal to grandfather “the current Energy Price of 9.99 cents per kWh for all customers with accepted applications as of April 20, 2018, for a period of five years” is unfair, inappropriate and clearly would result in a significant detrimental impact for customers currently in the Net Metering Program, as well as prospective customers who wish to participate in the Program. The proposed five-year grandfathering period ignores BC Hydro’s own express expectations regarding the likely payback period for a customer’s investment in a Net Metering project.

28. BC Hydro’s website currently advises that the average payback of a typical solar installation (most common type of project) is nearly five times longer than the proposed grandfathering period.

**“Generating your own electricity
Generation options for homes, businesses
By the numbers**

- 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.

¹³ Application, Ex. B-1, p. 52 PDF 58, ll. 1 – 13.

- ***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)***.¹⁴

29. As the 23-year payback period is premised on the average solar installation, there obviously will be other Net Metering projects (e.g. of a different size, cost or type of generation) that will require a period longer than 23 years.

30. Regarding the impact of the Rate Rider, NMRG members initially understood when they joined the Net Metering Program that the Rate Rider would be paid or credited to them. At least one NMRG member did receive payment/credit for the Rate Rider for two years, after which BC Hydro changed its practice and discontinued payment/credit of the 5% Rate Rider to that NMRG member. Despite requests from the NMRG member, the payments/credits for the Rate Rider amounts were not restored. Clearly, that 5% reduction in annual payments/credits results in a significant negative impact on participating customer's payback calculation and overall initial financial planning.

31. The Conclusion section of BC Hydro's Application goes on to state:

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

- Respond to the Engagement Survey Results, the Jurisdictional Review, the Evaluation Report and feedback received from customers and stakeholders since the 2018 Amendment Application;
- ***Maintain the intent*** of the Program while supporting simplicity and safety as well as improving fairness between participating and non-participating customers;
- Are ***fair and*** provide a ***balanced approach*** that avoids substantial costs to BC Hydro and non-participating customers while allowing for limited cost-shifting to support the Program; and
- Are ***expected*** to have either a limited or beneficial impact on most customers in the Program with a minimal overall financial impact.”¹⁵ (emphasis added)

32. NMRG believes that the proposed amendments seek to change the intent of the Net Metering Program – not maintain it. The preponderance of BC Hydro's public messaging, past and present, leaves NMRG members certain that the Program was intended to facilitate customers having an opportunity to sell clean, excess energy from their own distributed generation with the assurance that BC Hydro would buy it. BC Hydro is now trying to recast the primary intent of the Program as load offsetting – but that characterization is disproven by BC Hydro's own promotions and statements over the course of the Program offering.

33. BC Hydro's express expectations of impacts are stated in a misleading way, so one can't reasonably accept BC Hydro's characterization without asking about participating customers who fall outside “most customers” and individual rather than “overall” financial impacts. The fourth

¹⁴ BC Hydro website at https://www.bchydro.com/work-with-us/selling-clean-energy/net-metering.html?WT.mc_id=rd_netmetering

¹⁵ Application, Ex. B-1, p. 52 PDF 58, ll. 14 – 25.

bullet in the passage quoted above could just as accurately be stated conversely as follows: The proposed amendments are expected (by BC Hydro) to have a *significant or detrimental* impact on *some* customers in the Program with a *significant detrimental* financial impact on *some individual participating customers*.

34. To be clear the NMRG members expect, contrary to BC Hydro's view, that approval of the proposed amendments would result in significant detrimental financial impacts to themselves and many other participating customers.

7. EVOLUTION OF NET METERING IN BC

7.1 Net Metering Program From 2004 To Present States Excess Generation To Be Paid Out On Anniversary

35. BCUC Order G-26-04, regarding BC Hydro's November 3, 2003 Application for a Net Metering Rate Schedule 1289, at PDF 8, first full paragraph states:

"BC Hydro proposes to purchase net excess generation at a 12-month anniversary date for a price equal to its avoided cost for green energy, calculated as the weighted average energy cost of its most recent comparable Call for Tender for green power generation; a price currently equal to 5.4 cents/kWh. This "Energy price" is set out in the Rate provision of the Rate Schedule 1289 tariff pages, attached as Tab B to the Application."

36. The quote above confirms that the most recent (in 2004) comparable Call For Tender ("CFT") was the basis for setting the original price paid to Net Metering customers. The same CFT was then subsequently used as the basis for setting the Standing Offer Program ("SOP") rate, so the SOP price remains conceptually linked to the now "cancelled" CFT price. SOP rates are prorated with regard to inflation yearly within an Energy Purchase Agreement ("EPA"). As a consequence, the SOP rates are still increased annually and presumably will continue to be increased annually during the remaining 20 to 40-year remaining terms of those EPAs.

37. BCUC Order G- 26-04, at PDF Page 9 paragraph 3 states:

"The Commission Panel accepts BC Hydro's proposed methodology to calculate an Energy price for purchase of annual net excess generation based on the avoided cost of comparable green power generation. The Commission Panel considers this to be a fair and reasonable approach for valuing the excess generation from qualifying net metering facilities under BC Hydro's eligibility criteria, from the perspective of both participating and non-participating customers."

38. BC Hydro purchased any remaining net excess generation on a customer's annual anniversary date at the RS 1289 energy price.

"The current RS 1289 energy price of 5.40 cents/kWh is based on the weighted

average energy cost of the F2002/F2003 Green Power Generation Call and is also equal to the Tier 2 price (5.40 cents/kWh) for the Transmission Services Rate (RS 1823), prior to the re-pricing of the Tier 2 price in July 2008. **When customers generate more energy than they consume, they receive a credit from BC Hydro valued at the rate applicable to their electricity service account, which is applied against future consumption charges. At each annual anniversary date, if there is any excess energy remaining in the customer's account BC Hydro currently credits the customer for this energy at the energy price of 5.40 cents/kWh.**¹⁶ (emphasis added)

39. BCUC Order G-57-12, regarding the 2011 Rate Schedule 1289 Amendment Application, in the Executive Summary at PDF 6 states:

“Net Metering allows BC Hydro residential or commercial customers who have installed on-site generating capability no greater than 50 kW to sell electrical energy to BC Hydro and to only be billed for their ‘net consumption.’ *If the amount of self-generation exceeds the customer load on an annual basis, BC Hydro pays the RS 1289 customer for the net annual excess generation at a price that should be based on that paid for generation under its Standing Offer Program (SOP).*” (emphasis added)

40. In December 2014 the BCUC issued its Decision in the BC Hydro Amendment To Rate Schedule 1289 Net Metering Service proceeding that stated:

“The Net Metering program was approved in 2004 by Order G-26-04, which established Rate Schedule 1289 (RS 1289). **The Net Metering program allows eligible British Columbia Hydro and Power Authority (BC Hydro, the Applicant) residential or commercial customers who have installed on-site generating capability to sell electrical energy to BC Hydro, reducing their electricity bill to their ‘net consumption.’ If the amount of self-generation exceeds the customer load on an annual basis, BC Hydro pays the RS 1289 customer for the net annual excess generation at a price approved by the British Columbia Utilities Commission (Commission).**”¹⁷ (emphasis added)

41. The BCUC’s December 2014 Decision also stated:

“BC Hydro acknowledges that some larger customers, including local (but not limited to) governments and First Nations, would like the opportunity to install generators larger than 100 kW to offset more of their electricity consumption **and potentially sell any surplus electricity under RS 1289.**”¹⁸ (emphasis added)

¹⁶ BCUC’s 2009 Net Metering Order

¹⁷ https://www.b cuc.com/Documents/Decisions/2014/DOC_41820_07-25-2014_BCH_RS1289-Net-Metering_Decision.pdf p. 1, para. 1.

¹⁸ https://www.b cuc.com/Documents/Decisions/2014/DOC_41820_07-25-2014_BCH_RS1289-Net-Metering_Decision.pdf p. 11, para. 3.

7.2 Size Of Generation Plant Set By Availability Of Energy Not By Homeowners Load Requirements

42. On May 14, 2012 the BCUC issued its Reasons for Decision attached to Order G-57-12 include the following:

“BC Hydro states that the original intent of the Net Metering program was to allow individual customers to meet all or part of their electricity demand and to that end, the 50 kW limit was considered consistent with the maximum amperage and voltage that most residential and commercial customers take service. The Panel has concerns about this rationale for the 50 kW limit. An underlying assumption appears to be that since a residence does not require any greater capacity than 50 kW to meet its own consumption needs, then the owner does not need to purchase and install generating equipment with a capacity greater than 50 kW. The Panel agrees that this would be the case for, say, a backup diesel generator — why pay for a larger piece of equipment than will be required? However, the Panel feels that the economics of the Net Metering program and the clean, small power installations that it comprises were fundamentally different. In this regard, we note the situation of Mr. Zdenek Los. He submitted that he had sufficient resources - i.e. water licences and water pressure - to build a 90 kW plant. While it is true that this may far exceed his own domestic power requirement, it is presumably more economically efficient for him to install larger generation compact capability and sell the excess power back to BC Hydro, that’s making his installation more cost-effective and reducing the payback period on his capital investment.”¹⁹

43. Mr. Zdenek Los joined the NMRG Intervention in the current proceeding.

44. The Reasons attached to Order G-57-12 went on to state:

“Implementing new generation capacity is an expensive endeavour, either for BC Hydro when it is building dams and powerhouses, or for a residential consumer installing distributed generation equipment. To this end, the Panel notes that in its Final Submission, BC Hydro stated that the key barrier to participation in RS 1289 was the cost of technology. However, in the case of the distributed generation equipment typical in the Net Metering program, none of the capital costs are borne by BC Hydro or its ratepayers. As can be seen in Zdenek Los’ case, by allowing for a larger capacity limit, the Net Metering program could be made more attractive and more accessible to potential customers, which would benefit BC Hydro and its ratepayers. ***It is the Panel’s view that the capacity of a Net Metering installation should be driven by considerations of economically available clean energy and not by the theoretical maximum capacity a homeowner may require.***

¹⁹ Order G-57-12, PDF 52, at https://www.bcuc.com/Documents/Proceedings/2012/DOC_30626_G-57-12-BCH-Net%20Metering-ReasonsforDecision.pdf

Further, given the emphasis placed on electrical self-sufficiency and clean electricity generation by B.C. energy policy and legislation, the ***Panel is of the opinion that encouraging participation by lowering barriers should be of primary importance.***²⁰ (emphasis added)

45. The particular circumstances of NMRG members provide compelling reasons for the BCUC to maintain its view that the capacity of a Net Metering installation should not be driven by a theoretical maximum that a homeowner may require. Rather, the capacity of such facilities should be driven by considerations of economically available clean energy as the 2012 Panel stated. Imposing arbitrary limits (e.g. 110% of customer's energy consumption) would reverse a key finding of Order G-57-12 and raise barriers to participation in the Net Metering Program. In the case of a hydro generation project, any such capacity limit would almost certainly make it uneconomical. BC Hydro has previously acknowledged that an increase in the allowable generator size to 100 kW may lessen the barriers for some customers seeking to take service under RS 1289 by allowing for improved economies of scale for net metering installations.

46. The BCUC's Reason's for Decision in the 2012 Net Metering proceeding also directly addressed the rationale for a cap on the capacity of Net Metering facilities:

“In the Panel's view, the original policy driver was to support a clean energy goal, and the Commission stated that support was conditional that it did not incur any substantial cost on the utility or impose any inordinate barrier to ratepayers seeking to net meter. Thus, the most important reason for the cap was to reduce the potential magnitude of cost-shifting. The potential for cost shifting is greatest when the Energy Credit is greater than the cost of comparable energy purchased by BC Hydro under the SOP. Minimizing the amount of energy that a Net Metering customer is able to generate reduces the amount that they can potentially sell at the Energy Credit rate. The Panel acknowledges the potential effectiveness of this approach. However, the Panel also notes two mitigating circumstances. ***At the time the Net Metering rate was first approved, the Energy Credit received by Net Metering residential customers was 6.05 ¢/kWh (the residential energy charge in the Electric Tariff), which was higher than BC Hydro's estimate of the avoided cost of comparable green power generation (the 5.4 ¢/kWh Energy Price). Now, however, the reverse is true.*** The second is that the Commission stated that limited cost shifting was warranted to support the implementation of Net Metering. ***The Panel is of the view that BC Hydro should demonstrate that increasing the cap would result in a substantial cost on the utility and its ratepayers, not just that it would result in more exports to the grid.***²¹ (emphasis added)

47. BC Hydro did not show that increasing the cap to 100 kW would impose a substantial cost on the utility or its ratepayers and accordingly the Panel in the 2014 Net Metering proceeding increased the allowable capacity limit for a Generating Facility from 50kW to 100kW.²²

²⁰ Order G-57-12, PDF 52-53.

²¹ BCH-Net Metering Service – Reasons for Decision APPENDIX A to Order G-57-12, p. 44 PDF 46.

²² BCUC Decision July 25, 2014 Amendment to Rate Schedule 1289 Net Metering Service, p.13, Section 3.3.

8. NET METERING CUSTOMERS HAVE INTERCONNECTION AGREEMENTS WITH INDEFINITE TERM

48. NMRG members, and presumably all participating customers, are required to sign Interconnection Agreements (“IAs”) with BC Hydro. As a legal contract an IA confers certain rights and obligations on both parties in accordance with its specific terms. The IAs executed by NMRG members include the following:

“Term and Termination

7. This Agreement shall become effective when signed by Customer and BC Hydro, and shall remain in effect *indefinitely* thereafter, until terminated as follows:

(emphasis added)

49. The IAs signed by NMRG members contain no statement or suggestion that operation of Net Metering Program approved facilities is to be limited only to load offsetting for a customer’s account with BC Hydro.

9. BC HYDRO ACTIVELY PROMOTED SALE OF EXCESS GENERATION FOR 9.99 cents per kWh – AND STILL DOES

50. BC Hydro’s website currently states:

“As a net metering customer with a smart meter, electricity can flow to or from your house, and the meter registers what's going on in both directions. When you generate more electricity than you use, you receive a credit to your account that is applied against your future electricity use. At your annual anniversary date, *if you have an excess generation credit remaining on your account, we will pay you at a rate of 9.99 cents per kWh.*”²³ (emphasis added)

10. SOP PRICE REMAINS RELEVANT TO NET METERING ENERGY PRICE

10.1 Nexus Between SOP Price and Net Metering Energy Price

51. BC Hydro’s 2008 Net Metering Re-pricing Application stated:

“BC Hydro notes that the filing of this application is consistent with Policy Action No. 11 from the 2007 B.C. Energy Plan (2007 Energy Plan) attached in Appendix A. The 2007 Energy Plan states that the Net Metering tariff is to be aligned and generally consistent with the prices paid under BC Hydro's Standing Offer Program (SOP) and BC Hydro is therefore updating the RS 1289 energy price as discussed below, to align with the prices paid in the SOP. Note - this was to reflect the average price of EPA's had increased and the prices paid to existing SOP customers. At this

²³ <https://www.bchydro.com/news/conservation/2016/sell-electricity-at-your-home.html>

time, BC Hydro is not proposing in this application any other changes to the terms and conditions of RS 1289.”²⁴

52. In Order G-4-09 issued January 29, 2009 the Commission approved an increase in the RS 1289 energy price from 5.40 ¢/kWh to 8.16 ¢/kWh.²⁵ That change was in response to Policy Action #11 of the 2007 BC Energy Plan which required that, to ensure even treatment, the rate paid for net annual surpluses of generation purchased by BC Hydro should be generally consistent with the prices paid in the SOP. In its Reasons for Decision, the Commission interpreted “generally consistent” as meaning that the two rates are of similar magnitude and are not biased toward either source of supply.

53. In Policy Action No. 11 of the 2007 Energy Plan, the B.C. Government also directed BC Hydro to establish a standing offer for clean electricity projects up to 10 MW. The SOP is a program designed to reduce barriers for the development of independent power producer (IPP) and other small developer electricity generating projects. ***Standing or standard offers generally involve procuring renewable energy by providing a price guarantee through a long-term contract.*** BC Hydro's SOP was approved by the BCUC on March 19, 2008 pursuant to BCUC Order No. G-43-08. ***In developing the SOP, BC Hydro determined that the Small Project stream from the F2006 Call for Tenders (F2006 CFT) had the most relevant pricing from recent call processes for SOP pricing.*** The F2006 CFT had been divided into two streams, Large and Small Project stream. The Small Project stream was a competitive process that targeted IPP projects larger than 0.05 MW and less than 10 MW. **The Small Project stream product was also contractually non-firm.** Note: shows BCH buying non-firm power under long term contract. **The SOP base price was arrived at by assembling a portfolio from the F2006 CFT Small Project streams, starting with the lowest adjusted bid price (ABP) project and adding the next lowest ABP project such that once the total capacity of the portfolio exceeded 100 MW no further projects were added to the portfolio. The ABP of the last project added to the portfolio was \$78.4/MWh (2006 dollars) and this value was used for the SOP base price.**

54. Although the RS 1289 Energy Price is based on the SOP base price, they are not identical because the SOP varies energy prices by region, whereas the RS 1289 tariff does not. The updated RS 1289 energy price has been calculated by escalating the SOP base price by a two per cent inflation rate 1 over two years to arrive at 8.16 cents/kWh. Accordingly, an inflation adjustment for the Net Metering Energy Price continues to be required.

10.2 Net Metering Energy Price Is Based On SOP 70% Firm Rate And 30% Non-firm and Adjusted For Inflation

55. BC Hydro submitted that the primary purpose of its Application to update the Energy Price in RS 1289 from 8.16 cents per kWh to 9.99 cents per kWh. This increase was motivated by a provision in the 2007 BC Energy Plan that required the ***Net Metering tariff to be aligned and generally consistent with the prices paid under the SOP.*** In January 2011, the SOP adjusted

²⁴ BC Hydro's 2008 Net Metering Re-pricing Application, Ex. B-1, p.1.

²⁵ https://www.bcuc.com/Documents/Proceedings/2009/DOC_20881_Reasons_G-4-09_BCH_Net-Metering-Re-Pricing.pdf

energy price was updated to \$117.76/MWh (\$2009) firm and \$48.84/MWh (\$2009) non-firm, based on the 2009 Clean Power Call (CPC). The proposed Net Metering Energy Price of \$99.87/MWh or 9.99 ¢/kWh, was based on a 70/30 ratio of firm and non-firm and adjusted to 2011 dollars.

“It appears to the Panel that the Energy Price may be consistently lower than the SOP price in that it may not adequately include transmission and distribution losses and avoided costs. BC Hydro justified this approach in part on the basis that the financial impact of any increase in the Energy Price would not be material given the small volumes of energy purchased under this rate. However, the Panel is of the opinion that the Energy Price should not be not discounted because volumes purchased under the Net Metering rate are small. A change in the Net Metering program uptake could significantly increase the volume of energy sold under this rate and the Energy Price should be robust enough to withstand the change.”

10.3 SOP Contracts To Continue For Approximately 17 to 37 Years

56. BC Hydro’s April 2016 Standing Offer Program Rules at page 22 state:

“6.3 EPA Term –*The EPA will have a single term of 20 to 40 years*, as selected by the Developer, or 10 to 40 years for Projects Behind a BC Hydro Customer Load, commencing on the Commercial Operation Date (as defined in the Standard Form EPA). After the term of the EPA expires, BC Hydro will determine whether it is prepared to enter into negotiations with the owner of the Project regarding a new EPA for the Project. BC Hydro’s determination will be based on its need for the electricity, prevailing market conditions, energy price, and power procurement practices at the time. If BC Hydro wishes to enter into a new EPA for the Project, BC Hydro expects that the price it offers for energy will assume that all initial capital costs for the Project have been recovered during the term of original EPA.”

11. MID-C PRICE IS NOT APPROPRIATE FOR NET METERING

57. BC Hydro through Powerex is able to "buy low sell high" because BC Hydro has the ability to store energy at times other than freshet when the dams have extra storage capacity. This works because of nuclear and coal/oil/gas turbine plants in the USA.

58. Nuclear plants radiate energy based on rod size. The way to turn down a nuclear plant is to absorb the energy into a control substance thereby wasting the energy. The rod still is radiating at the same rate. So in practice the power station generally keeps operating at the fuel’s capacity and the energy generated is sold for whatever price is offered by the market. Most USA nuclear plants are for baseload and are therefore considered a "must run" resource.

59. Coal, oil and gas turbines also ramp slowly and preferably not often. Ramping causes significant repair costs from cooling and heating the turbines and boilers due to metal fatigue. Similar to nuclear power plants, turbines very rarely get turned off and are operated to limit ramping as much as possible - preferably very slowly over several days and in the 20% range.

However, at a cost in certain situations they can be ramped much harder and faster than that. These turbines generally will be ramped before nuclear.

60. Internal combustion motor driven generators react very quickly and are often diesel powered. These are expensive/inefficient to run. Hydro power with storage reacts very quickly - literally turning on or off the tap.

61. At night BC Hydro buys electricity from coal and nuclear plants in the USA at low prices to supply the night-time needs of B.C. electricity customers. BC Hydro turns down its own generation and therefore is able to fill BC Hydro dams, usually between 11:00 p.m. and 5:00 a.m. However, in the daytime when demand is high BC Hydro can quickly provide power at very high prices to the USA. Times of high demand are when people get up especially 6:00 a.m. to 9:00 a.m. and depending on the season when air conditioning units kick in or in winter towards the evening. Special events like Super Bowl Sunday also push electricity demand to record highs. In the event that a USA power plant goes down, BC Hydro has opportunities to realize a windfall.

62. Clean Energy BC has filed a number of documents in several BCUC proceedings that explain why the Mid-C price is totally irrelevant to energy acquisition in B.C. and regarding the power value from intermittent sources.

63. BC Hydro's calculations of energy prices include the effect of foreign exchange rates, which can be very volatile. BC Hydro's 2018 Financial Statements, indicate the majority of its revenues are from "Domestic revenues" comprised of "sales to customers within the province of B.C." and "sales of firm energy outside the province under long-term contracts reflected in domestic load requirements".

64. The Domestic revenues represent 88.62% of the total 2018 revenues. Basing the Net Metering Energy Price mainly on Mid-C rates, provided in the USA markets and representing 11.38% of BC Hydro's total annual revenues, doesn't seem to be a fair way to determine an Energy Price to Net Metering customers.

65. BC Hydro appears not to have appropriately considered the impact of foreign exchange rates in its Application to amend the RS 1289 Energy Price. The NMRG does not see appropriate or sufficient justification for the use of Mid-C rates that apply only to slightly more than 10% of its revenue stream. Further, BC Hydro's Energy Price calculation is lacking the necessary transparency for customers and the public to determine whether foreign exchange rate impacts are reflected appropriately in the Energy Price.

12. NET METERING PROGRAM CAN BE VERY EXPENSIVE FOR SOME PARTICIPATING CUSTOMERS

66. Net Metering is not imposing significant costs on BC Hydro or its non-participating customers. Operating an approved facility under the program is neither an easy nor quick way to make money.

67. BC Hydro's website currently includes a promotional article dated October 5, 2015 that states in part:

“Solar Panels the top choice in selling electricity back to BC Hydro

How you can generate your own electricity

You can't just generate electricity any way you want. Our province prides itself on its history of clean generation, and that applies to self-generation, too.

Clean and renewable generation of electricity can come from biogas or biomass, geothermal, hydro, solar, wave or tidal, and wind.

Some people who have creeks running through their properties have been able to set up their own hydroelectric generators, but most residential self-generators — about 95% — are using the sun.

"Solar is pretty straightforward," explained Akbulatova.

There's no digging required and it doesn't require any major infrastructure to accommodate a generator. The panels are installed, usually on the roof, and then connected to the main electrical panel in the house.

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

The entire system can be set up by professional installers in only a couple of days. While you may be able to install the solar panels yourself, Akbulatova said a qualified electrician must do the wiring.

And once you're set up, there's almost no maintenance, except occasional dusting. The ideal conditions for solar generation include having a south-facing roof the panels can be installed on that's not shaded by trees or other objects that prevent sunlight from reaching the panels.

When BC Hydro pays you for electricity

The truth is that very few customers are able to make money generating electricity. They would have to be able to generate a great deal of electricity while using very little.

But there are a few who can, said Akbulatova. And once a year, on the anniversary date of the customer joining the Net Metering program, if they've sent more electricity than they've received, they get a cheque for 9.99 cents per kWh.

Ultimately, generating your own electricity helps most by reducing your need for electricity from BC Hydro.

With two-tier residential rates, you pay four cents more — about a third more than the regular rate — for each kWh you use after you cross the conservation rate threshold.

When you have even a few panels on your roof, said Akbulatova, you're able to keep your electrical use down so that you may never cross that threshold. "For a lot of people, that's where the electricity bill gets expensive."

How much electricity can you generate?

There's a misconception, said Akbulatova, that Canada doesn't get enough sunlight to justify the cost of installing panels. The reality is that even on cloudy days, solar panels can still generate electricity.

And while not every location in B.C. gets the same amount of sun — the Lower Mainland's North Shore is often socked in during the winter — the average amount of sunlight across B.C. is close to that in some countries, such as Germany and Japan, that are big on solar.

A typical residential roof can accommodate 16 solar panels, which generates 4,400 kWh in a normal year. That's enough to run a home entertainment centre for four years. Or to power a small home for half a year or more.

The cost of being able to generate your own electricity

While the cost of adding self-generation to your home is cheaper today than ever before, installing solar panels remains a significant investment.

A 16-panel set-up like the one described above could cost between \$10,000 and \$20,000. ***At today's rates, it could take at least 20 years to recoup that investment.***

But some people see it as a smart investment in the future.

And it can be.²⁶ (emphasis in italics added)

68. Full text of the partially quoted promotional article may be found at the link provided in the footnote. It's clear from that the piece is aimed at the 95% of generating customers who operate a solar facility. That's not inappropriate for the purpose of the piece, but it doesn't provide much of the necessary background information necessary to inform the BCUC in this proceeding.

69. The NMRG intends to fill in some of those informational gaps with this Written Evidence. NMRG members are among what the article refers to as "some people who have creeks running through their properties have been able to set up their own hydroelectric generators". Their hydro generation projects tend to be more complex and much less straightforward than a typical rooftop solar installation. They also tend to be significantly larger. Hydro generation facilities also usually require more extensive design and engineering work, additional permitting and licences, digging, concrete work, construction and other efforts. Such customers, as BC Hydro acknowledges, are relatively few in number.

13. COST OF NET METERING PROGRAM IS INEXPENSIVE FOR NON-PARTICIPATING CUSTOMERS

70. BC Hydro has noted that participating customers and other stakeholders appear to agree that a significant benefit of RS 1289 is the simplicity of the rate, ***it is inexpensive for BC Hydro to implement and administer***, the Net Metering Interconnection Requirements are straightforward, and the ***RS 1289 customer application process is low cost, efficient and timely***.

71. The annual total costs for the Net Metering program in F2011 were \$99,567 and were anticipated to drop to \$54,567 and \$40,000 in F2012 and F2013, respectively.

72. BC Hydro has also acknowledged that in the 2009 Net Metering Decision the Commission accepted an Energy Price that does not reflect regional or locational differences, and that

²⁶ BC Hydro webpage at <https://www.bchydro.com/news/conservation/2015/selling-electricity.html>

the “*financial impact of the increase in the Energy Price is currently not material given the small volumes of energy - only four customers in F2011 were paid for Net Energy at the Energy Price, the total energy purchases being 57,730 kWh*”.

14. INVESTMENT CONSIDERATIONS FOR NET METERING HYDROELECTRIC PROJECTS

14.1 Actual or Contemplated Investment By NMRG Members

73. BC Hydro’s Application seeks to significantly alter the price and rules for its Net Metering customers after they have taken on significant risk and made significant investments based on their reasonable reliance on BC Hydro’s verbal and written assurances, enticements and public statements.

74. For example, because hydroelectric projects are site specific they typically require design work and assistance of an electrical engineer to ensure suitable control and protection equipment that meets or exceeds BC Hydro's specifications. That work alone can easily total \$5,000 or more.

75. Extending a distribution line from a neighbour’s property to the hydro project, poles, 25KVA transformers and conductors may cost in the range of \$6,000 or more.

76. A control system required to connect to BC Hydro’s system may add another cost of \$7,000 or more.

77. Upgrading a smaller hydro plant to 100 kW can easily take two years or more, require additional or larger poles, transformers and conductors, necessitate permits, environmental studies, water licences, hydrology reports, financial service requirements, construction and materials (\$475,000 range) and time and labour (\$385,000 range).

78. The extent of investments made by Net Metering customers is not trivial. The investments are material, significant amounts. NMRG members, in reliance on BC Hydro’s statements and communications regarding Net Metering, have made or intend to make large investments – in some cases in the \$800,000 to \$900,000 range per project. Their investments have included or are intended to include their own significant time, labor and opportunity cost of foregoing other opportunities in order to develop a Net Metering project.

79. NMRG members and other participating customers have not made their respective investments (or in some cases, prospective investments they wish to make) recklessly or spontaneously. Rather, their investments were made in good faith reliance on BC Hydro’s communications, information, marketing and promotions, and with the confidence that the BCUC would ensure fair treatment of participating customers.

80. Beyond the initial development and construction costs, NMRG members typically have significant ongoing costs arising from their hydro projects including:

- a. annual insurance/liability and licences (e.g. approximately \$1,800/year);
- b. maintenance and repairs (e.g. approximately \$3,000/year);
- c. income taxes on any net payment received from BC Hydro; and
- d. interest charges on loans taken to finance the hydroelectric projects.

81. NMRG member's experience for hydroelectric generation Net Metering projects is that at the current Energy Credit of 9.99 cents per kWh, the expected payback period is likely to be about 30 years.

82. Of course, the actual payback period may vary with the project and its particular circumstances (e.g. initial cost, interest rate, etc.). It must be noted that the payback period calculation includes no return whatsoever on the customer's investment – the possibility of achieving a return on their investment comes only after the investment and operating costs are recouped.

83. If some portion of the annual Energy Credit is considered to be a return component (as BC Hydro receives through its rates) then the payback period would of course have to be significantly extended. If not, then it is not unreasonable to consider and acknowledge the opportunity cost to participating customers as a result of an investment that provides benefits to BC Hydro and non-participating customers.

84. For example, an \$850,000 investment in a mutual fund with conservative low risk investment yields of 5% for 20 years, assuming inflation of 2% per year, would result in a Total Future Value of Investment of approximately \$1,517,000.²⁷

14.2 Net Metering Hydroelectric Project Customers' Investments Require Long Payback Period

85. BC Hydro's public statements regarding expected payback periods for a Net Metering project tend to focus on the most typical projects – solar panel installations. Those estimated payback periods of 20 to 25 years do not apply to hydro generation projects.

86. Frequently quoted lifespans of hydro plants are in the 50 to 100 year range, provided they are regularly and properly maintained. The Sandon run of river plant near one NMRG member has been in service for 121 years.

87. Although hydroelectric generation projects are long run, they also impose significantly higher up-front costs and investment. Financing that initial outlay can require a long loan repayment period, with commercial lending rates imposing significant carrying costs. A loan rate in the range of 6% annually can impose interest costs equal to almost half of the amount of the annual Net Metering credit amount.

²⁷ <https://www.bankofcanada.ca/rates/related/investment-calculator/>

88. As a point of comparison, BC Hydro has acknowledged that 40-year amortization periods are typically used for independent power producers (IPPs) based on its negotiations with developers, and a 70-year amortization period was used for the Site C dam.²⁸

14.3 Inflation Effects Vary By Type Of Net Metering Generation

89. BC Hydro has assessed that there was a trend of decreasing initial costs to construct and connect solar systems. Using the same assessment approach to align costs of constructing a hydroelectric facility and energy pricing, one would conclude that the Energy Price in respect of hydro projects would increase, which would reflect the increase in overall construction costs in B.C.

90. If NMRG members were to rebuild their facilities today, their construction costs would be significantly greater as wages and various professional fees such as engineering fees have gone up. Prices of fuel, concrete, helicopter service, lumber and all other construction materials have also increased. The requirements and standards to meet for connecting to the BC Hydro grid have not been reduced. In fact, if BC Hydro wishes to better align pricing with hydroelectric Net Metering participants' initial investments and construction costs, the Energy Price must be increased rather than decreased.

15. RATEPAYER AND PUBLIC BENEFITS OF NET METERING

15.1 Net Metering Excess Generation Is Necessarily Consumed Locally

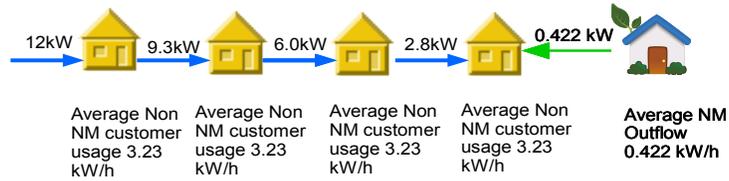
91. Notwithstanding BC Hydro's professed inability to determine where energy from Net Metering excess generation is consumed the answer is actually readily apparent. Energy from Net Metering excess production will be consumed by customers who are closest in physical proximity to them on BC Hydro's system. In general, that means that *neighbours* of Net Metering customers are the most likely consumers of any excess generation. The most likely consumption of excess energy generated by Net Metering customers is illustrated in Figure 1.

²⁸ https://www.bchydro.com/news/press_centre/news_releases/2016/70-year-economic-life-site-c.html

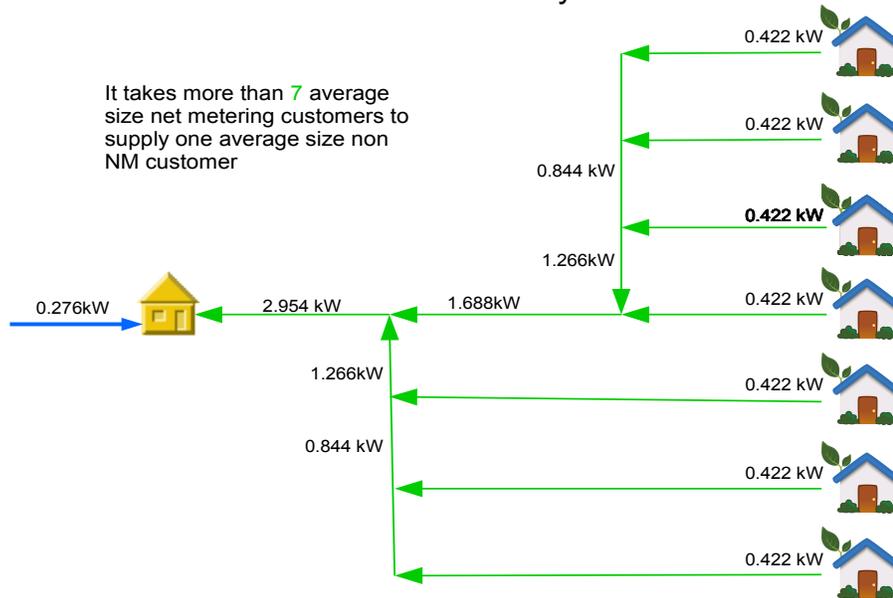
Figure 1

2018 BCH Customers $\frac{2,018,226}{1851} = 1090 : 1$
 Number of NM Customers
 2018 total NM MWh outflow 6844 MW/Yr = 781 kW/h
 Total net metering outflow $\frac{781\text{kW/h}}{1851} = 0.422 \text{ kW/h}$
 NM Customers

This continues with non NM customers another 1086 times



OR
Put another way



92. BC Hydro takes an odd position regarding its supposed inability to attribute energy received from a customer or by a customer to any particular use:

"Energy generated by a net metering customer is first used to offset the customer's load. Any excess energy is received by BC Hydro at the customer's point of interconnection with the BC Hydro system. As BC Hydro's system is managed as

a whole, the excess energy received from the customer is not attributed to a particular use by BC Hydro."²⁹

93. BC Hydro's approach of managing its system as a whole is appropriate in many contexts, but not in the context of Net Metering. Smart meters permit BC Hydro to see energy inflows and outflows at a specific location. Hydroelectric Net Metering projects tend to be connected to rural distribution lines, so it both unnecessary and inappropriate to maintain the fiction that excess energy from a Net Metering customers' generation could go to and be consumed *anywhere* in B.C. or even beyond the borders of the province. Of course, that is theoretically possible in some cases, but it is not an appropriate default assumption.

94. As a simple general proposition, excess energy from a Net Metering customers' generation will most likely be carried by BC Hydro's lines to the next closest customer on its system. As illustrated in Figure 1, that energy is not likely to travel any further.

95. If energy received by a customer is not attributed to a particular use then all electricity delivered to BC Hydro from a Net Metering customer or from any supply must be equally "not attributed" amongst all the other power. Following BC Hydro's logic, Net Metering energy would become indistinguishable to any other source of energy as soon as it leaves the Net Metering site. As all electricity in the system is deemed to be "not attributed a particular use" this means all must be equal. As all electricity is equal then all electricity must equally supply all loads. Therefore, it must be impossible for BC Hydro to attribute the energy supplied by a Net Metering customer to 100% export.

15.2 Environmental And Other Benefits Of Net Metering

96. Careful consideration of all aspects of net metering reveal that it results in net benefits, rather than net costs, for non-participating BC Hydro customers.

97. For example, *SHINING REWARDS The Value of Rooftop Solar Power for Consumers and Society* provides a review of 16 recent analyses indicating that individuals and businesses that decide to "go solar" generally deliver greater benefits to the grid and society than they receive through net metering.³⁰ Of these 16 analyses, the median value of rooftop solar energy was 16.35 cents per kWh, while the average residential retail electricity rate in included states was 13.05 cents per kWh.

98. The *SHINING REWARDS* study also addresses avoided energy costs. Solar energy systems produce clean, renewable electricity on-site, reducing the amount of electricity utilities must generate or purchase from fossil fuel-fired power plants. In addition, solar photovoltaic (PV) systems reduce the amount of energy lost in generation, long distance transmission and distribution, which cost U.S. ratepayers about \$21 billion in 2014.

²⁹ Ex. B-5, BC Hydro response to BCSEA 1.21.3

³⁰ https://www.seia.org/sites/default/files/resources/EA_shiningrewards_Summer2015.pdf

15.3 Power Quality From Hydroelectric Net Metering Projects

99. Most Net Metering hydro plants do not have a large storage ability, if any. However, there is usually a minimum and maximum average specific to each site. For example, one NMRG member's system runs at 50kWh/day for 8 months and 78kWh/day for 4 months during freshet. This level of Firm energy is higher than most larger run-of-river IPP projects.

100. The Freshet peak is also when BC Hydro generally runs their turbines at full capacity after they have replenished their storage dams to the maximum.

101. From August onwards, cooler weather in fall and winter is when energy demand is high in Canada. That is the same time period that most B.C. hydroelectric Net Metering projects create the highest value energy. This differs markedly from the solar generation profile particularly in winter and all year at night.

15.4 Net Benefits Of Net Metering Surpass Net Costs

102. Considering that only 12 customers out of BC Hydro's 1,300 Net Metering customers have so-called "oversized" generating facilities it appears highly doubtful that it would be appropriate or worthwhile to restrict access or effectively end the Program. Based on a fixed annual rate of 9.99 cents per kWh, Net Metering customers have to produce relatively steady year round power to have any hope of achieving the larger annual payouts. This suggests the power generated by these facilities would have a greater value than IPP's in the SOP program which typically have capacity factors of less than 50%. BC Hydro's Site C dam is expected to have a capacity factor of 55%, and the oversized Net Metering customers provide more "stable" power than Site C. This suggests oversized generators are not cost shifting to other ratepayers.

16. CONCLUSION

103. Fair and predictable pricing for Net Metering excess generation is essential to provide current Net Metering customers reasonable opportunities to recover their investments and realize a reasonable return, but also to attract and encourage prospective future customer investments in Net Metering facilities.