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March 12, 2020

BY ELECTRONIC FILING

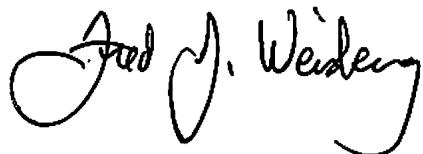
British Columbia Utilities Commission
6th floor, 900 Howe Street
Vancouver, BC V6Z 2N3
Attention: Patrick Wruck
Commission Secretary and Manager Regulatory Services

Dear Mr. Wruck:

**Re: British Columbia Hydro and Power Authority (BC Hydro)
Application to Amend Net Metering Service under Rate Schedule 1289 ~
Project No. 1599004
Net Metering Ratepayers Group
AND
British Columbia Community Solar Coalition
Final Argument**

We are writing on behalf of our clients the Net Metering Ratepayers Group (NMRG) AND British Columbia Community Solar Coalition (BCCSC) to file their joint Final Argument in the above captioned proceeding.

Yours truly,



Fred J. Weisberg
Weisberg Law Corporation
Counsel to
Net Metering Ratepayers Group
AND
British Columbia Community Solar Coalition

NMRG Application for Reconsideration
Of BCUC Order G-276-19
November 8, 2019

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

Net Metering Ratepayers Group
And
British Columbia Community Solar Coalition

Final Argument

March 12, 2020

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Part 1 Introduction

This Final Argument is submitted jointly by the Net Metering Ratepayers Group (NMRG) and the British Columbia Community Solar Coalition (BCCSC). Notwithstanding the two different generation technologies employed by the members of these two groups – microhydro for NMRG and solar for BCCSC – over the course of this proceeding the individuals and associations that comprise the two groups have cooperated and ultimately agreed to proceed, effective January 18, 2020, represented jointly by legal counsel. Such cooperation is not only expressly encouraged by the BCUC¹, but should be acknowledged as very significant in the context of BC Hydro's proposed changes to the NM Program. BC Hydro has characterized some NM customer facilities as “oversized” – a pejorative term apparently intended to vilify a few customers with generation facilities that were fully reviewed and approved by BC Hydro.

BCCSC's cooperation with NMRG, and equal participation in this Final Argument, represents a rejection of BC Hydro's apparent attempt to “divide and conquer” its customer groups, by painting a small group of NM customers as the “bad guys”.

Part 2 Context

A. Application Background

This proceeding involved a very large number of filings, a rather extraordinary number of Intervenors, Interested Parties and individuals proving Letters of Comment, considerable procedural steps, and a timespan of over 10 months to date. It would be easy, but not appropriate, to lose sight of the fact that under the current rules the Net Metering (NM) Program pays out just \$324,000 per year² for the total excess energy generated by its NM customers. To the NM customers who put in the effort and investment to design, build and operate their NM facilities, that sum is essential to begin down the decades-long road to recouping their costs. To Non-Participating customers who don't take part in the NM Program, that sum has at most a negligible impact on their electricity rates. To BC Hydro, which has insisted throughout its evidence that it operates its electrical system “as a whole”, that sum is immaterial.

In other words, the Application seeks punitive financial consequences for customers that responded to BC Hydro's promotions, made their own investments with BC Hydro's full knowledge and approval, and have created significant and measurable benefits to Non-Participating customers and to BC Hydro. “Correcting” the phantom inequities in the manner BC Hydro proposes would put some NM customers' investments in jeopardy, put others in a range of financial difficulty, and greatly discourage new customers from joining the NM Program, while providing no meaningful reduction in Non-Participating customers' electricity rates.

B. Adequacy of Evidentiary Record

1. Incomplete and Inadequate Engagement Process

Multiple Intervenors and the BCUC questioned the completeness and adequacy of BC Hydro's customer engagement process. The Stakeholder survey asked for multiple choice answers and written answers but did not give the respondent the choice to submit their responses because the navigation button named “next”, without any warning, functioned as the upload command - submitting the survey, without the

¹ PACA Guidelines https://www.bcuc.com/Documents/Guidelines/2019/G-97-17_BCUC_PACA-Guidelines.pdf

² Ex. B-1, page 11; https://www.bcuc.com/Documents/Proceedings/2019/DOC_53955_B-1-BCH-Amend-NetMetering-RS1289.pdf

authors awareness, permission, or approval.³ The design of the online survey provided respondents no opportunity to review their responses for accuracy and consistency with their previous answers before submission.

The Stakeholder engagement process failed to meet a basic definition of the consultation promised by BC Hydro's 2018 Net Metering Application.⁴

BC Hydro's current Application states:

"[To] inform the application, BC Hydro engaged with customers and stakeholders... the engagement materials [emphasis added] are provided in Appendix D. The survey and summary of the responses received are provided as Appendix E (Engagement Survey Results)."

As BCCSC stated in evidence:

"consultation was a promise and condition... on which the Panel made its interim decision. Consultation is materially different from engagement process, which is basically merely a one-sided focus group exercise, a priori biased towards what a proponent wants to have on the table".⁵

BC Hydro identified the issues it believed needed to be discussed in a letter provided with the extension request filing including: "the need for a transparent review of the net metering program, with the opportunity for all stakeholders to participate."⁶ At no point in the engagement were stakeholders brought together with the proponent for a dialogue, which would be the minimum requirement for consultation. Webinars, hosted by the proponent, and web surveys, do not meet this requirement.

BC Hydro produced stakeholder engagement materials that were misleading. For example, it produced a table called the "Evolution of Net Metering" for the webinar that did not accurately relay the history of Net Metering rate as amended over time by excluding Order G-7-15.⁷ When asked about this BC Hydro stated that "stakeholder materials were focused on specific proposed changes".⁸ It is inappropriate for BC Hydro to present stakeholders with an amended history of the Program without an express disclaimer that the "evolution" has been edited to fit BC Hydro's narrative.

In light of the shortcomings in the engagement process, BC Hydro's evidence of Stakeholders' views and preferences is unreliable and should be given little or no weight. Future evaluations of the Net Metering Program should be done by a neutral third-party.

³ DOC_56023_B-8_BCH-Responses-to-Intervener-IR2, page 13

⁴ "Our review process will include stakeholder consultation". DOC_51643_B-1-BCH_RS1289_NetMeteringServiceAmendmentApplication.pdf, page 9,
https://www.bcuc.com/Documents/Proceedings/2018/DOC_51643_B-1-BCH_RS1289_NetMeteringServiceAmendmentApplication.pdf

⁵ DOC_56384_C18-6-BCCSC-Evidence, page 7,
https://www.bcuc.com/Documents/Proceedings/2019/DOC_56384_C18-6-BCCSC-Evidence.pdf

⁶ DOC_53101_B-4-BCH-Reply-to-Stakeholders, page 2,
https://www.bcuc.com/Documents/Proceedings/2018/DOC_53101_B-4-BCH-Reply-to-Stakeholders.pdf

⁷ DOC_53955_B-1-BCH-Amend-NetMetering-RS1289, Appendix D page 139

⁸ DOC_55177_B5-BCH-Responses-to-Intervenors-IR1, page 24

2. Missing Essential Evidence

The Application seeks to justify a drastic reduction in the Energy Price paid for NM excess generation but BC Hydro's evidence leaves large gaps in the essential information required to change the Energy Price and neglects to provide critical evidence to support the highly consequential and damaging changes it proposes for NM. BC Hydro has used the government and regulatory process as a purported rationale for missing evidence. BC Hydro's extension request for filing referred to the Government's report of Phase 1 of the comprehensive review. A report on Phase 1 of the comprehensive review, and Government's response, is expected to be released in the months ahead.⁹

"BC Hydro believes that waiting for the release of results from Phase 1 of the comprehensive review would help". ***Evidence of how production from RS 1289 customers can contribute to resource plans simply doesn't exist.*** BC Hydro will "[include] Net Metering in resource planning in its next Integrated Resource Plan."¹⁰ (emphasis added)

A major omission in BC Hydro's evidence is restricting its consideration to ***current adoption*** of NM rather than ***expected growth*** in NM and technological developments in distributed generation. That omission greatly undervalues NM energy.

BC Hydro has also insisted that equipment leasing, a topic that was specifically addressed in the rate amendment proceeding resulting in Order G-7-15, is outside the scope of this application.¹¹ BC Hydro's choice to exclude consideration of equipment leasing, and omit mention of Order G-7-15 in its table titled "Evolution of Net Metering Program", create bias by focusing only on its proposed amendments while ignoring their impacts on customers in or wanting to join the NM Program. From the customers' perspective an option to lease clean or renewable generators is an essential element that may determine whether they can participate in NM. It is completely inappropriate to kick the can down the road by accepting BC Hydro's vague intention to "...consider matters related to the leasing opportunities for future applications".

As pointed out in evidence by BCCSC, BC Hydro has a history of "declinin[g] to provide their DG strategy".¹²

C. BC Hydro Enticed Customers to Join Net Metering Program, But Now Proposes to Punish Them for Their Efforts, Contribution to Climate Change Mitigation and Investments

The record, including NMRG and BCCSC evidence, leaves no doubt that BC Hydro actively enticed customers to join the NM Program. Such promotion was done through a number of channels, including BC Hydro website, press releases, public meetings and displays and other means. Those actions were appropriate. However, having encouraged customers to join NM with representations including the

⁹ DOC_52822_B-1-BCH-ExtnRequest-NetMetering-Application, page 1&2,
https://www.bcuc.com/Documents/Proceedings/2018/DOC_52822_B-1-BCH-ExtnRequest-NetMetering-Application.pdf

¹⁰ DOC_55177_B5-BCH-Responses-to-Interveners-IR1, page 42

¹¹ DOC_56023_B-8_BCH-Responses-to-Intervener-IR2, page 5,

https://www.bcuc.com/Documents/Proceedings/2019/DOC_56023_B-8_BCH-Responses-to-Intervener-IR2.pdf

¹² Footnote: DOC_56709_C18-9-BCCSC-IR1-Response-to-Interveners page 2,

https://www.bcuc.com/Documents/Proceedings/2019/DOC_56709_C18-9-BCCSC-IR1-Response-to-Interveners.pdf going back to 2012.

expected payback period on investment and the apparent stability of the Energy Price, it is now grossly unfair to propose amendments that directly contradict those representations and NM customer expectations. The ***precipitous 69% drop*** in the Energy Price is seldom if ever mentioned throughout BC hydro's filings in this proceeding – it is invariably described by BC Hydro in euphemistic terms like “updated”, “amended” or “adjusted”. The magnitude of the proposed drop in the Energy Price is not fairly indicated by any of those terms. The proposed drop in the NM Energy Price is nothing less than punitive.

D. Disincentives to Net Metering Are Not the Path to the Future Sought By BC Hydro's Customers

The sheer number of customer submissions – made by Intervenors, Interested Parties and individual letter so of comment – indicate a large and obvious level of public concern about BC Hydro's proposed amendments to NM. The vast majority of submissions seek to encourage the BCUC to enable a path to a much different for Net Metering in British Columbia than what BC Hydro is proposing.

Net Metered generators are the only option the utility provides for clean renewable energy during grid failures. For energy security and reliability BC Hydro is proposing ratepayers have the option to install private, unregulated, emergency back-up equipment for when and where the utility has a service failure.¹³ While declaring that emergency power only benefits the customer that owns the clean generator BC Hydro also acknowledges “the public benefit from the provision of safe, reliable, electricity service”¹⁴.

The 2007 Energy Plan describes electricity services as: “the lifeblood of our modern economy and key to our entire way of life.”¹⁵ Public infrastructure, transportation infrastructure, emergency centres, homes and businesses can all provide public benefit from owning and operating Net Metered generators when the grid fails. For example, in December 2018 many coastal communities in BC endured a 13-day power outage.

BC Hydro is also aware of the emerging reliability issues due to wildfires demonstrated in the PSPC events in California.¹⁶ More electricity system disruption is expected due to the impacts of climate change.

While BC Hydro uses international accepted standards for distributed generators to improve reliability on distribution feeders, CSA C22.2 No.107.1 inverters are ***not*** prohibited from “intentional islands” or “microgrids”.¹⁷ BC Hydro is not, in fact, planning any systems to meet the IEEE Std. 1547-2018 thereby demonstrating a preference, or a bias, to centralized generation.¹⁸

¹³ “[A] customer can install a Generating Facility with separate inverters for the utility connection and for the load requiring back-up supply.”* [DOC_56767_B-12-BCH-Rebuttal-Evidence](#), page 7,

https://www.bcuc.com/Documents/Proceedings/2020/DOC_56767_B-12-BCH-Rebuttal-Evidence.pdf

¹⁴ [DOC_57090_B-15-BCH-Responses-to-BCUC-Intervenors-IRsNo3](#), page 58,

https://www.bcuc.com/Documents/Proceedings/2020/DOC_57090_B-15-BCH-Responses-to-BCUC-Intervenors-IRsNo3.pdf

¹⁵ 2007 BC Energy Plan, page 12, https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/bc_energy_plan_2007.pdf

¹⁶ https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Intervenors-IR1.pdf, [DOC_55177_B5-BCH-Responses-to-Intervenors-IR1](#), page 129,

¹⁷ BC Hydro states: “As described in IEEE Std. 1547-2018 C2, these inverters can participate in an intentional island...” [DOC_57090_B-15-BCH-Responses-to-BCUC-Intervenors-IRsNo3](#), page 67

¹⁸ [DOC_57090_B-15-BCH-Responses-to-BCUC-Intervenors-IRsNo3](#), page 65

BC Hydro fails to mention or promote Net Metering systems for back-up power. Their published advice for preparing your home for an outage goes little further than advising battery powered flashlights, radios, and corded phones.¹⁹ Distributed generation should be acknowledged as an important element in preparation for power outages. However, because BC Hydro manages its electrical system “as a whole, the excess energy received from the customer is not attributed to a particular use”.²⁰ BC Hydro acknowledges that it “... has not conducted an analysis of the economic, environmental and social impacts of increased distributed energy generation”.²¹ **Clearly, such analysis is required to make an informed determination of whether the NM Energy price should be drastically reduced as BC Hydro proposes.**

Choosing to manage the electrical system “as a whole” for all purposes reflects a fundamental misunderstanding or rejection of distributed generation because it neglects to recognize the *locational value* of distributed generators.

For example, BC Hydro “... used \$300/MWh (F2015\$) as the avoided energy cost in the cost-effectiveness tests for DSM in the Non-Integrated Areas in the F2020-F2022 DSM Plan”²² and that “\$300/MWh in fiscal 2015 dollars equates to \$331/MWh in fiscal 2020 dollars”²³ or \$0.331/kWh. BC Hydro admits that “work is required to understand whether cost shifting from customers in the Program to non-participants is occurring in the non-integrated areas.”²⁴

BC Hydro is aware of utilities in BC that offer Community Net Metering but has not considered how the “services are offered” or “the rates are managed”.²⁵

BC Hydro “has not determined the degree to which aggregate generation from customers in the Program can be relied upon over the long-term and, to date, has not considered the potential energy contribution from customers in the Program to be sufficiently large to include in our long-term planning”²⁶ despite policy to value “aggregated intermittent resources”.

BC Hydro’s “surplus” has been created by past Integrated Resource Plan (IRP) process that has ignored the contribution of RS 1289 NM. Slashing the NM Energy Price and limiting distributed generation is not an appropriate fix to issues of supply planning.

BC Hydro introduces Virtual or Community Net Metering in the Application but provided a novel definition of the term. The definition used by BC Hydro describes “allocating credits to each subscriber’s electric bill

¹⁹ [DOC_57090_B-15-BCH-Responses-to-BCUC-Interveners-IRsNo3](https://www.bcuc.com/Documents/Proceedings/2020/DOC_57090_B-15-BCH-Responses-to-BCUC-Interveners-IRsNo3.pdf), page 59,
https://www.bcuc.com/Documents/Proceedings/2020/DOC_57090_B-15-BCH-Responses-to-BCUC-Interveners-IRsNo3.pdf

²⁰ [DOC_55177_B5-BCH-Responses-to-Interveners-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf), page 394

²¹ [DOC_55177_B5-BCH-Responses-to-Interveners-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf), page 101,
https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf

²² [DOC_55177_B5-BCH-Responses-to-Interveners-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf), page 320

²³ [DOC_55177_B5-BCH-Responses-to-Interveners-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf), page 321,

²⁴ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf), p122,

https://www.bcuc.com/Documents/Proceedings/2019/DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf

²⁵ [DOC_55177_B5-BCH-Responses-to-Interveners-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf), page 34,

https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf

²⁶ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1](https://www.bcuc.com/Documents/Proceedings/2019/DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf), page 128,

https://www.bcuc.com/Documents/Proceedings/2019/DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf

for *excess energy*²⁷ (emphasis added) BC Hydro proposes they will use a Deferral Account for Surplus Energy Payments²⁸, which NMRG and BCCSC consider an inappropriate way to account for the Energy Price for RS 1289 Net Metering.

BC Hydro is aware that inverters certified to UL 1741SA “Smart Inverters” are connected to the electricity grid and that these inverters have “additional functionality” to provide grid services like “voltage and power regulation”, and “voltage and frequency ride through”²⁹, yet it doesn’t want to reflect the value of those functions in the NM Energy price. That approach should be contrasted with BC Hydro willingness to value Smart Meters, with a capital budget of close to \$1 billion, but is unwilling to pay for a relatively insignificant expense for NM that provides distribution services.

Net Metering is the only available rate, or program, for community-based electricity projects. Communities, such as Fort St. John, and others access RS1289 Net Metering for Distributed Energy projects as this is the only available rate or program available that has an economic component. An alternative rate for communities may simplify RS 1289, but until such a rate is implemented RS 1289 must accommodate community projects and interest.

Part 3 Classification of “Oversized” Generating Facilities is Unnecessary, Misleading and Unhelpful

A. All So-Called “Oversized” Generating Facilities Were Fully Reviewed and Approved by BC Hydro

BC Hydro initiated use of term “oversized” generating facility – notwithstanding that the utility itself fully reviewed and approved (in some cases approving an expansion of existing facilities) each one. How can any impugned facilities be considered “oversized” when they were designed, constructed and operated with BC Hydro’s encouragement, full knowledge and final approval? BC Hydro has not suggested or acknowledged that it made any error in approving those so-called “oversized” projects, so such generating facilities must be considered entirely compatible with the intent of the NM Program.

The unfairness of misapplying an “oversized” label becomes more apparent when one considers the total cost and length of the expected payback period for facilities of this size. Customers who committed to investing in these generating facilities can’t simply undo their construction and other efforts, or somehow unwind the investment by liquidating those assets. Now that they are built, they have no choice but to carry those investments over several decades. Payments from BC Hydro at the Energy Price, and to a far lesser extent their reduced cost electricity for their own use, are the *only means* they have to recover their costs and any compensation for their efforts.

Going forward, customers fortunate enough to have the ability to produce clean, renewable energy to serve themselves and their neighbours should be permitted, and enabled, to do so. The inappropriate “oversized” notion is an obstacle to optimizing those resources.

²⁷ DOC_53955_B-1-BCH-Amend-NetMetering-RS1289, page 234, which it is not. Community Net Metering is the sharing of all generation, not excess generation, an important distinction.

²⁸ DOC_55177_B5-BCH-Responses-to-Interveners-IR1, page 139

²⁹ DOC_57090_B-15-BCH-Responses-to-BCUC-Interveners-IRsNo3, page 68

B. Concept of “Oversized” is New, But Also Wrong

Distributed Generation for public vehicle charging will not have a practical or economical way meet a 10% adder to customer’s annual load.³⁰ While load growth is predictable over time, the annual rate of growth is not and yearly upgrades to the generator are inefficient and uneconomical.

BCSEA has taken the position that the size to load criteria was impractical, and that the “Commission should welcome annual NEG... as being in the public interest and consistent with the B.C. energy objectives”.³¹ BCCSC and NMRG agree with that view.

C. Economics of Most Microhydro Projects Are Completely Unrelated to Matching a Customer’s Load

BC Hydro knows very well that the economics of developing, constructing and operating a microhydro generating project have little or no correlation to matching the size of that particular customer’s own load. It surely must know that, given its long and deep experience in developing, constructing and operating its own hydro generating projects, as well as being involved in commercial arrangements with independent power producers developing and operating their own hydro projects.

The underlying premise of the Net Metering Program is that at times a customer may produce more electricity than they require for themselves. With a steady resource such as microhydro, most facilities under normal operation will produce excess electricity much or most of the time.

D. Net Metering Generating Facilities Should Not Be Forced to Be Undersized Due to an Artificial Limit

Artificially capping Residential microhydro, or other clean renewable generation technologies, to match only that customer’s own load squanders the high-quality energy potential and blindly ignores the obvious economies of scale of larger (e.g. up to 100 kW) projects. That view was supported by the BCUC’s decision relating to Mr. Los not to set a cap at a theoretical maximum, but to permit sizing to the maximum potential.

Customers sometime site generators where the best resource is, as opposed to their load. In fact, in most situations, siting at the load is more economically beneficial for the customer as the energy has the value of the retail rate which is higher than the current Energy Price of \$0.0999. There is already a natural incentive to site with load but requiring generation to match load is artificial.

Part 4 Extent and Direction of Cost Shifting Between NM and Non-Participating Customers

A. Accurate Calculation of Cost Shifting

Accurate calculation of cost shifting between NM and Non-Participating customers requires minute by minute data from smart meters. Without it, BC Hydro must guess the time of day use by estimating when power is needed to supply the net metering customer based on a flawed calculation that does not include the NM customers’ internally (i.e. their own generation) satisfied loads.

³⁰ DOC_56384_C18-6-BCCSC-Evidence, page 12,
https://www.bcuc.com/Documents/Proceedings/2019/DOC_56384_C18-6-BCCSC-Evidence.pdf

³¹ DOC_47641_09-23-2016_BCSEA-final-argument, page 5&6,
https://www.bcuc.com/Documents/Arguments/2016/DOC_47641_09-23-2016_BCSEA-final-argument.pdf

Smart meters have Time of Use (TOU) ability and can be adjusted to give more data points. The data set for inflow and outflow could be available for all, compiled daily for each individual by using a simple program to show TOU in both directions. There are many products available which have kWh monitoring that can be placed on not only inflow and outflow but also on “house loads”.

B. Flow of Electricity

Electricity necessarily flows to the physically closest load, yet BC Hydro stated:

“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. The shortest physical distance is not always the shortest electrical distance. As the load and generation is constantly changing, it is not practical to determine the exact path the electric power generated by a customer in the Program takes on the BC Hydro distribution system.”³²

Technical terms of impedance, resistance, reactance, inductance, capacitance are all at play – but the basic principle is not overly complicated. The BCUC may take judicial notice of the explanation provided by Mike Holt, a highly qualified educator and expert for US National Electrical Code (NEC):

“Electricity takes all paths available in inverse proportion to the impedance of the paths. The magnitude of the current flowing in a path depends on the path's voltage and impedance. The lower the impedance (assuming voltage remains constant), the greater the current. Conversely, the higher the impedance (assuming voltage remains constant), the lower the current.”³³

Distance increases impedance – that is why the further the electricity travels the more line loss there is.

C. BC Hydro Doesn't Assign Electricity With A Specific Use - Except When It Does

BC Hydro opportunistically assigns specific uses for some electricity, but not for all electricity. BC Hydro does not assign a specific use to NM energy or conflates its use with alternative supply (i.e. Mid-C).

“The value of intermittent, non-firm energy to BC Hydro (e.g., excess generation from customers in the Program) is generally based on the Mid-C market price because it will generally result in incremental sales (exports) or decreased purchase (imports) activity with Powerex.”³⁴

That Response suggested NM energy would be exported or decrease imports from the US. Yet elsewhere in the record BC Hydro suggests that no particular use can be attributed to NM energy.

“... any excess energy received by BC Hydro at the customer's point of interconnection with the BC Hydro's system is not attributed to a particular use by BC Hydro”.³⁵

Although BC Hydro fully understands that NM energy will necessarily serve local loads first (a very specific use) it nevertheless maintains that 100% of electricity from NM generation is excess and has no value other than enabling exports and offsetting imports.

³² Ex. B-5, PDF 608 NMRG 1.5.2

³³ <https://www.ecmweb.com/content/article/20886840/the-path-of-least-resistance>

³⁴ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Page 170

³⁵ DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf page 66

D. NM First Fulfills Own Loads Before Providing Any Outflow

NM energy supplies local loads on the customer's side of the meter first. These loads are the closest electrically and necessarily closest physically to the generator. Only after all these loads have been fulfilled can any outflow (i.e. excess) be measured by the meter.³⁶

In a Response to a BCUC IR requesting total energy (kWh) generated by NM customers each year since the inception of the program BC Hydro stated:

"Total energy generated is not provided as BC Hydro does not separately meter customer Generating Facilities and therefore, does not have data on the total energy generated."³⁷

In a related Response BC Hydro stated:

"Current revenue metering measures a customer's **net** consumption and **net** generation."³⁸ (emphasis added)

To clarify this BC Hydro states:

"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"³⁹

Microhydro NM customers may and do show no inflow for months at a time. Those customers are still using electricity yet have zero inflow because all their energy needs are being met on the customer's side of the meter by their own generation.

NM generators create electricity at a fractionally higher voltage than the incoming power from BC Hydro. This helps BC Hydro with line regulation and voltage sag. The NM power at the fractionally higher voltage is pushed out of the generator towards the nearest available loads, replacing BC Hydro's supply. The more available power, the more loads the NM-source fills. When all local (i.e. the NM customer's own use – behind their meter) loads are filled, the generated power then starts to fulfill external loads (i.e. outside of the NM customer's meter). At that point the BC Hydro meter reads a power outflow.

BC Hydro has no idea how many NM customers' own loads have been fulfilled or when. Total energy generated isn't the same as "net outflow" or "net generation". However, BC Hydro's use of "net outflow" throughout its graphs, tables and cost shifting calculations ignores "total energy generated" and "NM customers' satisfied loads" thereby skewing the results so that it **appears** there is a cost shifting onto Non-Participating customers. In fact, such cost shifting to Non-Participating customers does **not** occur.

E. NM Secondly Supplies Next Nearest Load, Which Is 87% Residential

After the NM customer's own loads are fulfilled the excess energy starts to fulfil the next nearest load, their neighbors (of whom 87% are Residential). In 2016 on average a single Non-Participating Residential

³⁶ DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf page 394

³⁷ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf page 58

³⁸ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Page 174 last 4 paragraphs

³⁹ DOC_55177_B5-BCH-Responses-to-Interveners-IR1.pdf page 394 BCH RESPONSE:

customer consumed more than double the average outflow from a single NM client's renewable energy outflow.⁴⁰

RS1101 average residential customers usage was 9,739 kW/yr or 1.11kW/h.⁴¹ NM Sample groups average NM total outflow per client was $1,614,480 / 409 = 0.45\text{kW/h}$.

Taking BC Hydro's entire customer base for 2018, on average a single Non-Participating customer (not limited to the Residential customer class) will require more than the total outflow from 7 NM customers.⁴² There is one NM customer to every 1,090 Non-Participating customers.

87% of NM customers are located in residential areas (calculated by tariff code) and not surprisingly 87% of NM outflow is delivered in residential areas.⁴³

When requested to show electrical flow by specific example, BC Hydro provided an example of ludicrous proportions, showing a 1,000 kW generator (**10 times** the size of the largest allowable NM generator facility!), 2 x 5 kW generators and 1 x 10 kW generator supplying 3 houses.⁴⁴

BC Hydro's deeply flawed example simply avoided answering the question in any relevant or meaningful way. In its Written Evidence NMRG provided its own model, realistically based on factual averages.⁴⁵

F. NM Avoids Or Reduces Distribution Costs And Generation Costs

NM customers' local loads and some of their neighbour's loads are the first to be fulfilled by their NM energy, entirely avoiding BC Hydro transmission and generation costs, and avoiding almost all distribution costs. That in turn enables BC Hydro to: save its water reserves for highest load periods; reduce wear and tear on its turbines; reduce transmission costs, line loss, and the need to build more transmission lines to supply distant customers or customers at high demand times.

NM delivers locally produced clean renewable power to Non-Participating customers at the cost of the NM customer's own investment and effort, while also supporting the local economy.

G. NM Microhydro Generates 89% Of All Net Outflow

In 2016 1,709,190 kWh of total NM supply included 1,528,391 kWh from NM Microhydro customers. Of the total \$170,748 in annual net supply payments that year, \$152,686 (or 89% of the total) was paid to NM Microhydro customers. It follows that 89% of NM net annual supply to BC Hydro power was steady reliable power from microhydro generation and the other 11% was primarily from solar generation with reduced production in evening or winter.⁴⁶

⁴⁰ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) page 68 table 1

⁴¹ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) Table 8

⁴² [DOC_56386_C23-7-NMRPG-Evidence.pdf](#) Page 25 Figure 1:

⁴³ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) page 60/61

⁴⁴ [DOC_56023_B-8_BCH-Responses-to-Intervener-IR2.pdf](#) page 210,211

⁴⁵ [DOC_56386_C23-7-NMRPG-Evidence.pdf](#) Page 25 Figure 1

⁴⁶ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) Page 54-57

H. NM Microhydro Generation And Outflow Is Steady, Long Run, Reliable And Firm

Entirely ignoring that the source of the great majority of NM outflow is from NM Microhydro, BC Hydro wrongly contends:

“Generally, net generation (outflow) from customers in the Program is not firm and continuous.”⁴⁷

BC Hydro made several other incorrect statements regarding NM Microhydro outflow, including:

“Excess generation from customers in the Program is not the same product as the service received by a customer from BC Hydro. For example, among other things, excess generation from customers in the Program is not a firm and continuous service.”

In other instances, BC Hydro stayed deliberately silent on NM Microhydro’s steady power contributions by focusing only on solar:

“...the predominant **type** of generation for customers in the Program is solar photovoltaic which does not result in Demand related cost savings.”⁴⁸ (emphasis added)

Further, BC Hydro’s calculation of the capacity factor for NM Microhydro is fatally flawed. Its calculation of “Capacity Factor of 296kW/551kW = 0.54 or 54%” results in a number that is significantly too low because it does not reflect NM customers’ own use of the energy they generate.⁴⁹

I. NM Microhydro Generation Has Large Demand Savings

Throughout the winter NM shows a positive **net** generation after it has fulfilled all its needs. This means either no demand costs will contribute to the cost to serve, or an equivalent amount of demand savings must be added under the avoided costs.

“Generation from residential customers in the Program is delivered to BC Hydro **primarily** in the daytime, during the summer and shoulder season. These times do not coincide with BC Hydro’s peak demand period or the residential class non-coincident peak period. As a result, generation from residential customers in the Program provides energy value only and does not result in **any** avoided demand-related costs.”⁵⁰ (emphasis added)

BC Hydro’s statement is contradictory. If “Generation from residential customers in the Program is delivered to BC Hydro **primarily** in the daytime, during the summer and shoulder season” then **some** generation from NM customers must be delivered to BCH at nighttime, during winter and the shoulder season. As discussed above, 89% of all NM Net Outflow is from Microhydro – **which does run in nighttime, winter and shoulder season**. Therefore, it is false for BC Hydro to claim “generation from residential customers in the Program provides energy value only and does not result in **any** avoided demand-related costs.”

⁴⁷ DOC_56023_B-8_BCH-Responses-to-Intervener-IR2.pdf Page 157:

⁴⁸ DOC_56023_B-8_BCH-Responses-to-Intervener-IR2.pdf page 122:

⁴⁹ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Table page 54-57

⁵⁰ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf page 177

There are a number of other mistakes in the table referenced above that show NM in an inaccurate light.

For example:

The amount that the NM customers received in 2018 for their generation is based on the net of their yearly outflow minus their inflow.⁵¹ In 2018 there were 11 NM-Hydro customers, ranging in sizes: 3 x 100kW + 3 x 50kW + 45kW + 25kW + 23kW + 5kW + 3kW. Annual NM-Hydro generation totals 2,592,720 kWh. However, that total is inconsistent with the 2018 daily net generation showing NM-Hydro total output as 1,910,327kWh.⁵²

Apparently, NM Hydro customers used either 2,592,720 kWh (Total Annual Payout energy) **OR** 1,910,327 kWh (Net Annual NM-Hydro) in 2018.

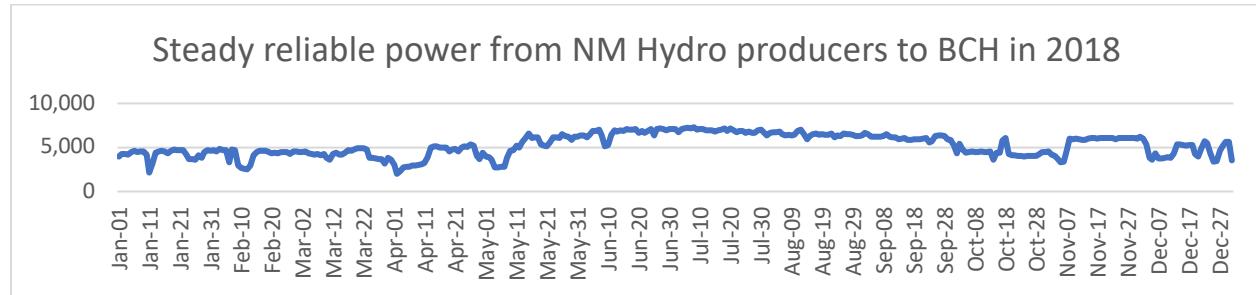
That discrepancy of 683,393 kWh, or 26%, is not trivial by any means. It is equivalent to omitting one of the largest 3 NM Hydro producers' entire years of steady output. Those 100 kW NM customers have the firmest year-round power with the highest capacity factors and have the greatest influence on any power profile analysis. It's difficult to understand how BC Hydro could make an error of that magnitude and there is no evidence to explain it.

As a result, any conclusions or graphs based on the table⁵³ on pages 144-151 require an increase in outflow by 26%.

Year-round firm power is provided by the NM-Hydro group, but NM customers are not able to outflow when BC Hydro has outages. These outages line up with the minimum output of 2005 kWh on April 11 2018, and again in December 2018 when BC Hydro had severe power outages.

The Figure 1 graph below was compiled from the same NM-Hydro table referred to above. All 365 daily data points are included.

Figure 1



It is important to note:

- BC Hydro had large power outages due to an ice storm on January 11th leaving 120,000 customers without power.

⁵¹ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Table page 54

⁵² DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Table pages 144 -151

⁵³ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Table pages 144 -151

- In December, 600,000 customers were without power in BC.⁵⁴ (Wikipedia and Global archive)
- Other outages could not be confirmed but are most likely the cause of outliers.
- Graph is missing one of the largest firm NM-Hydro customers data sets as discussed above.

Figure 1 graph above demonstrates that NM-Hydro provides peak demand capacity reliably through the NM program. This peak demand generation is delivered 87% of the time right into residential areas where it is needed. To a lesser extent, NM-Solar contributes as well.

The solar customers still manage to meet some of their peak demand needs themselves in house. Peak demand period in the evenings year-round is from 4 p.m. until 9 p.m. Twilight starts at 4:16 p.m. on the shortest day and 9:21 p.m. on the longest day (2016). Winter is also peak demand, but the sun is still shining, and the customers' loads are still somewhat being served. This too is not included into any of BC Hydro's calculations.

NM-Hydro customers are unaffected by winter and night-time. They offset the demand of the solar customers with their excess power, avoiding BC Hydro generation costs at peak demand times.

BCH also claims:

"Energy and Customer related costs. While net generation from customers in the Program reduces BC Hydro's energy related costs to serve Program customers, it does not reduce the Customer related costs and only reduces Demand related costs if the customer's net generation coincides with a peak period. This is generally not the case for **solar photovoltaic** generation, which is the **generation type** of **98 per cent** of participants in the Program. While customers can avoid Energy Charges under Rate Schedule 1289, they cannot avoid Demand or Basic Charges, under the Rate Schedule that the customer takes service."⁵⁵

In 2016:

- the total net output of all NM was 1,709,109 kWh (i.e. what all of NM received payments for).
- the total net output of NM-Hydro was 1,528,391 kWh (i.e. what NM-Hydro received payments for).
- the total net output of NM-Solar was just 180,718 kWh (i.e. what NM-Solar received payments for).⁵⁶

As those numbers show NM-Hydro made up 89% of NM annual net output. BC Hydro downplays or misrepresents that fact throughout its evidence by focusing on solar photovoltaic as the generation type making up 98% of participants – ***while not mentioning the generation type making up the great majority of net output.***

⁵⁴ Wikipedia and Global archive.

⁵⁵ DOC_56022_B-7_BCH-Responses-to-BCUC-IR2.pdf page 20

⁵⁶ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf pages 54-57

J. All 2016 NM Groups Peak Demand Was Fully Offset By NM Outflow

BC Hydro's Figure 1 shows Residential (RS 1101) Net Generation Outflow Pattern⁵⁷, which are then used in Tables 2 and 3 under (NM total) generation. However, use of BC Hydro's Figure 1 is incorrect because:

- It only shows net outflows, meaning the sum of all outflows for 409 NM clients after all inflows have been deducted.
- It doesn't consider all loads in sample 409 NM clients are met first by either their own generation on the customer's side of the meter or by an inflow from another NM members outflow. (BC Hydro avoided generation)
- Before any outflow can be recorded all the customer loads are fulfilled.
- BC Hydro does not supply the customer's own fulfilled load and it is not shown on this graph.
- Data of customer's own fulfilled load is not recordable by BC Hydro's meter.
- The net is always positive never negative.
- Should be increased by the number of fulfilled loads that BC Hydro can't meter.

BC Hydro's Figure 1 discussed above is not a net generation graph. Rather, it is a net outflow graph that does not include customer's own satisfied loads and must be treated as such. Basing Tables 2 and 3 on Figure 1 misses out a huge portion of the generated energy.

K. NM-Hydro Shares Outflow Amongst 409 Sample Group To Give Zero DEMAND

In considering BC Hydro's Figure 1 "outflow actual net generation pattern of 409 Residential (RS 1101) Net Metering customers in fiscal 2016" it must be noted:

- "Net outflow generation" shown is the outflow after inflow has been deducted and after all 409 client's loads have been satisfied.
- Shows net outflow is never less than zero - never negative.

Therefore, even throughout peak demand time in the evenings and in winter BC Hydro does not need to supply any net power to the Net Metering customers.

L. BC Hydro Inflates Avoided Cost - "Electricity Bill Revenues Less Surplus Payments"

BC Hydro's Table 8 shows Line (F), "electricity bill revenues less surplus payments" of \$474,343.⁵⁸

The existing NM tariff for these surplus payments is \$0.0999 / kWh. Table 1 shows surplus payments of \$1,085 for an average Non-NM client.⁵⁹

\$474,343 / 409 customers = \$1,160

\$1,160 (supposed annual 409 sample NM customers average load) - \$1,085 (average annual NON-NM customer) = \$74.76

\$74.76 / 6 months = \$12.46 Bi-monthly Basic Charges

⁵⁷ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) page 68, Figure 1 Table 2, 3

⁵⁸ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) Table 8 on Page 76

⁵⁹ [DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf](#) Page 68

Clearly the total, \$474,343, is based on the total demand for Non-Participating customers.⁶⁰

The figure of \$1,085 corresponds to 9,739 kWh annually from the same table. These figures, therefore, do not represent an NM sample group notwithstanding BC Hydro's claim that it does.⁶¹

BC Hydro was asked to provide a breakdown of the calculation of line F in Table 8 referred to above. Although the Response creates the impression that line F table 8 "electricity bill revenues less surplus payments" is directly from NM bills.⁶² Yet it clearly is not true. Line F, as shown above, certainly appears to be based on the average Non-Participating customer in RS1101.

That creates the false impression that NM customers have the same energy requirements as a Non-Participating customers, which defies logic because the former group is producing some or all of their own energy. That crucial difference skews the cost shifting analysis even further than simply leaving out NM fulfilled loads.

The average for RS1101 can't correctly be used as **both** an NM customer's needs and demands. NM customers necessarily must fulfill all their loads at their home before any outflow is made possible. NM is RS1289 not RS1101.

Line F should be identified as what it actually is - the average consumption of 409 Non-Participating residential customers.

The difference is even greater than it may seem because NM customers tend to be very frugal with super low usage because they:

- Invest more heavily in green products than any other residential rate class.
- All their local loads are satisfied entirely before any outflow is recorded.

M. BC Hydro Inflates (A) Energy Related Cost

By inflating Line (F), the amount a NM customer pays BC Hydro for their own loads to be satisfied at \$0.0999 / kWh, BC Hydro then uses this vastly inflated number in part in Line (A) as kWh supplied from BC Hydro.

Those miscalculations might lead some to conclude that if there is a credit in Line (F) then a debit of the same in Line (A) will even things out, but that would be the wrong conclusion.

(A) Energy Related Costs in kWh are directly proportional to (B) "Demand Related Costs" kW/month.

Further, (B) "Demand Related Costs" are the single largest driver of Cost to Serve.

BC Hydro has derived the amount in (B) from (F) plus the incorrect accentuated Figure 1 graph.

It's clear that BC Hydro is double-dipping by failing to take into account the satisfied loads in the Figure 1 graph **and** adding extra, and inappropriate, RS1101 requirements for load.

⁶⁰ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf Page 67 Table 1

⁶¹ DOC_56022_B-7_BCH-Responses-to-BCUC-IR2.pdf Page 5:

⁶² DOC_56022_B-7_BCH-Responses-to-BCUC-IR2.pdf page 6

Why then does BC Hydro claim (A) is a massive 6,041,1355 kWh? The energy required for a NM customer (A) logically must be **less** than the 9,739 kWh of energy required for a Non-Participating customer as shown in Table (1). Therefore (A) can't be higher than $9,739 \text{ kWh} \times 409 = 3,983,251 \text{ kWh}$.

The discrepancy between the number calculated by BC Hydro and the correct number is 2,058,105 kWh, an increase of 52%. Although BC Hydro expressly states that NM clients have a lower load factor it fails to reflect that fact in its own calculations, which incorrectly **increase** NM customers' load factor.

If NM customers actually received "6,041,355 kWh provided by BC Hydro" as claimed, then net metering clients would have to be receiving and using $6,041,355 / 409 = 14,771 \text{ kWh / year per client}$. Yet according to Table 1 average consumption for RS1101 customer is just 9,739 kwh / year per client.

Comparing the claimed annual consumption of 14,771 kWh by NM clients under RS1289 to the average consumption for Non-NM customers of 9,739 kwh / year per client under RS1101 results in a difference of 5,032 kWh /year. If correct, NM customers would have to be receiving and consuming 52% more energy from BC Hydro than received and consumed by average RS1101 customers. In other words, NM customers who have individually invested in green energy generation of their own are purportedly each receiving 52% more energy from BC Hydro than received by RS1101 customers who have zero self-generation? Clearly BC Hydro's claimed consumption for the average NM customer is simply wrong – by a very large margin.

N. BC Hydro's Inflated Energy Related Costs (A) Then Inflate Demand Cost (B)

Demand Cost (B) reflects the delivery of power at peak times, making it the single largest component of the cost to serve.

The ratio of Energy Related Costs (A) \$187,866 to Demand Related Costs (B) \$466,212, represents the ratio of energy that BC Hydro supplies to NM customers at peak demand time. That ratio of 1 : 2.46 on the cost side indicates BC Hydro must be assuming NM customers needed BC Hydro power during peak times. Those times coincide with times when NM-Hydro and some NM-solar are producing large outflows that would offset this.

(B) is the largest single component of cost to serve so any inflation of this cost will incorrectly and unfairly create a false impression of BC Hydro's true cost of serving NM customers.

O. BC Hydro's Numbers Actually Establish **Negative Cost Shifting**

To test BC Hydro's view of purported cost shifting, assume for the moment that BC Hydro is correct in claiming that the energy needs of NM customers is the same as RS1011 and that they do not generate some or all of their energy needs in house.

Then complete a calculation for (A) Cost of Generation provided by BC Hydro in kWh based on Non-Participating customer and (B) Cost of Demand.

1. A is $9,739 \text{ kWh} \times 409 = 3,983,251 \text{ kWh}$, representing all the electricity needed to supply 409 Non-Participating RS1011 residential customers' needs for a full year (who is not part of RS1289).
2. B is a product of A, the delivery and generation of electricity at peak periods.
3. B is directly proportional to A with a demand revenue escalation factor of 2.46.
4. A is $3,983,251 \text{ kWh} \times \$0.031 = \$123,481$
5. B (\$) is $\$123,481 \times 2.46 = \$303,763$

6. B (kW) is assumed to be using the demand revenue escalation factor $\$303,763 / \$12.82 \text{ kW} / \text{Month} = 23,694 \text{ kW}$
7. Figure 1 shows “net” generation graph never dipping below 0.
8. Therefore, all loads within NM 409 must be met at peak demand time. Also confirmed by daily net outflow graphs for 2018 (pages 146-151).
9. Total net metering generation supplied 1,612,480 kWh.
10. Of which \$90,508 was paid out for 905,986 kWh supplied.
11. $1,612,480 \text{ kWh} - 905,986 \text{ kWh} = 706,494 \text{ kWh}$ was banked in the summer and supplied back at necessary peak demand time.
12. Using the same supply calculation for demand from (A) to (B) for (F) to (G)
13. $706,494 \text{ kWh} \times \$0.031 = \$21,901$. A portion of which was delivered at “peak demand” time.
14. An Avoided Cost “Demand Related Savings” row needs to be added (G) for $\$21,901 \times$ demand revenue escalation factor of 2.46 = \$53,876.
15. Now to fully account for the \$90,508 that BC Hydro paid to the group as a whole for annual payout.
16. The total annual payout for 409 NM customers in the study was \$90,508 received for 905,986 kWh supplied to BC Hydro.
17. In line (G) 905,986 kWh @ \$0.031/kWh has been credited as part of the 1,612,480 kWh total generation value.
18. Or $905,986 \text{ kWh} \times \$0.031 = \$28,086$.
19. There are demand related savings of \$53,876. These were from supplying NM customers at peak demand time from other NM customers...or demand savings.
20. Value to BCH + Demand Savings = Total Savings.
21. $\$28,086 + \$53,876 = \$81,962$.
22. Annual Payout amount to NM – Total savings = Outstanding costs for payout for 409 NM sample group.
23. $\$90,508 - \$81,962 = \$8,546$.
24. Outstanding costs $\$8,546 / 409 = \$20.89 / \text{NM customer}$.
25. Working these numbers into the cost shifting calculation in the table below gives us a negative cost shifting of \$155.85

When these figures are inputted into Table 1 below the result shows that even with using inflated numbers for basic load based on an average RS1011 customer, and allowing for the demand savings that in all fairness have to be applied to energy supplied by NM at peak demand times that there is **negative** cost shifting (i.e. cost shifting from Non-Participating to NM customers).

Table 1

BC Hydro’s Own Calculation Demonstrates True Value of NM-Hydro’s Outflow 2018

NM-Hydro Offsets All BC Hydro Costs to Serve

The tables below provide an appropriate and more accurate calculation of the extent and direction of any cost shifting between NM and Non-Participating RS1101 customers.

BC Hydro Cost to Serve

A	Energy-related Costs	0.031 (\$/kWh) * 3,983,251 kWh provided by BC Hydro	\$123,481
B	Demand-related Costs	12.82 (\$/kW/month) * 23,694 kW / month provided by BC Hydro	\$303,763
C	Customer-related Costs	140 (\$/year/account) * 409 accounts	\$57,230
D	Program Administration Costs	175 (\$ / year / account) * 409 accounts	\$71,575
E	Total Costs to Serve	E = A + B + C + D	\$556,049

BC Hydro Revenues and Avoided Costs

F	BC Hydro Revenues Received	Electricity Bill Revenues less Surplus Energy Payments	\$474,342
G	Value to BC Hydro of Net Metering Generation Delivered	0.031 (\$/kWh) * 1,612,480 kWh Delivered to BC Hydro	\$50,148
H	Demand related Savings – NM Hydro offsetting solar requirements	12.82 (\$/kW/month) * 4,202kW month provided by NM Hydro-plants	\$53,876
I	Total Revenues and Value Received	I=F+G+H	\$578,366

Cost Shifting

J	Average Residential Net Metering Revenues to Cost Ratio	J=I/E	104%
K	Average Residential Non-Net Metering Customer Revenue to Cost Ratio	Per BC Hydro's Fiscal 2016 Fully Allocated Cost of Service Study	91%
L	Actual Average Cost-shifting Per Account	K = E * (K-J) / 409 accounts	\$-176.74
M	Annual cash payout remainder From BCH to NM per client	\$28,086 + \$53,876 = \$81,962 \$90,508 – \$81,962 = \$8,546 \$8,546 / 409 = \$20.89	\$20.89
N	Actual Cost Shifting per Client	L-M	\$-155.85

Even with the inflated energy and demand numbers from a Non-Participating customer it still shows a ***negative*** cost shifting of \$155.85. **Meaning every NM customer saves \$155.85 to Non-Participating customers.**

It is simply untrue that NM residential customers use 52% more power than Non-Participating residential customers. Even if one assumes that NM clients need the ***same*** amount of power as Non-Participating customers, which they do ***not***, the calculation still demonstrates a ***negative*** cost shifting as shown above.

The NM Project overall makes profit for BC Hydro, and accordingly the existing NM Energy Price should be increased to keep pace with the increase in the average power price from 2012 to 2020. The increase should also account for the avoided cost of building new renewable generation in BC with a stable long-run profile.

In past BCUC proceedings 10% cost shifting has been approved from NM to Non-NM customers. Some cost shifting in that direction is appropriate to partially offset NM customers' investments vs. the cost of BC Hydro building its own new generation, building local economy, renewable energy, and other advantages mentioned.

In a Response to a BCUC IR BC Hydro stated:

"The proposed update to the Energy Price is only intended to mitigate the cost shifting associated with Surplus Energy Payments (i.e., bullet a above). The remaining cost shifting resulting from the Program (i.e., paragraph b and paragraph c above) is not being mitigated through the Application.

BC Hydro will be undertaking additional cost shifting analysis through its next Net Metering Evaluation Report and will engage with customers in the Program and other stakeholders to identify possible solutions to any remaining cost shifting.

*This work may inform future applications to the BCUC.*⁶³

In light of the clear benefits of the NM Program to Non-Participating customers it is not apparent why recovering Program Administration Costs from all ratepayers is considered to be cost shifting at all. Acknowledging that many of the benefits of the NM Program are enjoyed to some extent by Non-Participating customers, allocation of some of the Program Administration Costs seems completely appropriate.

It seems clear from NMRG's calculations, and from the quoted Response above, that BC Hydro has considerable work yet to be done to fully understand the extent and direction of cost shifting between NM and Non-Participating customers. Given the large unexplained discrepancies, and significant analysis not yet undertaken, questionable cost shifting provides no basis to sharply decrease the NM Energy price.

P. NM Clients Are Underpaid For Their Investments In Renewable Energy

And Require A Higher Energy Price To End *Negative Cost Shifting*

BC Hydro states that the proposed amendments should be approved because:

"...the Energy Price would reflect the value of the electricity to non-participating customers."⁶⁴

⁶³ DOC_56022_B-7_BCH-Responses-to-BCUC-IR2.pdf page 8

⁶⁴ DOC_53955_B-1-BCH-Amend-NetMetering-RS1289.pdf Page 47 Line 3,4

That notion is simply wrong.

BC Hydro has not accounted properly for all aspects of the Net Metering cost shifting calculation. Cost shifting between customer groups is occurring, but not in the direction that BC Hydro claims. In fact, Non-Participating customers appear to be shifting costs **to** NM customers.

NM customers are not being paid a fair price for their excess **clean renewable** energy. To keep in line with previous BCUC decisions, which tied the NM tariff to SOP prices, the absolute minimum increase needed to RS1289 is 1% annually (approximately 50% of inflation rate) for every year since 2012. To help prevent **negative** cost shifting from continuing and exacerbating in the future, NMRG and BCCSC submit that an inflation factor of 1% should be added to the NM tariff to keep pace with existing SOP contracts.

“One hundred percent of the base price will be escalated at CPI annually up to the year in which an EPA is signed; escalation will be effective as of January 1st in each year. If CPI data is not available when the EPA is signed, the EPA will provide for a base price adjustment when the CPI data is released. After the EPA is signed, 50 per cent of the escalated base price is further escalated annually at CPI effective as of January 1st in each year.

The escalated base price is further adjusted based upon the time of day and month when the energy is delivered to establish the payment price for each MWh of energy delivered to the POI. The time of delivery adjustments are contained in the Standard Form EPA.”⁶⁵

BCUC’s 2008 NM review⁶⁶ showed an actual 10% cost shifting from NM to Non-Participating was acceptable. This formula was fine and was calculated using NM-Hydro at a 40% capacity factor – well below the actual 54% capacity factor of NM-Hydro discussed above. Significantly, the 54% capacity factor for hydro would better reflect the value of more stable year round power, further reducing the perceived cost shifting from NM to Non-Participating customers.

Part 5 Optimizing Customer Anniversary Dates Would Be Helpful

BCCSC and NMRG agree that it would be helpful to assign all RS 1289 customers a default anniversary date (Anniversary Date) of March 1 and allow customers to choose their own anniversary date once

Part 6 Most Relief Sought by BC Hydro Should Not Be Granted

A. Slashing Energy Price Would Be Unfair and Counterproductive

1. Slashing Energy Price at Extremely Low Uptake Level Contradicts Best Practice

According to the NARUC Manual⁶⁷ BC Hydro falls well within the earliest category of DER adoption “Grid Modernization” under 5% of distribution peak loading system-wide.⁶⁸ They caution that:

“before a jurisdiction embarks on the journey to implement substantive reforms due to the growth of DER adoption, it should look closely at data, analysis, and studies from its particular

⁶⁵ <https://www.itron.com/na/solutions/who-we-serve/electricity>

⁶⁶ DOC_20223_B-1_BCH-Net-Metering-Application APP B page 9.

⁶⁷ BCCSC filed “NARUC Manual on Distributed Energy Resources Rate Design and Compensation”. In DOC_56709_C18-9-BCCSC-IR1-Response-to-Intervenors, page 49, DOC_56709_C18-9-BCCSC-IR1-Response-to-Intervenors.

⁶⁸ NARUC Manual, page 60.

service are before any such actions are taken. The impacts that are occurring in one jurisdiction due to high DER adoptions may not necessarily be the same for another that is experiencing similar DER adoption.”⁶⁹ page 59

The amendments sought are clearly a “substantive reform” to RS 1289, yet BC Hydro’s customers are at the lowest of low adoption rate under 5% distribution peak loading system-wide, not at a high adoption rate of over 10%.

2. Clean Energies Provide Greater Value

Clean renewable energies (e.g. solar, micro-hydro, wind, geothermal) are non-emitting and therefore are not directly comparable to mega-hydro (e.g. large source of methane, NOx in agricultural areas and carbon dioxide). Mega-hydro may reduce the ability of the BC grid to accept increasingly needed input of non-emitting sources of electricity generation. Any changes to the NM Program should actively encourage and further enable customers to continue being or become producers of truly clean energy. Any NM amendments that discourage or prevent NM clean energy production run counter to social and scientific imperatives and should not be approved.

3. NM Requires Less Transmission and Distribution Infrastructure

Non-emitting clean energies in BC are broadly distributed, and due to their integration into local distribution infrastructure they necessarily generate electricity closer to the consumers and thus are not directly comparable to centralized generation from much larger facilities. As a result, from the generation location to the consumption location much less transmission and less distribution infrastructure is typically required.

4. NM Cost Is Relatively Minor

The amount of **excess** clean energy made available through the NM Program that enters the grid (3.25 GWh/y – 2018 – BC Hydro response to BCUC IR No. 1) is minute at 0.0057% compared with BC Hydro's overall generating capacity (57,173 GWh/y – 2018; BC Hydro annual report 2019) or annual imports of brown power from the Mid-C market. Any suggestion that this relatively infinitesimal energy contribution results in a significant rate impact for Non-Participating customers is incorrect and should be rejected.

According to Statistics Canada, BC will have an **annual** net population influx of between 25,000 (low estimate) and 78,000 (high estimate) for the next 25 years. The additional load growth that will result is likely to dwarf the energy input from NM customers even further.

Another noteworthy point of comparison for the cost of NM is that new generation costs for Site C are over \$9,000 per kW of installed nameplate generation. Using that same cost factor total NM of 13.39MW or 13,390 kW at \$9,000 per kW would have an equivalent cost of \$120,510,000.

5. Imposing Mid-C Pricing On NM Energy Price Is Inappropriate

BC Hydro wants to impose Mid-C pricing on NM customers yet ignores the local subsidies and climate change attributes of energy traded in Mid-C, which includes carbon-intensive high-emitting energy generated from coal, gas and biomass.

⁶⁹ NARUC Manual, page 59.

"BC Hydro has recently adopted the market price as a conservative interim assumption for evaluating energy during surplus and deficit periods.

Rationale for using an unadjusted Mid-C price as the Energy Price and to BC Hydro's response to NMRG IR 1.4.1 where we explain that Mid-C is well established as an appropriate proxy for market value in the Electric Tariff and that excess energy from customers in the Program has negligible direct value in wholesale markets."⁷⁰

To consider BC Hydro's position on its recent move to the market price for evaluating energy during surplus and deficit periods, the BCUC may wish to take judicial notice of the following additional context:

"In 2018, Powerex exported 8.7 million megawatt hours of electricity to the U.S. for a total value of almost \$570 million, according to data from the Canada Energy Regulator. That same year, Powerex imported 9.6 million megawatt hours of electricity from the U.S. for almost \$360 million."

Powerex sold B.C.'s publicly subsidized power for an average of \$87 per megawatt hour in 2018, according to the Canada Energy Regulator. It imported electricity for an average of \$58 per megawatt hour that year.

BC Hydro assigns all excess renewable energy from NM as having negligible wholesale value, whilst at the same time Powerex imports 9,600,000,000 kWh 2018 of cut price mainly fossil fuel power to sell in BC."⁷¹

Acknowledging that the source of the above quote was not filed in evidence in this proceeding, NMRG and BCCSC would welcome any factual corrections that BC Hydro may wish to provide in its Reply.

The inappropriateness of assigning NM power a value equivalent to discounted power imported to British Columbians from outside the province is further supported by other industry participants:

"A good chunk of the electricity we use is imported," says Martin Mullany, interim executive director for Clean Energy BC. "In reality we are trading for brown power" — meaning power generated from conventional 'dirty' sources such as coal and gas."⁷²

It is also important to consider the relative amounts of clean renewable NM power vs. imported discount power. For example, consider the ratio in 2018.

3,246,827kWh (NM annual excess)

DIVIDED BY

9,600,000,000 kWh (annual power imports to BC from US alone not including Alberta)

= 0.03%

⁷⁰ DOC_55177_B5-BCH-Responses-to-Intervenors-IR1.pdf pg. 479

⁷¹ <https://thenarwhal.ca/clean-b-c-is-quietly-using-coal-and-gas-power-from-out-of-province-heres-why/>

⁷² DOC_53955_B-1-BCH-Amend-NetMetering-RS1289.pdf Page 5 Table 1

In other words, in 2018 BC Hydro (through Powerex) imported nearly 3,000 times more energy from the US Mid-C market, derived mainly from fossil fuels, than it purchased from NM customers.

NM clean renewable energy is unlike Mid-C imported power due to:

- Mid-C generation outside of BC is mainly fossil fuel derived.
- Mid-C is a highly volatile US “junk” power market.
- Mid-C market can be manipulated by large players.
- Supply may or may not be there – it’s essentially what is left over after utilities fulfil their own domestic needs.
- Mid-C is not in BC - Location transmission costs, infrastructure.
- Carbon tax should be accounted for on power imports from Mid-C (\$147M)
- Buying from Mid-C contradicts multiple acts and initiatives including but not limited to BC Clean Energy Act, 2019 Clean BC, and Carbon Tax Act.
- Favors profits over environment.
- NM is 100% renewable.
- NM is locally produced and used..
- NM has the same energy profiles year in year out.
- NM is always there.
- NM increases the degree of BC self-sufficiency.
- NM-Hydro producers provide firm power with a capacity factor greater than Site C. Site C is 1,100MW/h nameplate 5,100 GWh or 582MW/h and a capacity factor of 53% - whereas NM-Hydro has a capacity factor of 54%.
- NM has Renewable Energy Credit value not recognized in this proceeding due to Powerex “Confidentiality” not releasing details.⁷³
- Buying “dirty” or “brown” power from the US is not a preferable alternative to British Columbians providing, increasing and improving local green renewable power generation.

Not relying on the US / Mid-C for excess power was a 2007 Clean Energy Act **mandate**.

Mid-C has been alleged to have been manipulated by Powerex and other players. In 2013 British Columbia's Minister of Energy and Mines, Bill Bennett spoke to why BC Hydro was agreeing to a \$750 million settlement with California over claims Powerex manipulated electricity prices.

⁷³ DOC_55177_B5-BCH-Responses-to-Intervenors-IR1.pdf page 179 response

6. SOP Pricing Remains Relevant Consideration

Although the SOPs are suspended, the rationale behind them continues to exist and still serves as a useful reference for the NM Energy Price. A future NM rate (properly discussed with all stakeholders, including the public) might be linked to the retail (i.e. Residential) rate at which most excess NM energy is purchased.

7. Effect of Inflation

The NM Energy Price already effectively decreases each and every year because Cost of Living Allowance (COLA) is not built into it. The Energy Price has had no annual inflationary adjustments for the past 8 years, unlike the Call For Power (CFP) or SOP contracts as instructed to do so by the BCUC.

BC Hydro answered a question about inflation with this quote from the 2004 Order G-26-04:

"BC Hydro does not believe that inflation is a relevant consideration with regards to the Energy Price. The Energy Price is not based on the costs incurred by the customer. Rather, in Order No. G-26-04, the BCUC determined that "it would be fair if net metering customers were compensated for the value BC Hydro receives from net excess generation."⁷⁴

However, the quote from G-26-04 goes on to say:

"The Commission considered that it would be fair if net metering customers were compensated for the value BC Hydro receives from net excess generation. Further, in light of the current economics of small-scale renewable generation in B.C., this requirement could be expected to encourage participation in net metering, all else equal."

However, BC Hydro has taken this out of context and the Order goes on to explain in detail:

"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.

The Commission Panel requests that when BC Hydro files its monitoring and evaluation report, it also propose revisions to its tariff pages to include the terms of the Energy price methodology, and a description of *the provisions for updates to the Energy price based on the most recent CFT for comparable green power generation*." (emphasis added)

BC Hydro's proposal to move to using the Mid-C market price as the basis to determine the NM Energy price is the opposite of using the "avoided cost of comparable green power generation". Mid-C power purchases are in no way comparable to NM excess power purchases with respect to the provision of local/provincial vs. foreign economic benefits, local energy supply security, line losses, environmental impacts or (Transmission costs, distribution costs, avoided transmission infrastructure upgrade costs,

⁷⁴ DOC_55177_B5-BCH-Responses-to-Intervenors-IR1.pdf Page 585 1.1.5

etc.). Most obviously, the great majority of Mid-C power is fossil-fuel derived and is in no way whatsoever comparable to green power produced by NM in BC.

8. BC Hydro Profits On Sale Of NM Excess Energy

In 2019, BC Hydro took in an average of 11.8 cents/kWh from the Residential customer class, which was 1.8 cents/kWh (18.3%) **more** than BC Hydro paid out for excess generation to NM customers. Therefore, BC Hydro made a significant profit on each kWh of excess generation from NM customers, without incurring any capital expenditures, while also greening its portfolio at the expense of NM customers.

In 2019, BC Hydro took in \$115 million from **surplus** electricity sales, at a rate of 5.16 cents/kWh, but suddenly sees an equity issue when purchasing energy for \$324,000 from NM customers at 9.99 cents/kWh, which is still below the **average** retail price.⁷⁵

B. BC Hydro Proposals Don't Appropriately Balance Fair Apportionment of Costs and Rate Stability

As discussed in other sections of this Final Argument, cost-shifting between NM customers and Non-participating customers is not the direction or the amount that BC Hydro claims. When the many benefits of clean renewable local NM energy are fairly considered, and the costs of alternative supply (e.g. Mid-C market) are fully reflected, BC Hydro's apportionment of costs is clearly not fair.

BC Hydro's proposals may contribute to rate stability for Non-Participating customers – but only because there is either no material impact on their rates as a result of any aspect of the NM Program or because NM customers are bearing more than their fair share of BC Hydro's costs.

At the individual customer level, the proposals changes to the NM Energy price will have a very large and consequential negative impact on NM customers' **revenue** stability – if the price they receive for the clean renewable energy they provide to other customers is drastically reduced as proposed.

C. Proposed Amendments Won't Improve Program Clarity and Simplicity

- Limit RS 1289 eligibility to those customers proposing a Generating Facility with an estimated Annual Energy Output no greater than 110 per cent of their estimated Annual Load, with some provisions to provide additional flexibility for customers.

This proposed amendment appears to be a solution in search of a problem. No problem of this kind exists.

In almost all cases, and for almost all solar NM customers, Annual Energy Outputs are not exceeding 110 per cent of the customer's estimated Annual Load. Indeed, they clearly are not exceeding even 100 per cent of their estimated Annual Load. If they were, the amount paid out would far, far exceed the total annual payout of \$324,000 in F2018⁷⁶ and the number of NM customers receiving payouts would be in the thousands rather than only 249.⁷⁷

In the few cases of NM customers with micro-hydro generation, the 110% of Annual Load restriction would make no sense whatsoever, for reasons discussed elsewhere in this Final Argument. In any event

⁷⁵ BC Hydro 2018/2019 Annual Services Plan Report. Page 23,
<https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/accountability-reports/financial-reports/annual-reports/BCHydro-Annual-Service-Plan-Report-2018-2019.pdf>

⁷⁶ Exhibit B-3, page 57.

⁷⁷ Exhibit B-3, page 57.

the pool of potential micro-hydro generation projects for Residential customers is so small that it seems outrageous to propose a 110% restriction on such a valuable steady clean energy resource.

- Update the price (**Energy Price**) BC Hydro pays a customer for the balance remaining in their generation account (**Generation Account Balance**) at the customer's Anniversary Date. BC Hydro proposes an Energy Price based on the daily average Mid-Columbia (**Mid-C**) prices for the previous calendar year, converted to Canadian dollars. This amendment is *intended to align the Energy Price with the value BC Hydro receives from net excess generation from RS 1289 customers*. (emphasis added)

The inappropriateness of imposing Mid-C pricing on NM energy is discussed elsewhere in this Final Argument. The point that must be addressed in this context is that the Mid-C price has absolutely nothing to do with the “value BC Hydro receives from net excess generation from RS 1289 customers”. Very simply, all net excess generation from RS 1289 customers enters the distribution lines and is taken and consumed by neighbouring customers closest (on the distribution lines) to the NM generation. Despite BC Hydro’s obfuscations, the excess energy from a particular NM customer does not go anywhere and everywhere in the province. It is generated and consumed locally. The first measure of the “value BC Hydro receives” is what those neighbouring customers pay to BC Hydro for that energy. In almost every case, BC Hydro sells excess NM energy for about 18% more than it currently pays NM customers who produce it. The rate that a Non-Participating customer pays BC Hydro for that NM energy has nothing at all to do with the Mid-C market price.

- Maintain the current Energy Price of 9.99 cents per kWh for all customers with accepted Net Metering Applications as of April 20, 2018, for a period of five years (**Transitional Energy Price**). The five-year transitional period will mitigate the impact of the Energy Price change to existing Program customers by providing time for those customers to plan to adjust to the updated Energy Price.

If the BCUC approved the drastic drop in the Energy Price, maintaining the current Energy Price of 9.99 cents per kWh for five years would certainly be far better than having no transitional period. However, a sharp reduction in the Energy Price is unnecessary, unsupported and unfair. Moreover, there is no reasonable basis for any expectation that a five-year transitional period will in any way mitigate the “impact” (i.e. the 69% drop⁷⁸) of the Energy Price change to existing Program customers by **providing time for those customers to plan to adjust to the updated Energy Price**. Those NM customers, promised one price and later given only a fraction of it, do not have a means to mitigate a 69% drop in the revenue they receive. They can’t cut their costs by ceasing to operate the generation equipment because then their revenue would drop to zero. They can’t pull up the equipment and take it back for a refund. They can’t tell their creditors that we now need many more years to pay back what we borrowed. They are stuck with investments in generation projects that BC Hydro elicited, encouraged and approved but now claims provide only a fraction of the previously recognized value.

⁷⁸ Ex. B-5, p.496. “Annual Average Mid-C Price (2018): USD \$30.76/MWh” or \$0.031/kWh $0.031/0.0999 = 69\%$ drop or giving a new value of 31% of the old”.

A simple net metering rate would have:

- a simple capacity cap of 100 kW;
- an anniversary date;
- and the energy price equal to the retail rate.

D. Maintaining Safety Is Appropriate – Using It As a Bogeyman Is Not

NMRG and BCCSC agree that safe maintenance and operation of all components of the electrical system is a worthy and important priority. As generators of power for themselves and others, NM customers are very cognizant and respectful of the safety of both their own facilities and BC Hydro's.

As new technologies and equipment become available appropriate safety measures should be applied before they are installed or implemented by NM customers or BC Hydro. However, it is imperative that any resistance to new technologies or equipment (e.g. inverters) is founded in legitimate safety concerns and ensuring that such concerns are not raised simply to prevent or discourage more Net Metering.

E. Some Proposed Amendments are Unjust, Unreasonable and Unduly Discriminatory or Preferential

“As stated on page 4 of Appendix D of the Application, the intent of the Program was to be a load offset program that:”

“While cost recovery of a customer’s capital investment is not an objective of the Program, BC Hydro believes that supporting the objectives of the Program requires that any proposed amendments to the Energy Price be implemented in a way that mitigates the impact to existing customers in the Program. Please refer to BC Hydro’s response to BCUC IR 1.15.1 where we explain the rationale for proposing a five-year transition period.”⁷⁹

Part 7 Making and Breaking Promises to Customers Is Unsustainable

BCCSC and NMRG are concerned that BC Hydro’s proposed amendments⁸⁰ will create significant disincentives to participation in the Program and introduce great uncertainty into the viability of net metering in BC. The maxim “once bitten, twice shy” will apply, as prospective NM customers will be wary of making their investments on generating facilities knowing that BC Hydro’s past representations regarding payback periods, value of NM energy and Energy Price turned out to be untrue. That type of chilling effect on customers NM investments can and should be avoided by raising, not lowering, the Energy Price and assuring existing NM customers that their efforts and investments are welcome, valued and beneficial.

It is imperative that customers be able to trust that BC Hydro will not change the rules and financially undercut them after they have entered the NM Program and made significant investments. If that trust is lost, it won’t be won back soon or easily and will harm not only NM but also any other future initiatives that may require customer investments.

⁷⁹ DOC_54689_B-3-BCH-Responses-to-BCUC-IR1.pdf pg 198 first and last paragraph

⁸⁰ With the exception of the Anniversary Date changes, which NMRG and BCCSC support.

Part 8 Broad and Deep Public Support for More Net Metering, Not Less

A. BC Hydro's Proposals Contradict BC's Clean Energy Goals

The 2007 Energy Plan describes Net Metering as:

“...allow[ing] customers to lower their environmental impact and take responsibility for their own power production. It helps to move the province towards electricity self-sufficiency and expands clean electricity generation, making B.C.’s electricity supply more environmentally sustainable.”⁸¹

If BC Hydro wishes to move away from and create obstacles self-sufficient, environmentally sustainable, clean electricity generation, it should have the conviction to say that plainly and publicly. BC Hydro has not done so, yet that is precisely what approval of the proposed amendments would achieve.

Further, particularly in regard to solar NM generation, the Application represents an apparent unwillingness into acknowledge the true value of intermittent distributed generation. That view directly contradicts government policy to:

“Ensure the procurement of electricity appropriately recognizes the value of aggregated intermittent resources”.⁸²

One of the most tangible means to recognize such value would be it raise, not lower, the Energy Price for NM excess energy.

B. Creating Obstacles to Net Metering Is Out of Step with Global Energy Improvements and Innovation

RS1289 Net Metering has its origins in the 2002 Energy Plan and now needs to be updated to consider and encourage steps to implement Aggregate Net Metering, Community Net Metering and Emergency Power. To slash the Energy Price on NM generation before of these initiatives are given meaningful consideration will restrict and constrain future options.

Scientific consensus indicates that improvements and innovation in energy sources, infrastructure, equipment, technology and practices is a global imperative. Approval of the proposed NM amendments, particularly cutting the Energy Price, would be a regressive action entirely out of step with scientific conclusions and societal and consumer trends.

Part 9 Summary of BC Hydro Commitments

A. Commitments Made by BC Hydro

BCCSC and NMRG note that many of the commitments noted in BC Hydro’s Final Argument are subject to the future Integrated Resource Plan (IRP) and thus don’t provide the assurance of unqualified commitments.

⁸¹ BC Energy Plan, page 13, https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/bc_energy_plan_2007.pdf

⁸² BC Energy Plan, pg 18

B. Necessary Commitments That Should Be Made by BC Hydro

- Commitment to begin a customer consultation as soon as practical with the goal of cooperatively developing a Community Net Metering Application for filing with the BCUC.
- Commitment to engage a neutral third-party expert to author future Net Metering reports to the BCUC. Using models and techniques developed in the fields of arbitration and mediation could assist in assuring an acceptable degree of neutrality.
- Commitment to include a reliable, updated analysis of the carbon impact of various energy sources in the next BC Hydro Application related to Net Metering.
- Commitment to have all future NM-related Applications include transparent, clear calculations including supporting references for all numbers and assumptions.
- Commitment that BC Hydro will provide for transferability on any tariffs or grandfathering the Energy Price, so that if an NM customer dies or is required to sell, they do not lose their investments.

C. Necessary Commitments Specific to Microhydro NM

- Commitment to consider whether Time of Use (TOU) billing for Residential peak demand periods is required for consistency with BC Hydro's demand-based calculations in respect of NM energy. Smart meters would be capable of determining TOU billing so that energy delivered or received can be valued at the higher demand rate if inflow or outflow is at peak demand time. That date would enable determination of fair prices for energy for both inflows and outflows and improve the precision of calculations to identify cost-shifting.

D. Necessary Commitments Specific to Solar NM

- Commitment to contact other utilities in BC that offer Community Net Metering to gain a full understanding of how the “services are offered”, “the rates are managed” and consider how to best make its own service offerings for Community Net Metering.⁸³

Part 10 Conclusion

The key issues arising from the Application boil down to the following:

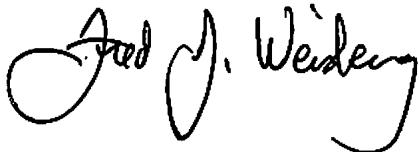
- BC Hydro actively elicited, promoted and encouraged participation (and continues to do so) in the Net Metering Program, including specific representations regarding the expected payback period for NM facilities and the stability of the Energy Price payable for excess NM energy.

⁸³ [DOC_55177_B5-BCH-Responses-to-Intervenors-IR1, page 34,](https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Intervenors-IR1.pdf)
https://www.bcuc.com/Documents/Proceedings/2019/DOC_55177_B5-BCH-Responses-to-Intervenors-IR1.pdf

- “Oversized Generating Facility” is an unsubstantiated pejorative term recently introduced by BC Hydro as a means to garner public dissatisfaction against Net Metering customers. Not a single NM generating facility in BC – not even one – has been developed, constructed or operated without the full knowledge and approval of BC Hydro.
- When all costs and benefits are appropriately accounted for there is no material amount of cost shifting from NM customers to Non-Participating customers. To the contrary, BC Hydro’s own facts and numbers indicate a degree of cost shifting from Non-Participating customers to NM customers.
- As the current 9.99 cents Energy Price is fixed with no allowance for inflation, even without approval of BC Hydro’s proposed dramatic reduction payments to NM customers for excess energy will effectively decline by approximately 2% per year each year. Accordingly, whether or not the application is approved, Energy Price payments are reasonably expected to decline by a total of 10% over the five years of BC Hydro’s “transitional period.” Few, if any, enterprises can be sustained if their revenues do not increase at least at the pace of inflation. Far less, or none, can be sustained if they also have fixed costs and precipitously reduced revenues. That is precisely the dilemma that BC Hydro’s Application has created for its NM customers after enticing them to enter the Program. The Energy Price needs to be increased – not decreased as BC Hydro proposes.
- The BCUC has the responsibility and authority to make an important choice for BC Hydro’s customers. The choice is whether to fairly inappropriately value clean, renewable energy generated by our NM neighbours and distributed locally, or to establish a pricing regime that frustrates or prevents maintaining or developing a vibrant net metering sector in BC by favouring imports of energy from the Mid-C market generated primarily by the combustion of fossil fuels.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

March 12, 2020



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