

**FINAL SUBMISSION ON BEHALF OF
THE CLEAN ENERGY ASSOCIATION OF
BRITISH COLUMBIA**

Re: BRITISH COLUMBIA HYDRO and POWER AUTHORITY

2015 Rate Design Application

**Project No. 3698781
Pursuant to Order G-156-15**

October 11, 2016

British Columbia Hydro

2015 Rate Design Application

INTRODUCTION

For the reasons contained in this final submission the Clean Energy Association of B.C. (“CEBC”) supports the provisions in BC Hydro’s (“BC Hydro” or “BCH”) 2015 Rate Design Application (“Application” or “2015 RDA”) that would eliminate the tiered rate system for its Large General Service and Medium General Service customers.

The CEBC is also in favour of eliminating the present two-tiered structure of the Residential Inclining Block Rate (“RIB”). However, the CEBC feels that there will then be a need to put in place a modified rate to assist low income households, who may be adversely affected by the removal of the low Tier 1 rate.

The CEBC believes that work should commence on eliminating the tiered Transmission Service Rate system for BCH’s industrial customers. However it is a more complex undertaking than for residential customers since industrial customers may have committed to significant investments based on the expected two-tier rate structure.

The CEBC also asserts that the 2015 RDA contains no significant measures to advance the government’s goal of reducing GHG emissions, as set forth in the Clean Energy Act.

The CEBC’s comments will be addressed at the following topics:

- 1. The Residential Inclining Block Rate**
- 2. The Large and Medium General Service Rates**
- 3. The Transmission Service Rate**

1. THE RESIDENTIAL INCLINING BLOCK RATE

In order to meet the greenhouse gas (“GHG”) reduction objectives of the Clean Energy Act (British Columbia)¹ and the Paris Accord, BCH’s rate structure should encourage the efficient use of renewably generated electricity in order to reduce greenhouse gas emissions from the burning of fossil fuel. The maxim appears to be: “The more electricity you use the more you pay” but this ought to be changed to: “The more you use electricity inefficiently the more you pay”.

The tiered structure purportedly sends a price signal to BCH’s customers. In the past it has been based on BCH’s long run marginal cost (“LRMC”) of acquiring new increments of electrical generation from third parties subject to adjustment for delivery to the Lower Mainland. By making this adjustment to the Lower Mainland, the LRMC is effectively including a charge for capacity as well as generation, and ignoring the fact that new generation would most naturally be

¹ Section 2(h) of the Clean Energy Act: “to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas (GHG) emissions in B.C.”.

acquired in the region most proximal to new load growth, which is not necessarily in the Lower Mainland.

However, the CEBC believes that the RIB is no longer doing an effective or an efficient job. The job of incenting conservation is already being effectively accomplished by the general rate increases that have already occurred, and particularly by the anticipated future rate increases that have been widely publicized².

1.1 The two-tier RIB rate structure penalizes some customers who use electricity more efficiently, and customers who use electricity to reduce GHG emissions.

Since there is no adjustment for household size in the two-tier RIB structure, the rate unfairly penalizes larger households. By comparing the data in Figures 5-10 and 5-11³, it is apparent that households of 4 or more people use significantly less electricity per person (3.1 MWh per person per year) compared to households of 3 (3.7 MWh per person per year), households of 2 (4.5 MWh per person per year), or households of only 1 person (5.3 MWh per person per year).

This means that the average single-person household uses 70% more electricity per person than a household of 4, yet the average household of 4 will have to pay the Tier 2 rate for some of its electricity while the average single-person household will not. Without some adjustment for household size, the two-tier RIB is unfairly penalizing the more efficient consumers. How does this meet a standard for fairness and equity?

Both customers with electric heating and customers with electric vehicles are doing the right thing for reducing GHG emissions, and yet both of them will be penalized by the two-tier RIB structure. BC Hydro says it will be addressing the situation with respect to electric vehicles, but it may take another year or two, and it may involve time-of-use pricing and separate metering for electric vehicles⁴. Time of use pricing would be targeting the capacity component of residential use while electrical energy use would still be penalized.

A far simpler, less costly and more immediate solution to these inequities would be to simply drop the two-tier RIB structure, and revert to a flat rate, in which all electrons are charged at the same rate.

1.2 Tier 2 of the RIB rate no longer represents the LRMC, and therefore is no longer an efficient price signal.

BC Hydro's updated LRMC of \$85 is already well below the Tier 2 RIB rate and will fall back even further as BC Hydro's rates continue to escalate. The following chart, produced by BC Hydro in its response to BCOAPO IR 2.250.1⁵ illustrates the expanding gap as future rates continue to rise more rapidly than inflation.

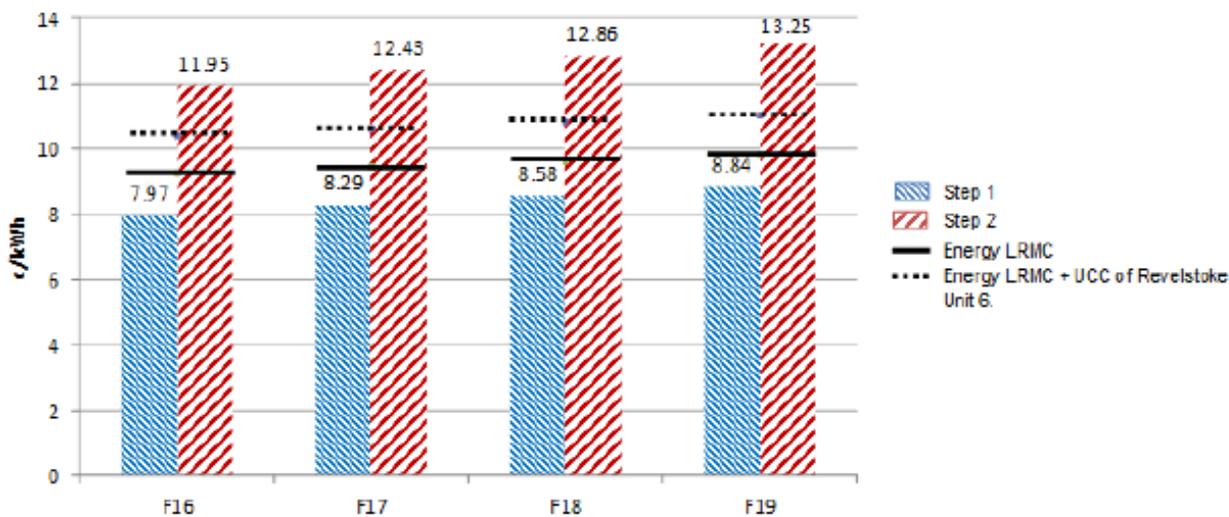
² Transcript Vol.4 pages 911-914.

³ Exhibit B-1.

⁴ Transcript Vol. pages 927-931.

⁵ Exhibit B-23.

Figure 5-18 is reproduced below, with the updated LRM forecasts.



BC Hydro suggests that this situation can be mitigated slightly by adding a capacity charge to the Energy LRM. However, BC Hydro has already agreed that it is inappropriate to add other charges to the Energy LRM, such as avoided transmission or distribution costs when setting the RIB Tier 2 rate. In its response to BCOAPO 1.25.1,⁶ BC Hydro stated:

“...Yes, it is BC Hydro’s view that the LRM used for rate-making should not include avoided transmission and distribution costs when considering the RIB rate. This view is based on the following Commission decision:

In the 2008 RIB Reasons for Decision accompanying Commission Order No. G-124-08, the Commission determined that the RIB rate structure is a conservation rate intended to show existing customers the cost of new supply and to offer an incentive to reduce consumption, and in these circumstances it is incorrect to show the existing customer the incremental cost of transmission and distribution.”

The CEBC asserts that the same logic ought to apply to the inclusion of a capacity charge. The strain on the system’s capacity resources is not a function of the residential customers’ monthly energy usage, but is instead related to peak loads on the 4 coldest days of the year. Boosting the customer’s energy charge is not an efficient way to deal with the issue of capacity.

The future expanding gap between the Energy LRM and the Tier 2 RIB rate indicates a growing problem with the inefficiency of the price signal. The intent of a conservation rate should not be to greatly over-induce customers to make investments in efficiency that are excessively expensive, or to induce them to make these investments far earlier than needed. However, if BC Hydro abandons efficiency as one of the priority goals of this price signal mechanism, as it apparently intends to do⁷, then that over-inducement will be the result.

⁶ Exhibit B-5.

⁷ Transcript, Vol. 3, page 429.

Accordingly, the CEBC recommends that now is the time to drop the two-tier RIB structure and return to a single flat rate for residential customers - in the same way that a single rate is being proposed for medium general service and large general service customers.

In terms of the BCUC's jurisdiction, if it has the jurisdiction to drop the tiered rate structure for medium general service and large general service customers it has the jurisdiction to drop the two-tier RIB rate.

1.3 The updated \$85/MWh LRMV proposed by BC Hydro may be significantly overstating the LRMV, which makes the price signal even more inefficient.

BC Hydro is proposing to update its LRMV to a price of \$85/MWh for the period to 2033 and \$100/MWh for 2034 on. This revision acknowledges some of the reduction in Greenfield wind and solar costs that have occurred in recent years, but then ignores further reductions that are likely to occur well into the future.

The updated LRMV value is supposedly based, at least in part, on the cost of demand side management ("DSM") programs. However, the logic seems somehow circular, in that the cost of DSM is used to establish the LRMV but then the \$85/MWh LRMV value is used as the cutoff cost for DSM programs⁸.

The \$85/MWh value is a significant overstatement of the average cost of DSM programs. In response to CEBC IR 2.5.2⁹ BC Hydro produced a table showing the Total Resource Cost ("TRC") and the Utility Cost ("UC") metrics for its proposed DSM programs, levelized over a 20-year period.

This table shows that the average Total Resource Cost of these programs is only \$57/MWh (gross) or \$43/MWh (net). On the Utility Cost metric, which more accurately represents the cost to the utility's ratepayers, the average cost is only \$37/MWh (gross) or \$25/MWh (net). In view of these much lower average costs, the adoption of the \$85/MWh value is artificially high.

Of all the DSM programs being proposed, the only one with a net TRC as high as \$85/MWh is the relatively small Low Income residential program -- a program which BC Hydro is obligated by government to undertake even at a premium cost. Of all the other programs, the highest net TRC is \$57/MWh and the highest net Utility Cost is \$35/MWh.

In its IR response to BCOAPO IR 1.25.1¹⁰ BC Hydro acknowledged that the weighted average was the proper value to use, rather than the maximum, and this acknowledgment was based on two previous Commission decisions.¹¹

⁸ B.C. Regulations 326/2008, 228/2011 and 141/2014, Demand-Side Measures Regulation, under the Utilities Commission Act.

⁹ Exhibit B-23.

¹⁰ Exhibit B-5.

¹¹ BC Hydro's response to BCOAPO 1.25.1 cites Commission Order No. G-79-05 and Commission Order No. G-97-08, each of which recommended the use of levelized weighted-average plant gate prices for the Tier 2 price signal.

Certainly the average Utility Cost of \$25/MWh for all of these programs is significantly cheaper than the \$85/MWh being proposed by BC Hydro as its LRMC for the next 18 years. And these DSM programs constitute the significant majority of all the incremental energy available for acquisition over the next 10 years. According to BC Hydro, 3600 GWh is available from DSM programs,¹² vs. 600 GWh from small hydro IPPs and 1000 GWh from other projects, mainly forest companies' biomass projects.¹³

The \$85/MWh being proffered by BC Hydro as its LRMC is a significant overstatement of the proper value and, accordingly, the significant gap between the LRMC and the Tier 2 price shown in the updated Figure 5-18 above¹⁴ should actually be far greater than that chart shows. Hence the inefficiency of the price signal is also far greater.

1.4 The 2-Tier RIB structure is no longer necessary to incent conservation. General rate level increases are already providing sufficient incentive.

BC Hydro ratepayers have experienced overall rate increases totaling more than 60% over the 10 years since F2007, and are facing another 11% by F2019.

The 2013 10-Year Rates Plan calls for BC Hydro to spend \$17 billion on capital over the next decade, plus the investment in Site C will add another \$8.8 billion. The utility ratepayers are well aware that all of this capital spending will result in rate increases that must continue to outpace inflation.

The customer's awareness of past and future rate increases comes as much from extensive media stories as it does from examining and understanding the rates printed on their monthly utility bills. And this general awareness of these increases has at least as much impact, and probably more impact on his conservation motivation and behavioral change.

Accordingly, the conservation motivation is not likely to be compromised by the abandonment of the two-tier RIB structure.

1.5 The two-tier RIB structure may not be as "well understood" as BC Hydro would wish. The conclusions being drawn from the Survey results are not without significant uncertainties.

Because definitive proof is almost impossible to obtain for something as complex as "customer understanding," BC Hydro has relied heavily on a survey to demonstrate that its residential customers "understand" the RIB structure and that this is what is motivating them to conserve.

There is no definitive proof that the two-tier RIB is causing ratepayers to conserve especially given the opposite response from BCH's commercial customers. There is some decline in consumption, and there is also the presence of the two-tier RIB rate, but that may be simply a coincidence in timing. It does not prove causality. In fact, it is extremely difficult to definitively prove causality, because there are so many factors that could also be causing the decline in consumption -- not the least of which is the dramatic increase in rates in general, or the publicity

¹² Transcript Vol. 4, pages 617- 618.

¹³ Exhibit B-52, BC Hydro Undertaking No. 24.

¹⁴ Exhibit B-23, BCOAPO IR 2.250.1.

concerning future rate increases. Other contributing factors might be an economic downturn, or people's general concern for the environment or simply a desire to use less energy. The list of possible contributors is a long one.

As an aid in assessing the effectiveness of the RIB structure, and the customers' understanding of it, BC Hydro conducted a survey ("Survey") the analysis of which is included in the Application.¹⁵ The Survey itself proposed several possible reasons for people to manage their consumption, including:

- To protect the environment/to reduce my home's GHG emissions
- To save money on our home electricity bill
- To be part of a large unified effort to use less
- To decrease the pay-back time of home renovations or upgrades made
- Other (please specify)
- Don't know
- Not applicable -- our household never makes an effort to manage its electricity use

The participants were asked to indicate their Main Reason and their Second Main Reason, and the answers would be very interesting to see, especially broken down by region, household type, income class, etc. Unfortunately, the CEBC cannot find the answers to this question anywhere in the analysis.

According to BCH this Survey had a healthy response from some 2500 households, from a representative cross-section of customers across all regions, household types, income classes, etc.¹⁶ However, people were offered up to 12 chances to win a \$250 prize for participating, and it is not known how many people rejected the Survey. There is always a chance of motivational bias in such a case.

There are also several other things about the Survey that give rise to some uncertainties. The Survey asks about "unaided awareness" of the RIB rate structure, but there is a huge discrepancy between Vancouver Island and the other regions as far as awareness. Vancouver Island has almost 50% higher awareness than other regions, which indicates that there must be some process "aiding" Vancouver Island residents that is not present in other regions. No explanation is offered for this anomaly.

A further complication is the fact that the Survey itself offers a tutorial in the RIB rate structure - rather like an interrogator leading the witness. Participants were asked not to read ahead before answering the questions but all participants were mailed the Survey and could well have read the whole thing before choosing to reply, especially if they replied on the internet.

Another factor that is not adequately explained is the question of households on the equal payment plan. Apparently 28%¹⁷ of BC Hydro's customers are on this plan but we do not know

¹⁵ Exhibit B-1, Appendix C-3B, the RIB Evaluation Report begins at p. 105 of 609 with the Survey Instrument beginning at p. 202 of 609.

¹⁶ Transcript Vol. 5, p. 925.

¹⁷ Response to BCH undertaking No. 24.

if they were excluded from the Survey, or whether their responses were somehow segregated. Customers on this equal payment plan would have to go to considerable effort to find out how their bills are being affected. Since they have less direct contact with their monthly bills, their responses should be different from other customers.

In their analysis of customer consumption behaviour, BC Hydro's statisticians undertook many analyses, including whether drops in consumption might be lagging by some period of time after rate increases, but they have never been able to statistically test whether drops in consumption might be leading those rate increases. That is to say, are residential customers reducing their consumption in anticipation of future rate increases? That would be an extremely difficult premise to test because there is no well defined variable that represents people's anticipation, and what leading period should the analysis use?

In addition to the above uncertainties, the California Public Utilities Commission considered a paper entitled: "Are Residential Customers Price-Responsive to an Inclining Block Rate?"¹⁸. This paper was authored in part by Dr. Ren Orans one of BC Hydro's witnesses in the RDA proceedings. This commission concluded that:

"..it is not possible to conclude that the introduction of tiered rates by BC Hydro reduced consumption overall... Without an estimate of this effect, it is not possible to conclude that the introduction of tiered rates by BC Hydro reduced consumption overall.."

The point to be drawn from this is not the correctness of the conclusions reached by the authors of the paper. Rather in a multi-variable environment such as continuing general rate increases such as those experienced by BC Hydro's residential customers, it is very difficult to isolate the factors that lead to lower consumption.

1.6 Taxpayer funding may available to protect Low Income families.

The one downside to dropping the two-tier RIB structure in favour of a flat rate is that Low Income ratepayers may experience an increase in their electricity bills. This comes about because Low Income ratepayers are generally also low usage ratepayers, and therefore only experience the Tier 1 Rate. Since the Flat Rate would be higher than the Tier 1 Rate, the low usage customers would see their bills rise.

The protection of Low Income customers could be dealt with as proposed by BCAOPO, with any necessary modifications, or by the provincial government and the taxpayer as an income redistribution initiative. The provincial government has indicated that it wants BC Hydro to make some effort to help Low Income ratepayers. As evidenced by the following discussion of the investment in Site C, the provincial government appears willing, at least in the case of Site C, to help all classes of BCH customers¹⁹ by foregoing any return on its equity investment:

"Mr. Austin: Q: ...Is it true to say that when that calculation is done that the government is not expecting any return on the risk as owner of BC Hydro that it takes with respect to Site C over a period of 70 years?"

Mr. Reimann: A: So the effective result is that Site C would be 100 percent debt financed, so from that perspective that would suggest that that's probably true...."

¹⁸ Exhibit A2-3 page 42.

¹⁹ Transcript Vol. 4, page 676.

Mr. Austin: Q: But for the purpose of Site C it's expecting a zero return on Site C for 70 years?

Mr. Reimann: A: That's right. It would be 100 percent debt financed."

1.7 Since the LRMC is now disconnected from the Tier 2 rate

If at this time, the BCUC is not prepared to eliminate the two tiered rate structure for BC Hydro's residential customers then it should consider eliminating any purported link to LRMC. Instead Tier 2 rates would be set as fixed percentage e.g. 10-15% above Tier 1 rates or whatever percentage is required to generate the revenue required from Tier 2 rates.

Simply put the continuing declining cost of new generation such as wind and solar would result in a declining LRMC and a declining Tier 2 rate.

2. THE LARGE AND MEDIUM GENERAL SERVICE RATES

BC Hydro is proposing to discontinue the tiered rate structure for the Large General Service and Medium General Service rates. The CEBC agrees with its elimination but not for the reasons advanced by BC Hydro. The emphasis should be on the efficient use of electricity and not the sheer volume of use. This applies to all classes of BC Hydro's customers.

3. THE TRANSMISSION SERVICE RATE

The CEBC believes this rate should be phased out for similar reasons to the RIB -- i.e. it's giving an outdated and increasingly inefficient price signal. However, it is recognized that many industrial customers may be relying on the Tier 2 rate to justify investments they've already committed to. Accordingly, the phasing out of the rate should be done after reasonable consultation with the industrial customers.

4. CONCLUSIONS

To reiterate the CEBC positions:

For all the reasons cited in Section 1 above, the CEBC is in favour of eliminating the present two-tiered structure of the Residential Inclining Block Rate. However, the CEBC feels that there will then be a need to put in place a modified rate to assist low income households, who may be adversely affected by the loss of the low Tier 1 rate.

The CEBC supports the proposals in BC Hydro's Application that would eliminate the tiered rate system for its Large General Service and Medium General Service customers.

The CEBC believes that work should commence on eliminating the tiered Transmission Service Rate system for BCH's industrial customers. However it is a more complex undertaking than for residential customers since industrial customers may have committed to significant investments based on the expected two-tier rate structure. Therefore, any elimination or phasing out of the structure should be done with reasonable consultation with the customers.

In any event, any linkage between tiered rates and BC Hydro's LRMC should be abandoned. Deriving the LRMC has become an exercise in construction and no longer reflects the cost of new generation which is declining and not rising.

All of which is respectfully submitted.