

CANADIAN OFFICE AND PROFESSIONAL EMPLOYEES UNION, LOCAL 378 (COPE 378)**INFORMATION REQUEST NO. 1 TO BC HYDRO****BC HYDRO 2015 RATE DESIGN**

- 1.0 Reference: Exhibit B-1, Application, 1.3 Relationship of Rate Design to BC Hydro's Revenue Requirement and Integrated Resource Plan, page 1-17, II 10-11**
- BC Hydro 2013 IRP, Chapter 3**

"The main link between the 2013 IRP and this Application is with respect to BC Hydro's LRMC."

However, two of the resource options considered in the 2013 IRP (DSM options 4 and 5) were aimed at incenting more DSM than what is included in BC Hydro's current plan. Option 4 contemplated new and more aggressive conservation rate structures but the enhanced DSM options were not pursued because they were considered too 'new and untested' and raised uncertainty as to their effectiveness.

- 1.1 Please confirm the key elements of the conservation rate structures in the IRP's DSM Option 4 included:

- (i) All customers would have experienced greater exposure to marginal cost price signals;
- (ii) The transmission service tier 1/tier 2 rate split was set at 80/20 instead of the current 90/10;
- (iii) General customer rates or connection fees were tied to efficiency ratings; and
- (iv) Rate structures for houses and buildings were tied to energy performance standards.

- 1.2 Given the widespread support to use economically efficient DSM as opposed to supply-side projects and initiatives to address growing needs, what steps, if any, has BC Hydro taken in the 2015 RDA to develop and test any of these four key elements of the IRP's DSM Option 4 in order to allay any potential concerns about their viability in the future?

2.0 Reference: Exhibit B-1, Application, 1.3 Relationship of Rate Design to BC Hydro's Revenue Requirement and Integrated Resource Plan, page 1-20 to 1-21 and 2-14

The three Bonbright criteria BC Hydro lists as its top rate priorities in this RDA do not include the Bonbright efficiency criterion that speaks to price signals that encourage conservation and discourage inefficient use.

2.1 Please explain why BC Hydro does not consider the encouragement of conservation and efficient energy use with appropriate price signals as one of its priorities.

2.2 On page 2-14 of the Application, BC Hydro states that it does not believe the 2007 Energy Plan Action 4 (which called for rate structures to encourage energy efficiency and conservation) requires it to prioritize the Bonbright efficiency criterion over the other seven. Does BC Hydro think the decision to prioritize other Bonbright criteria over the efficiency one is inconsistent with the 2007 Energy Plan?

2.2.1 If yes, please explain why BC Hydro is proceeding on this basis.

2.2.2 If no, please explain why it is not inconsistent.

3.0 Reference: Exhibit B-1, Application, 2.2.1.3 Direction No. 7, the Heritage Contract and Rate Rebalancing, page 2-7, II 1-17 and page 2-15

BC Hydro notes that Special Direction No. 7 dictates a Tier 1/Tier 2 90/10 split for transmission service rates.

3.1 Has BC Hydro provided any analysis or briefing of the energy conservation and other consequences of a movement to an 80/20 split to government?

3.1.1 If so, please provide.

3.2 Has government provided any analysis comparing an 80/20 split versus a 90/10 one to explain why BC Hydro has been directed to maintain a 90/10 split?

3.2.1 If so, please provide.

3.3 Please provide an analysis of the conservation and efficient energy use implications of the 80/20 split developed for DSM Option 4 of the 2013 IRP.

4.0 Reference: Exhibit B-1, Application, 2.2.2 Government Policy, page 2-8, II 22-23

BC Hydro states that it is government policy that there will be no mandatory Time of Use (TOU) pricing for residential and commercial customers.

- 4.1 Does BC Hydro consider this government policy to be a legally binding constraint?
 - 4.1.1 If so, please explain why BC Hydro is legally bound by this policy.
 - 4.1.2 If not, please explain why not.
- 4.2 Has BC Hydro analyzed what impacts TOU rates might have on peak demand and the integration of intermittent renewable supply?
 - 4.2.1 If so, please provide that analysis.
 - 4.2.2 If not, please explain why has BC Hydro failed to complete such an analysis?
- 4.3 Has BC Hydro analyzed what other possible impacts TOU rates might have on its operations?
 - 4.3.1 If so, please provide that analysis.
 - 4.3.2 If not, please explain why BC Hydro has failed to complete such an analysis.
- 4.4 Has government provided to BC Hydro any analysis of TOU rates?
 - 4.4.1 If so, please provide.
 - 4.4.2 If not, please explain BC Hydro's understanding of what government used to inform its position prohibiting TOU rates.

5.0 Reference: Exhibit B-1, Application, 2.3.2.1 Smart Meters, pages 2-44 to 2-46

BC Hydro states that the installation of Smart Meters is 99% complete and that these new assets have helped the utility to better understand load characteristics, enabling it to develop more accurate cost allocations.

“The additional data from smart metering has increased the accuracy of BC Hydro’s load profile information which is a key input into cost allocation with the F2016 COS study. With the capability to create almost on-demand detailed customer load profiles, COS analysis, rate design and peak load forecasting can be improved.” (page 2-45)

- 5.1 Has BC Hydro studied what improvements in rate design Smart Meters may enable?
 - 5.1.1 If so, please provide those relevant studies, documents, or summaries.
 - 5.1.2 If not, why has BC Hydro failed to study this?

5.2 Has BC Hydro studied the opportunities to use Smart Meters to implement rates and controls that will enable customers to utilize price or system sensitive Smart Energy Management Technology?

5.2.1 If yes, please provide the relevant studies, documents, or summaries.

5.2.1.1 If yes, please indicate how these opportunities have influenced the development of the rate and other proposals in this RDA.

5.2.1.2 Please also indicate what opportunities identified BC Hydro has declined to pursue and apply in this RDA and explain why the utility has done so.

5.2.2 If no, why has BC Hydro failed to study this?

6.0 Reference: Exhibit B-1, Application, 2.3.2.3 Capacity Long-Run Marginal Cost, page 2-55, II II 11-18

“Several Workshop 3 participants advanced two grounds for including a generation capacity value in the energy LRMC for purposes of the RIB Step 2 rate: (1) the RIB rate contains no demand charge; and (2) while the RIB is an energy conservation rate, it delivers anticipated capacity savings. In section 4.1.2 of the Workshop 3 consideration memo (copy at Appendix C-3A), BC Hydro communicated its view that adding a capacity value to signal these savings could confuse the pricing of the RIB with its purpose, which is energy conservation not peak capacity reduction.”

6.1 Please confirm that for the foreseeable future BC Hydro is more likely to be capacity constrained as opposed to energy constrained.

6.1.1 If this is not the case, please explain the basis upon which BC Hydro has determined it is more likely to be energy constrained than capacity constrained in the near future. If this is based on studies or data not already on the record, please file those materials.

6.2 Does BC Hydro agree that reductions in peak capacity can have significant trade and other system benefits?

6.2.1 If so, please describe those benefits

6.2.2 If not, please explain why BC Hydro does not see any such benefits arising out of a reduction in peak capacity.

6.3 Since BC Hydro does not believe that it is appropriate to add a capacity value to the Step 2 RIB rate, how does the utility propose to provide a signal, price or otherwise, to customers of their marginal capacity costs or values in order to encourage efficiencies and reductions in peak requirements?

6.3.1 Please file the documents, studies, or summaries BC Hydro used to formulate its position on whether it was appropriate to provide a signal and what form that signal would or could take.

7.0 Reference: Exhibit B-1, Application, 5.2.2.2 Residential Class Characteristics, page 5-10, ll 5 5-10

“The consumption per account is generally highest for SFDs with a median consumption of about 9,800 kWh/year and a median F2016 annual electricity bill of about \$900. In comparison, apartments and condominiums generally have the lowest consumption per account with a median consumption of about 3,700 kWh/year and a median F2016 annual bill of about \$360.”

7.1 Does BC Hydro consider it consistent with the Bonbright fairness criterion to have the same Step 1 / Step 2 breakpoint set for SFDs and apartments/condos given the fact that they each have markedly different median electricity consumptions?

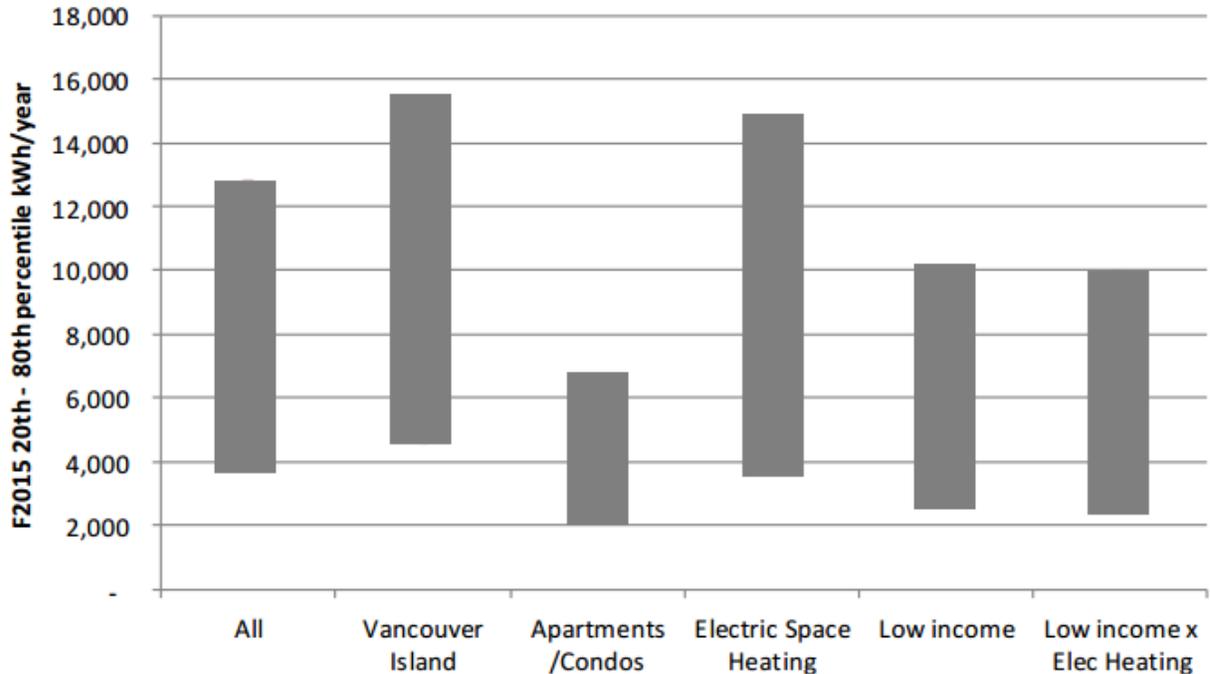
7.1.1 If yes, please explain how this is consistent with the fairness criterion.

7.2.1 If no, please explain why BC Hydro has not adjusted its Step 1 / Step 2 breakpoints for these two dwelling types in order to ensure the RIB is more fair?

8.0 Reference: Exhibit B-1, Application, 5.2.2.2 Residential Class Characteristics, page 5-12, line 8 and page 5-16, Figure 5-12

“The median consumption of low income accounts is about 5,297 kWh/year...”

Figure 5-12 Consumption Distribution of Select Residential Customer Segments, 20th to 80th Percentile of Annual Consumption in F2015



- 8.1 Please confirm that the median electricity consumption for low income customers is 43% higher than the median consumption for apartments and condos.
- 8.2 Please confirm that the consumption range for low income customers is much broader than the range for apartments / condos.
- 8.3 Please confirm that this higher median consumption is due to the significant number of low income customers who live in single family dwellings (SFDs).
- 8.4 Table 5-15 on page 5-68 of the Application shows the percentage of each dwelling type held by low income customers. Please provide
 - i) the number of low income customers by dwelling type; and
 - ii) the number of customers defined as low income for the purposes of DSM programming (1.3 times the LICO rate) by dwelling type.
- 8.5 BC Hydro has stated and the BCUC has confirmed in previous decisions that the RIB rate structure benefits the majority of low income customers. Please confirm that the extent of that benefit varies considerably between low income customers living in SFDs and those living in apartments/condos.

8.6 Please confirm that for low income customers in the higher end of the household electricity consumption range, the RIB rate does nothing to ease the burden of those energy costs.

8.6.1 If not, please explain how it eases this burden.

9.0 Reference: Exhibit B-1, Application, 5.2.3 2013 Residential Inclining Block Rate Evaluation Report, page 5-17, II 11-14

- The class average elasticity due to RRA rate increases under a flat rate was not able to be estimated using empirical data. The evaluation used the assumption of -0.05 as the class average price elasticity to determine the natural conservation baseline.

9.1 Is there an empirical basis for the assumption that in the absence of a RIB rate, the elasticity of demand for BC Hydro customers since the RIB came into effect would have been -0.05?

9.2 Please provide any materials that BC Hydro used to inform this assumption.

10.0 Reference: Exhibit B-1, Application, 5.2.3 2013 Residential Inclining Block Rate Evaluation Report, pages 5-17 to 5-18

The 2013 RIB Evaluation Report found that large consumers have higher elasticities than smaller consumers. Refer to the following 2013 RIB Evaluation Report findings:

- Large residential users consuming more than 2,400 kWh bi-monthly show a substantially higher than average response to higher prices. The 2013 RIB Evaluation Report indicates that the customer segment above 2,400 kWh of bi-monthly consumption has an estimated price elasticity of -0.16 to -0.18 (RIB Evaluation Report, pages vi, 20);
- Price elasticity is generally larger for customer segments with higher consumption. As discussed in section [5.2.2.2](#) above, customers living in single family detached homes generally have higher consumption than those living in other dwelling types. The 2013 RIB Evaluation Report finds that customers living in single family detached houses demonstrate higher price responsiveness than customers living in town houses, apartments or mobile homes (2013 RIB Evaluation Report, pages vi, 19). Section [5.2.2.2](#) also shows that customers with electric heat tend to have higher consumption than those that use other heating fuels. Price elasticity is higher among households with electric heat than those with non-electric heat (2013 RIB Evaluation Report, pages vi, 20); and
- Higher consumption is correlated with both higher awareness of the RIB rate and higher price elasticity; however, no firm conclusions can be drawn about how RIB awareness is related to customer price response (RIB Evaluation Report, pages vii, 28).

These results are all consistent with the RIB rate design assumptions that customers with a higher level of consumption tend to have a higher responsiveness to price.

- 10.1 Please confirm that with the RIB, high-use customers pay a higher average rate per kWh than they would if they were low-use customers?
- 10.2 Has BC Hydro done any analysis to determine if it is the higher average rate per kWh or the effect of the marginal rate (the tier structure) that has the greatest effect on high-use customer behaviours in the RIB?

10.2.1 If so, please provide.

10.2.2 If not, please explain why BC Hydro has chosen not to determine what has the greater effect on customer behaviours.

11.0 Reference: Exhibit B-1, Application, 5.2.5.2 Basic Charge Cost Recovery Increase, page 5-41, line 10

“The current RIB rate basic charge recovers 45 per cent of customer-related costs.”

- 11.1 Please confirm that this figure represents the percentage recovery of fully allocated embedded costs.
- 11.2 Please confirm that the impact of residential customer additions on all BC Hydro customer-related costs (i.e. the marginal customer-related cost associated with serving more customers) is much less than the average fully allocated embedded costs.
- 11.3 Please provide BC Hydro’s best estimate of the marginal customer-related cost associated with serving more customers (marginal cost per additional account).
- 11.4 What impact would a revenue neutral elimination of the basic charge (where the lost basic charge revenue is recovered from higher energy rates) have on the following:
 - (i) the step 1 and step 2 rates assuming they were both increased proportionately;
 - (ii) the step 1 and step 2 rates assuming that the lost customer charge revenue was recovered from the step 1 rate;
 - (iii) conservation of electricity (under both step rate assumptions listed above);
 - (iv) the average low income customer’s bill (under both step rate assumptions listed above)
- 11.5 What impact would eliminating the basic charge for only BC Hydro’s low income customers on a revenue neutral basis have on the step 1 and step 2 rates, conservation and the average bill of low income families (as listed in points (i) to (iv) in Q.4 above above).

12.0 Reference: Exhibit B-1, Application, 5.4 Low Income Rate, page 5-58, II 3-7

“In the context of UCA sections 58 to 61 rate setting, low income rates are likely to be seen as unduly preferential to low-income customers or unduly discriminatory to the remaining customers who subsidize those rates because the low income rate would be based on the

personal characteristics of the customer, divorced from the cost to deliver electricity to the premises.”

- 12.1 Please explain whether BC Hydro believes the RIB rate, which results in different cost recovery for people living in apartments/ condos as compared to single family dwellings (their personal housing characteristics), is any less ‘unduly discriminatory’ than a rate designed to lower energy costs for low income customers.

13.0 Reference: Exhibit B-1, 5.5.3 Approach to Address Minister Residential Inclining Block Rate Letter, page 5-71, ll 14-21 and pages 5-71 and 5-72 lines 23-27

- As the RIB rate has been in place for almost seven years, the only sound method to gauge bill impacts to low income customers is to compare the RIB rate to an alternative had the RIB rate not been in place. BC Hydro proposes that the flat energy rate modelled for the 2015 stakeholder engagement process and described in section [5.2.4.1](#) above serve as the counter-factual. As noted in [Table 5-3](#) above, BC Hydro estimates that with a flat rate, in F2017 80 per cent of low income accounts will experience bill impacts greater than 10 per cent, and 47 per cent greater than 20 per cent.

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As illustrated in section [5.2.4.1](#) above, BC Hydro modelled the bill impacts of moving from the RIB rate to a flat rate by dwelling type (apartments) and for customers using electric space heating. BC Hydro also proposes to model the bill impacts of moving from the RIB rate to a flat rate for customers in communities that do not have access to natural gas.

- 13.1 Has BC Hydro identified and analyzed alternative rate structures or measures in order to identify opportunities to assist low income customers?
- 13.1.1 If so, please provide the materials generated.
- 13.1.2 If not, please explain why BC Hydro has declined to perform this analysis.

- 13.2 Does BC Hydro agree that there are rate structures or measures designed to assist low income customers that could do so in a more comprehensive, fair and consistent manner than the current RIB?

13.2.1 If not, please explain.

14.0 Reference: Exhibit B-1, Application, 6.2.3.1 SGS Rate Structure, pages 6-10 to 6-11

“A SGS demand charge would also require a demand meter which not all SGS customers have. The requirement for a demand meter on all SGS customers makes the demand charge less practical and cost-effective to administer.”

- 14.1 Has BC Hydro analyzed what capabilities Smart Meters provide for better alignment of rates with costs? For example, has it analyzed whether its Smart Meters are capable of metering energy use on a Time-of-Use basis that would enable, should government policy allow, differential rates for peak versus non-peak hours and on a seasonal basis? If so please provide the relevant studies or summaries

- 14.2 Does BC Hydro agree that this pricing model would address some of the efficiency and fairness rationales of demand charges?

14.2.1 If not, please explain why not.

15.0 Reference: Exhibit B-1, Application, 6.2.4 BC Hydro Proposal and Stakeholder Engagement, page 6-12, ll 21-24

In BC Hydro’s view, there are no rate design objectives to be traded off. Increasing the SGS basic charge recovery to 45 per cent of customer-related costs aligns with the Bonbright fairness criterion by matching embedded cost recovery in rates with cost causation. Moreover, there is no conflict with the economic efficiency criterion:

- 15.1 Please provide BC Hydro’s best estimate of the marginal customer-related cost associated with serving more SGS customers (marginal cost per additional account).
- 15.2 How does that compare to the average embedded fully allocated costs per account?

16.0 Reference: Exhibit B-1, Application, 6.3.5 BC Hydro Proposal and Stakeholder Engagement, page 6-32, ll 11-15 and page 6-37

“BC Hydro acknowledged that as a result of the proposed increase to the demand charge, the MGS flat energy rate under its proposal drops below the lower bound of the energy LRMC range (F2017: MGS flat energy rate is 8.54 cents/kWh and the lower end of the energy LRMC range is 9.46 cents/kWh).”

On page 6-37, BC Hydro notes that high load-factor customers who can make more efficient use of the system will benefit the most from this proposal and that AMPC supported a higher demand charge and lower energy rate.

- 16.1 What analysis has BC Hydro done to compare the efficiency and conservation losses that will result from lower energy rates relative to the efficiency gain resulting from the higher demand rates?
- 16.2 Is there any evidence of an overall economic efficiency gain or loss?
 - 16.2.1 If so, please provide.

17.0 Reference: Exhibit B-1, Application, 6.4.4.2 Screening of Alternatives and Stakeholder Engagement, page 6-55, ll 4-9

“However, there is a trade-off between the customer understanding and acceptance and the economic efficiency criteria because the flat energy rate would not be reflective of LRMC (F2017: LGS flat energy rate is 5.37 cents/kWh with demand charge cost recovery at 65 per cent, and the lower end of the energy LRMC range is 9.46 cents/kWh).”

- 17.1 Has BC Hydro estimated the efficiency (and conservation) impact of having an energy rate roughly 40% below the lower bound of the LRMC? For example has it estimated the how much higher LGS energy demand will be at its proposed energy rate as compared to a mid-point estimate of the LRMC?
- 17.2 Does BC Hydro have any plans to address the potential adverse efficiency impacts of having an energy rate so far below the LRMC?
 - 17.2.1 If so please indicate what they are.
 - 17.2.2 If not, please indicate why not.

18.0 Reference: Exhibit B-1, Application, 6.4.4.2 Screening of Alternatives and Stakeholder Engagement, page 6-56, ll 71-21

During the stakeholder engagement process, AMPC stated that the Bonbright fairness criterion supports increasing the LGS demand cost recovery to 65%. BC Hydro's proposal is to increase the LGS demand cost recovery to 65%.

18.1 What analysis has BC Hydro done to assess whether this proposal would be supported by the Bonbright efficiency criterion? More specifically, similar to questions posed concerning the proposed increase in the MGS demand rate, what analysis has BC Hydro done to compare the efficiency (and conservation) loss from lower LGS energy rates relative to the efficiency gain resulting from higher demand rates?

18.1.1 If BC Hydro has not done any analysis to assess this, please explain why not.

18.2 Is there any evidence of an overall economic efficiency gain or loss?

18.2.1 If so, please provide.

19.0 Reference: Exhibit B-1, Application, 6.4.5.1 LGS Flat Energy Rate, page 6-60, ll 18-20

"...the gains in simplification in moving to a flat energy rate appear to be worth the apparent small loss in economic efficiency in the status quo LGS rate design."

19.1 What is BC Hydro's latest available estimate of the economic conservation potential in the LGS section expressed both in GWh and as a percentage of total load?

19.2 What was BC Hydro's estimate of the extent to which that economic conservation potential might be realized under the rate proposals in the DSM Option 4 from BC Hydro's 2013 IRP?

19.3 What economic conservation potential is expected to be realized with the rates proposed in this Application?

20.0 General Issues Raised at the Workshops

During the RDA workshops, in response to a COPE 378 query, BC Hydro stated that they are approximately 5 to 10 years away from developing the necessary IT infrastructure to engage in complex billing practices such as pre-paid billing or automatic conservation incentives based on previous power use.

- 20.1 Can BC Hydro describe in more detail what it will achieve and when during that timeline?
- 20.2 Is an expansion of the online customer service and billing infrastructure currently underway?
 - 20.2.1 If so, what is the expansion going to achieve or facilitate relating to complex billing practices.
- 20.3 Is an expansion relating to billing practices planned for the future?
 - 20.3.1 If so, what is the timeline to begin and finish this expansion and what is its specific intended purpose?
- 20.4 What is the reason for such a lengthy timeline?
- 20.5 Has BC Hydro considered any of the following more flexible or conservation-oriented rate design forms, and if so, what have they determined about each:
 - i) rebates or incentives for demonstrated conservation;
 - ii) time of use and other efficient or price-responsive demand options;
 - iii) residential demand charges or minimum bills;
 - iv) micro-loans built into rates for efficiency improvements; and
 - v) pre-paid accounts.
- 20.5.1 Does BC Hydro intend to pursue investigations or development of programs in any of these areas for inclusion in future rate design applications?
 - 20.5.1.1 If so, when is BC Hydro planning to do so?
 - 20.5.1.2 If not, please explain why not.
- 20.6 In conjunction with conservation-oriented rate design, is BC Hydro considering any incentive or funding programs for retrofitting, efficiency systems, and other conservation-based upgrades?
 - 20.6.1 Is BC Hydro considering the implementation of any of the programs listed above to enhance existing programs or to offset efficiency trade-offs inherent in the current proposal?