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February 13, 2015

Erin Pritchard
BC Public Interest Advocacy Centre
208-1090 West Pender St.
Vancouver BC, V6E 2N7

Attention: Erin Pritchard

Dear Ms. Pritchard:

RE: British Columbia Old Age Pensioners' Organization (BCOAPO)
British Columbia Hydro and Power Authority (BC Hydro)
2015 Rate Design Application (RDA)
Responses to BCOAPO Questions for Purposes of
Residential Rates Workshop No. 2 - February 25, 2015

BC Hydro writes to provide its responses to BCOAPO questions dated January 23, 2015 for purposes of BC Hydro's Residential Rates Workshop No. 2 – February 25, 2015.

Low Income Population

1. In the attached PDF entitled "Summary of BC Hydro Low Income Program Activity Reports," BC Hydro states that "Between 15 and 20 per cent of BC Hydro residential customers are designated low income. This translates to a population of approximately 260,000 low-income households depending on prevailing socio-economic conditions" (p. 6).
   - How was the "15 to 20 per cent" determined?
   - What percentage of BC Hydro's customers would be designated low income per the DSM Regulation's current definition of low income (i.e. before-tax annual household income equal to or less than the LICO established by Statistics Canada for a given year for households of that size, multiplied by 1.3)?

RESPONSE

The reference is to a summary of the evaluation of the Low Income program of Fiscal (F) 2009 and F2010. The figure of "15 to 20 per cent" is an out-of-date estimate, as it was determined based on BC Hydro's 2006 Residential End-Use Study (REUS) and an old methodology to estimate the number of low income residential customers. The robustness of the classification procedure in the 2006 REUS was limited by reporting

issues as well as a lack of precision in the income ranges in the end use survey, which inadvertently led to an upward bias in the estimated overall incidence of low income qualified customer households. In 2011, the methodology used to determine the prevalence of low income households was updated to provide a more accurate estimate based on a honed classification procedure. Applying the new methodology to the 2012 REUS study, BC Hydro estimates that 11 per cent of residential customers have incomes below Statistics Canada's Low Income Thresholds.

On July 10, 2014, the *Demand Side Measures Regulation* (*DSM Regulation*) was amended as follows with respect to Demand Side Management (DSM) low-income initiatives:

(a) Low-income program eligibility (Low-Income Cut-Off) threshold was raised to 130 per cent of nominal values;

(b) List of pre-qualified recipients of various government income and housing assistance programs; and

(c) Benefit calculation in the DSM Total Resource Cost cost-effectiveness test for low-income programs increased from 130 per cent to 140 per cent.

BC Hydro estimates, using the 2012 REUS study, that 21 per cent of residential customers meet the definition of low income per the *DSM Regulation* (i.e., fall under Statistics Canada's Low Income Thresholds multiplied by 1.3) as compared to 11 per cent prior to the *DSM Regulation* amendments. Accordingly, the number of residential customers eligible for BC Hydro's two low-income DSM programs has increased. BC Hydro's two existing low-income programs are described in the response to BCOAPO question 6.

Arrearage

2. Please provide an aged analysis of residential accounts receivable (by quarter) for the two years ending on March 31, 2014.

RESPONSE

The following shows aging of residential accounts receivables during F2013 and F2014.

RESIDENTIAL ACCOUNTS RECEIVABLE						
Fiscal Year (March YE)	**Quarter**	**0 to 29 Days ($ million)**	**30 to 59 Days ($ million)**	**60 to 89 Days ($ million)**	**90 Days + ($ million)**	**Total ($ million)**
F2013	**Q1**	**94**	**15**	**5**	**30**	**144**
	Q2	**63**	**12**	**4**	**31**	**109**
	Q3	**91**	**15**	**3**	**30**	**140**
	Q4	**133**	**23**	**7**	**30**	**193**
F2014	**Q1**	**90**	**16**	**6**	**33**	**145**
	Q2	**66**	**12**	**4**	**33**	**115**
	Q3	**92**	**14**	**4**	**34**	**144**
	Q4	**144**	**22**	**7**	**34**	**207**

3. Please provide the amounts of residential accounts receivable written off by BC Hydro to bad debt expense, and the amounts recovered, for the 5 years ending March 31, 2014.

RESPONSE

The following table summarizes total electric bad debt expense for each fiscal year. The numbers reported are net of recoveries from collection agencies.

Net bad debt is not easily reportable by rate class. However, analysis of accounts receivable for closed accounts (F2013-14) indicates that 79 per cent of aged closed accounts are residential – this figure is a reasonable estimate of the proportion of bad debts resulting from residential accounts.

	F2010 ($000)	**F2011 ($000)**	**F2012 ($000)**	**F2013 ($000)**	**F2014 ($000)**
Total Bad Debt Expense	**5,454.9**	**5,977.8**	**6,782.2**	**6,949.5**	**7,208.8**
Estimated Contribution from Residential Accounts (79%)	**4,309.4**	**4,722.5**	**5,358.0**	**5,490.1**	**5,695.0**

4. Please provide BC Hydro's annual collection costs for residential customers for the 5 years ending on March 31, 2014

RESPONSE

As part of the Service Agreement with BC Hydro, Accenture is responsible for the performance of the activities required for the collections of arrears for residential customers. Annual costs incurred by Accenture related to collection activities are not known to BC Hydro.

BC Hydro pays for costs related to collections made on accounts that have been referred to a collection agency. Costs for the previous five years ending March 31, 2014 are as follows:

Fiscal Year	$000
2010	401
2011	473
2012	497
2013	571
2014	635

5. Please comment on the contribution of low income customers to the amounts set out in the answers to questions 2, 3 and 4.

RESPONSE

BC Hydro does not identify customer accounts as being low income. Therefore, it is not possible to determine the contribution of low income customers to aged accounts receivables, bad debt expense or collection costs.

Low Income Power Smart Programs

6. Please provide the following data regarding BC Hydro's DSM programs for low income customers for the past 5 years ending on March 31, 2014, broken down by year:
   (d) Number of Energy Saving Kits distributed; and
   (e) Number of home energy assessments and upgrades completed under the Energy Conservation Assistance Program (ECAP)

RESPONSE

Five year figures for Energy Savings Kits (ESKs) and the number of home energy assessments and upgrades completed under ECAP are provided in the table below. BC Hydro promoted ESKs and ECAP to attract participants to the programs. However, as market penetration increases, it becomes more difficult to attract new participants and therefore participation has begun to decline. BC Hydro anticipates that over the near to medium term the increase in DSM Regulation-related Low Income thresholds will help program participation to stabilize.

	F2010	F2011	F2012	F2013	F2014	Five Year Total
ESKs*	**11,524**	**20,388**	**16,209**	**8,119**	**9,017**	**65,257**
Number of Home Energy Assessments and Upgrades Completed under ECAP**	**536**	**1,595**	**2,708**	**2,407**	**1,655**	**8,901**

*** ESKs - includes kits distributed to individuals and kits directly installed in housing units**

**** ECAP - participants receiving basic assessments and measures.**

7. BC Hydro's website suggests that ECAP has limited availability in the Northern and Southern Interior regions. Specifically,

"Customers in the Northern and Southern Interior regions: Applications are accepted year round. Service is provided from April to October. Appointments are booked in groups according to the volume of applications within each area."[1]

What is the reason for these geographic and date restrictions?

RESPONSE

ECAP availability is not limited in the northern and southern interior regions. ECAP is available throughout BC Hydro's service area; however, offering a service area wide in-home installation service is a challenge given the dispersed nature of participants. To serve as many customers as efficiently and safely as possible, regional service is bundled so that a number of customers can be serviced during the trip to the area. Promotion in the local area precedes these visits to raise awareness that the ECAP evaluators will be in the area and encourage more applications. The appointments are booked during the spring and summer to reduce weather related hazards and delays.

1 http://www.bchydro.com/powersmart/residential/ps_low_income/energy_conservation.html.

8. BC Hydro's website contains a section with the heading "Are you a low income BC Hydro customer? We can help you save $30 a year." How did BC Hydro calculate this $30 per year savings amount?[2]

RESPONSE

The website headline "We can help you save $30 a year" refers to the average electricity savings from ESKs. It is based on the blended average annual savings of the two current types of kits (standard and apartment). The cost of electricity assumed is $.0827/kWh based the residential exempt rate (Rate Schedule (RS) 1151 as of April 1, 2013).

Prepayment Option

9. Is BC Hydro exploring the possibility of offering a prepayment option for residential customers to pay their accounts? Do smart meters and BC Hydro's current billing system allow for this?

RESPONSE

Yes, BC Hydro is exploring the possibility of offering a voluntary prepayment option where residential customers buy electricity upfront for a set period of time rather than paying bi-monthly after electricity has been used. However, BC Hydro's priority for the 2015 RDA is to address the default rates for residential customers and other customer classes before embarking on voluntary options.

At the February 25, 2015 Residential rates workshop BC Hydro will ask for stakeholder comment as to whether BC Hydro should pursue the development of a voluntary residential prepayment option once the default Residential rates are established by the Commission. To inform the discussion, BC Hydro will list the asserted benefits and concerns raised with respect to voluntary prepayment options adopted in other jurisdictions, as well as the foundational components BC Hydro would need to get in place prior to offering a voluntary prepayment option. A summary of this information is set out in this response.

By way of background, a June 2012 National Consumer Law Center (NCLC) report states that 52 U.S. electric utilities in 19 states offer prepayment options[3], with municipal power companies and member-owned cooperatives comprising the majority of these electric utilities. BC Hydro understands that few prepayment options are offered by regulated

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2 https://www.bchydro.com/news/conservation/2013/ways-to-save.html.

3 Entitled *Rethinking Prepaid Utility Service*; http://www.nclc.org/images/pdf/energy_utility_telecom/consumer_protection_and_regulatory_issues/report_prepaid_utility.pdf.

U.S. electric utilities. There is a two-year pilot in Arizona offered by Arizona Public Service and a two year pilot in Michigan offered by Detroit Electric.[4]

BC Hydro understands that in 2014 the California Public Utilities Commission (CPUC) denied San Diego Gas & Electric's (SDG&E) proposed prepayment pilot. SDGE&E's proposal featured enrolled customers receiving notice when their account equals $0 or below by their chosen method including automated phone call, text message or e-mail; following this single notice, SDG&E would terminate via remote disconnection the service of any customer whose credit balance drops below $0 and remains there for four days or whose balance reaches or drops below -$20, whichever occurs sooner.[5]
BC Hydro also understands that in 2009, Western Massachusetts Electric Company's prepayment option request was denied by the Massachusetts Department of Public Utilities on the basis that among other things the proposed pilot unfairly targeted low income customers.[6]

BC Hydro also examined the following Canadian utilities and confirms that none of them offer a prepayment option: FortisBC (both the gas and electric utilities); Yukon Electric; SaskPower; Manitoba Hydro; Hydro Quebec; New Brunswick Power; Nova Scotia Power; and Newfoundland Power.

Asserted Benefits

- **Proponents report that there are energy conservation savings because residential customers who use payment options are more cognizant of their electricity use (i.e., prepayment induces behavioural changes). The utility that has operated a voluntary prepayment option for one of the longest periods of time (since 1993), Salt River Project (SRP) in Arizona serving Phoenix, reports an overall reduction of 12 per cent in electricity use compared to customers served on standard residential service.[7] However, as described below these estimates have been challenged;**
- **Prepayment options are often positioned as an affordable option because it does not typically require a deposit, credit check or cancellation fee. Customers are able to control the amount and time of their payment to the utility; and**

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4 LIHEAP Clearinghouse Report, "Prepaid Public Utility Service, Low Income Customers and LIHEAP", March 2014, page 6; http://www.liheapch.acf.hhs.gov/pubs/LCIssueBriefs/prepaid/FIINALprepay.pdf

5 Refer to the November 22, 2013 Proposed Decision of Administrative Law Judges (**ALJs**) for the CPUC's at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M081/K989/81989700.PDF. The ALJs Proposed Decision was voted on and accepted by the full CPUC on 19 December 2014 as part of SDG&E's Application for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design.

6 http://www.democracyandregulation.com/attachments/138/Smart_Grid_m-dism_WM_09-34_DPU_ORDER_72109dpuord.pdf.

7 Refer to Electric Power Research Institute's October 2010 report entitled *Paying Upfront: A Review of Salt River Project's M-Power Pre-Paid Program* available at http://www.srpnet.com/environment/earthwise/pdfx/spp/EPRI_MPower.pdf

- **There may be utility benefits (reduction in bad debt and write-offs because arrearages do not build up; perhaps reduced costs associated with billings, notification of disconnection, disconnection and reconnection).**

Concerns Raised

- **Prepaid service increases the risk of disconnection for participating residential customers, resulting in costs. Prepayment options typically provide for automatic disconnection when customer account balances reach zero. This has prompted opposition from consumer groups in the U.S. BC Hydro understands that utilities make disconnection exceptions for inclement weather and/or certain periods of time such as nighttime/weekends/holidays. For example, SRP customers cannot be cut off between 6 p.m. and 6 a.m.; and**
- **Claims of a conservation effect have been disputed. NCLC states that studies do not calculate the extent to which a conservation effects is attributable to forced usage reduction to avoid loss of service.**

Foundational Components

One potential approach is to allow the pre-purchase of electricity similar to purchasing a phone card or putting a credit on a Starbucks or Tim Hortons card. Consumption charges would be billed and deducted from the credit each night as the automated meter reading is obtained. As the balance gets close to zero, either the customer tops his or her account or there is an automatic disconnection if the balance hits zero. The service would then be reconnected when the customer applies another pre-payment to the account.

BC Hydro could offer this type of payment arrangement to customers that have a meter enabled for remote disconnect and reconnect. Metering infrastructure is already in place; however, it would be necessary to develop the billing processes and systems required to support it. For example, it would be necessary to develop online and mobile tools to allow customers to identify their current balance, forecast when their credit balance will run out, and enable replenishment of the balance.

It would also be necessary to address how the Residential Inclining Block (RIB) rate would apply. Under RIB, Step 2 charges are determined at the end of the monthly or bi-monthly billing period based on total consumption relative to the threshold. However, in the pre-payment approach described above, it may not be practical to wait until end of the billing period to determine if the threshold has been exceeded, thereby potentially requiring development of a rate based on daily consumption.

Large Residential Customers

10. Would BC Hydro be willing to update the data provided in the table in Exhibit B-3, BCUC IR 1.4.6 in BC Hydro's 2008 Residential Inclining Block Application?[8]

RESPONSE

The table below reproduces the table from the reference above with F2014 data.

Please note that since 2008 residential farm customers have been moved off of RS 1101 and onto RS 1151F and therefore the "farm accounts" in the table consist of RS 1151F customers. Also, the residential common area accounts are RS 1111; this is the only way to define that group of customers. The other groups, Multiple Residential and Single Family Dwellings are on RS 1101. The denominators for the percentages are all residential customers. This is the closest possible replication of the 2008 submission given the changes since 2008.

8 http://www.bcuc.com/ApplicationView.aspx?ApplicationId=187.

	Farm Accounts Rate 1151F			Common Area Accounts Rate 1111			Multiple Residential Service			Single Family Dwellings (House, Duplex, Townhouse, Mobile, Etc.)		
Annual Consumption Range (kWh)	Approximate Number of Customers	Percentage of Total Residential Customers	Percentage of Total Annual Residential kWh	Approximate Number of Customers	Percentage of Total Residential Customers	Percentage of Total Annual Residential kWh	Approximate Number of Customers	Percentage of Total Residential Customers	Percentage of Total Annual Residential kWh	Approximate Number of Customers	Percentage of Total Residential Customers	Percentage of Total Annual Residential kWh
25,000-30,000	1,144	0.067%	0.17%	507	0.030%	0.077%	8	0.000%	0.001%	35,348	2.073%	5.345%
30,000-35,000	806	0.047%	0.15%	437	0.026%	0.079%	11	0.001%	0.002%	16,393	0.961%	2.936%
35,000-40,000	522	0.031%	0.11%	409	0.024%	0.085%	0	0.000%	0.000%	8,090	0.474%	1.676%
40,000-45,000	364	0.021%	0.09%	342	0.020%	0.081%	3	0.000%	0.001%	4,276	0.251%	1.006%
45,000-50,000	235	0.014%	0.06%	289	0.017%	0.076%	1	0.000%	0.000%	2,452	0.144%	0.645%
50,000-55,000	205	0.012%	0.06%	305	0.018%	0.089%	3	0.000%	0.001%	1,494	0.088%	0.435%
55,000-60,000	159	0.009%	0.05%	237	0.014%	0.076%	0	0.000%	0.000%	1,095	0.064%	0.349%
60,000-65,000	133	0.008%	0.05%	235	0.014%	0.082%	0	0.000%	0.000%	803	0.047%	0.278%
65,000-70,000	83	0.005%	0.03%	175	0.010%	0.066%	0	0.000%	0.000%	532	0.031%	0.200%
70,000-75,000	80	0.005%	0.03%	169	0.010%	0.068%	0	0.000%	0.000%	460	0.027%	0.185%
75,000-80,000	76	0.004%	0.03%	138	0.008%	0.059%	0	0.000%	0.000%	384	0.023%	0.165%
80,000-85,000	89	0.005%	0.04%	158	0.009%	0.072%	1	0.000%	0.000%	316	0.019%	0.145%
85,000-90,000	68	0.004%	0.03%	132	0.008%	0.064%	0	0.000%	0.000%	295	0.017%	0.143%
90,000-95,000	50	0.003%	0.03%	139	0.008%	0.072%	0	0.000%	0.000%	216	0.013%	0.111%
95,000-100,000	59	0.003%	0.03%	107	0.006%	0.058%	0	0.000%	0.000%	235	0.014%	0.127%
100,000-150,000	360	0.021%	0.24%	538	0.032%	0.359%	3	0.000%	0.002%	1,240	0.073%	0.838%
150,000-200,000	172	0.010%	0.16%	189	0.011%	0.182%	0	0.000%	0.000%	545	0.032%	0.523%
200,000-250,000	95	0.006%	0.12%	56	0.003%	0.070%	0	0.000%	0.000%	263	0.015%	0.326%
250,000-300,000	55	0.003%	0.08%	18	0.001%	0.027%	0	0.000%	0.000%	66	0.004%	0.099%
300,000-350,000	35	0.002%	0.06%	11	0.001%	0.020%	0	0.000%	0.000%	45	0.003%	0.080%
350,000-400,000	19	0.001%	0.04%	2	0.000%	0.004%	0	0.000%	0.000%	29	0.002%	0.061%
400,000-450,000	16	0.001%	0.04%	2	0.000%	0.005%	0	0.000%	0.000%	23	0.001%	0.054%
450,000-500,000	17	0.001%	0.04%	1	0.000%	0.003%	0	0.000%	0.000%	10	0.001%	0.026%
500,000-550,000	6	0.000%	0.02%	0	0.000%	0.000%	0	0.000%	0.000%	9	0.001%	0.026%
550,000-600,000	4	0.000%	0.01%	0	0.000%	0.000%	0	0.000%	0.000%	9	0.001%	0.029%
600,000-650,000	2	0.000%	0.01%	1	0.000%	0.003%	0	0.000%	0.000%	4	0.000%	0.014%
650,000-700,000	5	0.000%	0.02%	1	0.000%	0.004%	0	0.000%	0.000%	2	0.000%	0.008%
700,000-750,000	3	0.000%	0.01%	0	0.000%	0.000%	0	0.000%	0.000%	3	0.000%	0.012%
750,000-800,000	1	0.000%	0.00%	0	0.000%	0.000%	0	0.000%	0.000%	2	0.000%	0.008%
800,000-850,000	3	0.000%	0.01%	0	0.000%	0.000%	0	0.000%	0.000%	1	0.000%	0.005%
850,000-900,000	3	0.000%	0.01%	0	0.000%	0.000%	0	0.000%	0.000%	2	0.000%	0.010%
900,000-950,000	2	0.000%	0.01%	1	0.000%	0.005%	0	0.000%	0.000%	1	0.000%	0.005%
950,000-1,000,000	2	0.000%	0.01%	0	0.000%	0.000%	0	0.000%	0.000%	0	0.000%	0.000%
1,000,000-1,250,000	5	0.000%	0.03%	0	0.000%	0.000%	0	0.000%	0.000%	1	0.000%	0.006%
1,250,000-1,500,000	2	0.000%	0.02%	0	0.000%	0.000%	0	0.000%	0.000%	1	0.000%	0.007%
1,500,000-1,750,000	3	0.000%	0.03%	0	0.000%	0.000%	0	0.000%	0.000%	0	0.000%	0.000%
1,750,000-2,000,000	0	0.000%	0.00%	0	0.000%	0.000%	0	0.000%	0.000%	0	0.000%	0.000%
Total	**4,883**	**0.286%**	**1.95%**	**4,599**	**0.270%**	**1.79%**	**30**	**0.002%**	**0.007%**	**74,645**	**4.377%**	**15.883%**

Return on Equity

11. Can BC Hydro confirm it plans to earn a net income (i.e. distributable surplus) of $581.5M and $651.9M in F2015 and F2016, respectively? [9] If so, please provide an estimate of how much of this net income will be recovered from low income customers for each of those years.

RESPONSE

Confirmed.

BC Hydro does not track revenue and costs for low income customers and therefore is not able to provide an estimate of net income from low income customers for F2015 and F2016.

Residential Model

12. Is the model BC Hydro is currently using to evaluate the impact of various inclining block options capable of modelling i) more than two tiers; ii) more than one season; and iii) electric heat vs. other methods of home heating?

RESPONSE

Models could be developed to evaluate the general options noted above.

13. Does BC Hydro plan to make the model available to interveners?

RESPONSE

It may be possible to send a more detailed set of outcomes for a single rate design alternative model, for example, to show revenue neutrality. For the reasons noted in this response, the models that compute the alternatives and analyze the rates will not operate as a standalone software package with any form of interface or control panel on which to run alternative design scenarios. Rather, the models are a multi-platform amalgamation of formula and functions. There are over four sub-models for each alternative to compute rates and determine bill impacts, across multiple software programs. Every rate design variation is

[9] BC Hydro F2015 to F2016 Revenue Requirement Application, Appendix C, page 39 (Schedule 9.0): https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/revenue-requirements/RRRA-2015-2016-main.pdf.

modelled separately and manually, to allow flexibility to change the fundamental programming and formulas.

It is for this reason that BC Hydro usually sends the Commission a detailed description of the modelling methodology as part of BC Hydro's filings where BC Hydro computes the rates, instead of a copy of the model. As an example, BC Hydro attaches the methodology document for the status quo RIB rate for F2016 as Attachment 1, which in substance was provided to the Commission and interveners as Appendix F to BC Hydro's 2013 RIB Rate Re-pricing Application. The methodology document discloses BC Hydro's method and assumptions.

BC Hydro proposes to continue supporting BCOAPO and other 2015 RDA participants by modeling requested inputs and design as has occurred through feedback to date (and in response to BCOAPO question 14 below). If participants would find it helpful, BC Hydro would be pleased to host a meeting to walk through the documentation of its modelling methodology as has been filed with past rate compliance filings.

14. Can BC Hydro model a three-tier rate, with the first tier having a ceiling of 250kWh/mo, and the third tier having a threshold of 2,000 kWh/mo, with the first tier priced at a fixed 3 cents/kWh, and the third tier priced at current IPP prices with an adder for dependable capacity at Revelstoke 6 and adjusted for T&D losses?

RESPONSE

Yes, BC Hydro will model BCOAPO's suggested three-tier residential rate and will present the underlying assumptions, rate modeling results and associated bill impacts at the workshop on February 25, 2015.

For further information, please contact Gordon Doyle at 604-623-3815 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

Original signed

Janet Fraser
Chief Regulatory Officer

bh/ma

Enclosure (1)

BC hydro

2015 Rate Design Application
Responses to BCOAPO Questions for Purposes of Residential Rates
Workshop No. 2 - February 25, 2015

Attachment 1

To Response to BCOAPO Question 13

F2016 RIB Rate Calculation Methodology

Executive Summary

This document describes the methodology used to calculate the F2016 RIB rate effective April 1, 2015, computed based on a 6 per cent rate increase.

The F2016 RIB rate is shown in Table 1 as follows:

Table 1 F2016 RIB Rate

Rate Component	Amount
Basic Charge ($/day)	0.1764
Energy Charge	
Step-1 Rate (cents/kWh)	7.97
Step-2 Rate (cents/kWh)	11.95

The pricing methodology follows the RIB rate pricing principles as approved by Commission Order No. G-13-14.

This document contains six sections, which describes the methodology used to calculate the RIB rate for F2016. It also demonstrates that the calculated RIB rate is revenue neutral on a forecast basis in F2016.

1 Pricing Principles Approved by Commission Order No. G-13-14

The F2016 RIB rate is computed by following the RIB rate pricing principles approved by Commission Order No. G-13-14 which can be described simply as:

- Each of the Step-1 rate, Step-2 rate, and the Basic Charge is increased by BC Hydro's Revenue Requirement Application (**RRA**) rate increase.

2 Billing Determinants

F2013 residential billing data (April 2012 through March 2013) is used for modelling and rate-setting, and consists of all residential accounts that have been billed at any time within F2013.

The forecasted F2016 residential kWh sales net of DSM by step is based on BC Hydro's October 2013 Energy Sales Load forecast, which is the most recent load forecast approved by the Commission, as follows:

Total kWh: 17,476 GWh

kWh in Step-1: 10,171 GWh

kWh in Step-2: 7,305 GWh.

The ratio used for allocating kWh sales to Step 1 and Step 2 is 1.39 (Step 1 kWh/Step 2 kWh). This ratio is a four-year average from F2010 to F2013 of Step 1 and Step 2 load since the RIB rate has been in effect. This is consistent with the ratio used for BC Hydro's F2015 RIB rate calculation. BC Hydro has continued to use this load ratio to determine the F2016 Step 1 and Step 2 loads due to the following reasons:

1. The four-year average Step 1 and Step 2 load ratio best reflects actual kWh sales under the RIB rate.
2. BC Hydro's Load Forecast is weather normalized, and the F2010 – F2013 period had "normal" weather, as defined by comparing the heating degree days for the same period to that of the weather normalized heating degree days.
3. Conservation estimates due to rate structures are evenly allocated to Step-1 and Step-2 forecasted consumption; hence, the percentages of load in Step-1 and Step-2 are unchanged from year to year in BC Hydro's rate model. Given that the estimated demand response compared to the overall residential load is

relatively small, this allocation methodology should not result in any significant differences in revenue requirement.

3 RRA Increase and Class Average Rate Change (CARC)

The F2016 RRA increase and F2016 Rate Rider used are as approved by Commission Order No. G-48-14 dated March 24, 2014. The F2016 CARC is the F2016 net bill impact which takes into account the F2016 RRA increase and Rate Rider.

The values are as follows:

F2016 RRA increase: 6 per cent

F2016 Rate Rider: 5 per cent

F2016 CARC: 6 per cent.

4 Target Revenue

Target revenue is determined by the same general methodology used to determine forecast domestic revenue described in previous years.

F2016 target revenue is computed using the F2014 RIB rate approved by Commission Order No. G-77-12A as the base, the approved rate increases in F2015 and F2016, the approved F2016 Rate Rider and the October 2013 load forecast.

The steps are as follows:

I. “Total revenue under F2014 rates” is equal to the sum of (a) forecast F2016 RIB kWh load for Step-1 and Step-2, multiplied by the F2014 RIB Step-1 and Step-2 rates and (b) forecast F2016 number of RIB rate customer accounts multiplied by the F2014 RIB Basic Charge multiplied by 366 days.

II. The approved or directed annual RRA increases for F2015 and F2016 are applied to the "Total revenue under F2014 rates" calculated in (I). These annual increases are 9 per cent for F2015 and 6.00 per cent for F2016.

III. The approved annual Rate Rider for F2016 of 5 per cent is applied to the outcome of II, resulting in the F2016 target revenue. These calculations are shown in Table 2.

Table 2 Target Revenue Calculation

Line	Description	Value	Unit	Source
A	Forecast F2016 RIB Step-2 Load	7,305,474,456	kWh	October 2013 Load Forecast (refer to section 2 Billing Determinants above)
B	Forecast F2016 RIB Step-1 Load	10,171,157,126	kWh	October 2013 Load Forecast (refer to section 2 Billing Determinants above)
C	Forecast F2016 Customer Accounts	1,729,095	Accounts	October 2013 Load Forecast
D	April 1, 2013 RIB Step-1 Rate (F2014)	6.90	cents/kWh	RS1101, Electric Tariff. Approved by Commission Order No. G-77-12A
E	April 1, 2013 RIB Step-2 Rate (F2014)	10.34	cents/kWh	RS1101, Electric Tariff. Approved by Commission Order No. G-77-12A
F	April 1, 2013 RIB Basic Charge (F2014)	0.1527	$/day	RS1101, Electric Tariff. Approved by Commission Order No. G-77-12A
G	Step-1 Revenue under F2014 RIB Rate	701,809,842	$	D * B/100
H	Step-2 Revenue under F2014 RIB Rate	755,386,059	$	E * A/100
I	Basic Charge Revenue under F2014 RIB Rate	96,636,007	$	C * F * 366
J	Total Revenue under F2014 RIB Rate Excluding Rate Rider	1,553,831,908	$	G + H + I
K	F2015 RRA increase	9.00	%	Commission Order No. G-48-14
L	F2016 RRA increase	6.00	%	Commission Order No. G-48-14
M	Total F2014 Revenue Escalated by F2015 and F2016 RRA increases	1,795,297,386	$	J * (1 + K) * (1 + L)
N	F2016 Rate Rider	5.00	%	Commission Order No. G-48-14
O	F2016 Total Rate Rider Revenue	89,764,869	$	M * N
P	**Total F2016 Target Revenue**	**1,885,062,255**	**$**	**M + O**

5 Rate Computation

5.1 Basic Charge

The Basic Charge computation follows the pricing principles outlined in section 1.

Basic Charge = F2015 Basic Charge * (F2016 RRA % + 100%)
= $0.1664 / day * (6.00% + 100%) = $0.1764 / day

5.2 Step-1 and Step-2 Rates

The Step-1 and Step-2 rate computations follow the pricing principles outlined in section 1.

Step-1 rate = F2015 Step-1 rate * (F2016 RRA % + 100%)
= $0.0752 * (6.00% + 100%) = $0.0797 / kWh

Step-2 rate = F2015 Step-2 rate * (F2016 RRA % + 100%)
= $0.1127 * (6.00% + 100%) = $0.1195 / kWh.

Outcome:
The resulting F2016 RIB rate (excluding Rate Rider) is as follows:

Step-1 rate: 7.97 cents/kWh
Step-2 rate: 11.95 cents/kWh.

The computation details are shown in Table 3.

Table 3 Computation of F2016 RIB Rate

Line	Description	Value	Unit	Source
A	F2016 RRA increase	6.00	%	Commission Order No. G-48-14
	April 1, 2014 RIB Rate (F2015)			
B	April 1, 2014 RIB Step-1 Rate (F2015)	7.52	cents/kWh	Commission Order No. G-48-14
C	April 1, 2014 RIB Step-2 Rate (F2015)	11.27	cents/kWh	Commission Order No. G-48-14
D	April 1, 2014 RIB Rate Basic Charge (F2015)	0.1664	$/day	Commission Order No. G-48-14
	Resulting F2016 RIB Rate*			
E	**F2016 RIB Step-1 Rate**	**7.97**	**cents/kWh**	B * (100% + A)
F	**F2016 RIB Step-2 Rate**	**11.95**	**cents/kWh**	C * (100% + A)
G	**F2016 RIB Rate Basic Charge**	**0.1764**	**$/day**	D * (100% + A)

* F2016 RIB Rate excludes Rate Rider and is rounded to 1/100th of a cent/kWh. Refer to section 1 and section 5.2 for a description of the pricing methodology.

6 Revenue Neutrality

Using the rates calculated via the rate calculation methodology described above, this section shows that the rates are revenue neutral on a forecast basis using the F2016 forecast load. This is done by comparing the revenue under the F2016 RIB rate and the revenue target, as shown in Table 4.

Table 4 Revenue Neutrality

Line	Description	Value	Unit	Source
A	Forecast F2016 RIB Step-2 Load	7,305,474,456	kWh	October 2013 Load Forecast
B	Forecast F2016 RIB Step-1 Load	10,171,157,126	kWh	October 2013 Load Forecast
C	Forecast Customer Accounts	1,729,095	Accounts	October 2013 Load Forecast
	F2016 RIB Rate			
D	RIB Step-1 Rate (rounded to 1/100 of a cent)	7.97	cents/kWh	Table 3 Line E
E	RIB Step-2 Rate (rounded to 1/100 of a cent)	11.95	cents/kWh	Table 3 Line F
F	RIB Rate Basic Charge (rounded to 1/100 of a cent)	0.1764	$/day	Table 3 Line G
G	Rate Rider	5.00	%	Commission Order No. G-48-14
H	RIB Step-1 Rate Revenue	810,641,223	$	D * B/100
I	RIB Step-2 Rate Revenue	873,004,197	$	E * A/100
J	RIB Rate Basic Charge Revenue	111,634,523	$	F * C * 366
K	Rate Rider Revenue	89,763,997	$	(H + I + J) * G
L	Total F2016 Revenue forecasted from the RIB Rate and Rate Rider	1,885,043,941	$	H + I + J + K
M	F2016 Target Revenue	1,885,062,255	$	Table 2 Line P
N	Variance due to rounding at the 3rd decimal place	18,315	$	M – L
O	**Variance (%)**	**0.0010**	**%**	**N/M * 100%**