British Columbia Utilities Commission

British Columbia Utilities Commission

Report to
The Government of British Columbia
on the Impact of
BC Hydro and FortisBC's Residential Inclining Block Rates

REPORT

March 28, 2017

This report was prepared for the Minister of Energy and Mines and Minister Responsible for Core Review.

British Columbia Utilities Commission
Sixth Floor, 900 Howe Street
Vancouver, BC V6Z 2N3

Email: Commission.Secretary@bcuc.com
Phone: 604-660-4700
Toll Free: 1-800-663-1385

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Minister of Energy and Mines and Minister Responsible for Core Review has asked the Commission to report on the impact of the British Columbia Hydro and Power Authority (BC Hydro) Residential Inclining Block Rate and the FortisBC Inc. (FortisBC) Residential Conservation Rate, collectively referred to as the residential inclining block (RIB) rates. Complaints have been received regarding "unreasonable bill impacts" on some customers, in particular rural customers who do not have access to natural gas to heat their homes and low-income customers.

Replacing the previous flat rate structure, the RIB rates were introduced to incent consumers to conserve energy and promote energy efficiency, and there is evidence that this is indeed happening. The RIB rates provide this incentive by charging customers more for the electricity they use beyond a certain "step" (1,350 kWh per billing period for BC Hydro, 1,600 kWh for Fortis BC), but at the same time giving all residential customers a reduction in the price they pay for their use below that step.

It has been suggested that the RIB rates may cause a cross-subsidy, whereby people living in areas without access to natural gas, and who are therefore more likely to heat their homes and hot water with electricity, subsidize people living in areas which do have access to natural gas. The Commission has considered this question from multiple perspectives, and determined that there is no evidence to support this theory. There is a "break-even point" (approximately 2,300 kWh per billing period for BC Hydro and 2,500 kWh per billing period for FortisBC) above which the RIB rate bill is higher than the equivalent flat-rate bill, and below which the RIB rate bill will be lower. But this does not constitute a subsidy, and neither is it unjust, unreasonable, unduly discriminatory or unduly preferential, the tests the Commission must use when setting rates.

That said, any customer who uses electricity for space heating and hot water will be likely to use more electricity than one who does not, since these are two of the prime determinants of high residential electricity use. While it is true that customers without access to natural gas are more likely to use electricity for space heating and hot water, it is also important to remember that some customers who do have access to natural gas use electricity for space heating and hot water as well. And, even in areas without access to natural gas, most customers would pay more under the flat rate than the RIB rate.

In winter, electric heating customers will use more electricity than in summer, and be more likely to exceed the break-even point where they pay more under the RIB rate than they would under the flat rate. In a colder-than-average winter, heating bills of all kinds, both electricity and natural gas, will be correspondingly higher. To illustrate, we have looked at a hypothetical FortisBC customer using 10,000 kWh of electricity in a winter billing period. We calculate that this results in an electricity bill of a little less than $1,500. If they were taking service at an equivalent flat rate, the bill would still be almost $1,200. While 10,000 kWh represents five times the average bill for a FortisBC customer, 5,000 kWh use would result in a RIB-rate bill of just over $700, which is only about $100 more if the customer was on the RIB rate than if they were on a flat rate.

Furthermore, for some of these customers, their summer bills are actually lower under the RIB rate structure than they would be under a flat rate structure. To evaluate the overall effect more comprehensively, it is necessary to look at total annual electricity cost and not just winter bills. When considering the annual cost, we

find, for example, that 88 percent of BC Hydro low-income customers are better off overall under the RIB rate compared to the flat rate, and only 1 percent of the same population were more than 10 percent worse off.

While 65.2 percent of FortisBC low-income customers are better off under the RIB rate than the flat rate, FortisBC estimates that 9.7 percent of its low-income customers are more than 10 percent worse off. There is a significant difference between the FortisBC and BC Hydro results in this regard. Based on the evidence available, the difference might be due at least in part to the mix of housing stock across the Province. In the FortisBC region, proportionately more low-income customers live in single family dwellings, and fewer in apartments, leading to higher electricity use.

The two utilities offer a range of demand-side management (DSM) programs aimed at encouraging customers to conserve energy and promote energy efficiency. These include programs tailored for low-income customers that are more affordable as they do not require an investment on the part of the customer. The Commission believes that there is potential for these DSM programs to reduce customers' electricity use, and hence mitigate the effects of the higher tier of the RIB rate. In fact, the very design of the RIB rate is intended to provide increased incentives for customers to take advantage of the DSM programs – customers reducing energy use in the higher-tier rate save more than if they were under the flat rate.

Having said that, there is more that could be done to promote the existing DSM programs and to encourage customers to participate. There is also the potential for additional programs and innovative financing programs that could further help customers, in particular low-income customers, to conserve energy and reduce their electricity bills. The two utilities could also look to develop DSM programs intended specifically to assist high-use households (including high-use/low-income households) located in areas without access to natural gas to reduce their electricity consumption. While there are limits on BC Hydro's total level of DSM funding, there are opportunities to reallocate DSM funding towards targeted groups of residential customers.

1.0 Scope and process of this report

On July 6, 2015, the British Columbia Minister of Energy and Mines and Minister Responsible for Core Review (Minister) requested the British Columbia Utilities Commission (Commission, BCUC) report to government on the impact of the British Columbia Hydro and Power Authority (BC Hydro) Residential Inclining Block Rate and the FortisBC Inc. (FortisBC) Residential Conservation Rate (together, the residential inclining block [RIB] electricity rates).[1]

1.1 Scope

The Minister expressed that he had "heard concerns from the public that the residential inclining block rates may have unreasonable bill impacts on some customers" including rural customers who do not have the option to heat their homes with natural gas.[2] The Minister requested information on customers, including low-income customers, with bill impacts greater than 10 percent as a result of the implementation of the RIB rates. More specifically, the Minister tasked the Commission to prepare a report to address the following five questions:

1. Do the residential inclining block rates cause a cross-subsidy between customers with and without access to natural gas service?
2. What evidence is available about high bill impacts on low income customers?
3. What evidence is available about factors that lead to high-energy use and, therefore, bill impacts for customers without access to natural gas, including low income customers?
4. What is the potential for existing Demand Side Management programs to mitigate these impacts?
5. Within the current regulatory environment, what options are there for additional Demand Side Management programs, including low income programs?

The Minister also recommended the BCUC gather information from ratepayers in regions not served by natural gas regarding the impacts of the RIB rates and awareness of ratepayer mitigation options.

1.2 Out of scope issues

The Minister set certain issues out of the scope of this review process. Specifically, the Minister stated that any analysis of higher greenhouse gas emissions, electricity conservation, revenue neutrality resulting from the residential inclining block rates and any analysis of alternative rate structures are best left to existing regulatory processes other than this review process.[3]

Given the Minister's request for responses to the five questions listed above, this review process and report are not intended to alter the rates or to include any Commission recommendations.[4]

[1] Minister Bennett, Letter to BCUC, July 6, 2015, p. 1 [Attached as Appendix B to this Report].
[2] Ibid.
[3] Ibid., p. 2.
[4] Exhibit A-1, p. 2.

1.3 Process

Below is a summary of the process the Commission undertook to gather information for this report. A detailed description of the process is included in Appendix C.

1. Following a consultation process with the Utilities and the public, the Commission set out the method and process (attached as Appendix D to this report) by which the Utilities would prepare reports to the Commission on the Minister's five questions, including a number of definitions to specific terms.
2. In an effort to reach all impacted parties, the Commission provided extensive opportunities for public comment, expanding on the usual comprehensive notification and public comment periods.
3. The Utilities filed their reports on the Minister's five questions with the Commission.
4. Public and stakeholder comments were sought on the Utilities' reports.
5. The Commission drafted this report.

The Commission adopted an approach whereby interested individuals and organizations could register as stakeholders (Stakeholders). Ten parties registered as Stakeholders, of whom the following five made comments on the Utilities' submissions:

- British Columbia Old Age Pensioners' Organization *et al.* (BCOAPO);
- B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA);
- Mr. N. Marty (Marty);
- Regional District of Mount Waddington (RDMW); and
- Ms. J. DeCock (DeCock).

In this process the Commission provided opportunities for public comment that were much more extensive than our usual public comment periods. Public notice was provided in major as well as community newspapers across the province and was sent directly to regional districts and municipalities. Two separate public comment periods were held, each of which was open for approximately 6 weeks. The public comment processes resulted in 669 letters of comment being submitted to the Commission. A list of the publications, regional districts and municipalities to which public notice was sent or published appears in Appendix F of this report.

1.4 Document structure

The Commission provides its response to each of the Minister's five questions in the following five sections (2.0 through 6.0). Each section begins with the Commission's response, followed by a summary of the information provided by BC Hydro and FortisBC (together, the Utilities) and Stakeholders that the Commission concluded was relevant to that question.

The extensive comments received from the public have been summarized, and this information is included in Appendix A. Further background information is provided in additional appendices.

2.0 Question 1 – Do the residential inclining block rates cause a cross-subsidy between customers with and without access to natural gas service?

The RIB rates do not cause a cross-subsidy, as that term is used and understood by energy regulators, between customers with and without access to natural gas.

In responding to the Minister's question of whether the RIB rate causes a cross-subsidy between customers with and without access to natural gas, the Commission interpreted this question as requiring an examination of "cross-subsidy" within the context of public utility regulation in BC. More specifically, the Commission does not consider that a comparison of revenues only, without taking into account the utility costs to serve that customer, can indicate whether one customer group is subsidizing another customer group. Hence, the Commission adopted a revenue-to-cost comparison (i.e. as opposed to a revenue comparison only) interpretation of the term "subsidy" in this report.

Revenue-to-cost (R/C) ratios are industry-standard measures that are used extensively in rate design. They attempt to measure the degree to which customer revenues cover the costs of delivering service, and are typically used to ensure that cross-subsidization between rate classes is minimized. The Commission acknowledges that judgement is involved in assigning costs to customers, and asked the Utilities to use the same methodology in this exercise as they have used in previous regulatory proceedings. The Commission also acknowledges that there is no clear dividing line as to when a difference in revenues and costs within a customer class is large enough to be considered a subsidy, and has reflected this in its Report.

Although it may appear that any R/C ratio other than unity indicates cross-subsidization, it is important to recognize that the ratio is an imperfect measure, and therefore some degree of variance around unity falls short of being determinative that there is indeed a cross-subsidy. In particular, R/C ratios are sensitive to the methods chosen to estimate and allocate costs. Factors such as the degree of detail to which costs are broken down and whether historic or future costs are used will significantly vary the results of the R/C analysis. For this reason, it is common to look at R/C ratios on both historic and future cost bases when considering cross-subsidization, though neither on its own can be considered definitive.

R/C ratios can also be used to evaluate whether intra-class cross-subsidization occurs. In this context, it is important to keep in mind that residential electricity rates in BC are set on a "postage stamp" basis, whereby all customers in the BC Hydro territory pay the same amount regardless of their location, as do FortisBC customers (though BC Hydro and FortisBC customers have different rates). It is understood that costs to serve specific residential customers vary depending on many factors, including but not limited to location within the province, population density, and housing type. Hence, postage stamp rates inherently accept a degree of cross-subsidization between different residential customers.

When setting utility rates, the Commission is governed by sections 59–60 of the *Utilities Commission Act* (UCA), which state that rates must not be "unjust, unreasonable, unduly discriminatory or unduly preferential." The Commission uses R/C ratios as one indicator of whether discrimination exists, and the degree to which such discrimination might be considered undue.

The Commission has looked to previous Commission decisions for guidance on the correlation between R/C ratio and cross-subsidization. In the Commission's 2014 decision on BC Hydro's rate schedule (RS) 3808, the Commission observed that a +/- 10 percent range was considered an acceptable degree of cross-subsidization between different rate classes.[5] Commenting on intra-class subsidization ranges, in the same BC Hydro RS 3808 Decision, the Commission observed "that acceptable R/C ratios for existing customers within a particular customer class can be greater than the +/- 10 percent range which has at times been considered acceptable for the total customer class."[6]

In another proceeding involving intra-class subsidy issues, the Commission considered whether the Big White area was sufficiently different from other areas in FortisBC's service territory to warrant special and unique rate treatment. In that proceeding, the costing data showed that if all of the project costs (construction of a new 138 kV line and substation and network upgrades) were assigned to the Big White area, the R/C ratio would be approximately 84 percent after load growth has occurred, compared to 100.6 percent for customers in the remaining service area. Costing data also showed that the R/C ratios for other regions included in the residential customer class varied, with Christina Lake at 82.1 percent and Kaslo at 128.1 percent. In that decision, the Commission considered that the results for Big White fell within the range of R/C ratios of the other communities in the FortisBC area, and did not establish the Big White area as a separate region for rate setting purposes.[7]

The Commission finds that the RS 3808 and Big White decisions are both relevant to the analysis of intra-class subsidization. It is within this context that the Commission considered whether the analysis presented by the Utilities shows evidence that the RIB rates cause a cross-subsidy between customers with and without access to natural gas.

The Commission asked BC Hydro and FortisBC to compare average residential rates for each customer segment to (i) historic (embedded) and (ii) future (incremental) costs for the utility to produce and deliver electricity to those segments. Summary results of this analysis are shown in the table below:

[5] Commission Decision on BC Hydro Application for approval of rates between BC Hydro and FortisBC with regards to RS 3808 dated May 6, 2014 (G-60-14), p. 39.
[6] Ibid.
[7] Commission Reasons for Decision on an Application by FortisBC for a Rate Design on the Big White Supply Project dated August 7, 2009 (G-87-07), pp. 1, 6, 15.

Table 1: Comparison of revenues to costs for customers with/without access to natural gas

	Customers with no access to natural gas	Customers with access to natural gas	Difference (percentage points)
BC Hydro[8]			
• Revenues as a percentage of historic costs (R/C Ratio)	94.9%	90.2%	4.7
• Revenues as a percentage of future costs (R/C Ratio)	89.0%	86.0%	3.0
FortisBC[9]			
• Revenues as a percentage of historic costs (R/C Ratio)	108.5%	94.0%	14.5
• Revenues as a percentage of future costs (R/C Ratio)	114.5%[10]	111.8%[11]	2.7

BC Hydro's analysis produces R/C ratios (calculated on both a historic and future cost basis) that show a difference of no more than 4.7 percent between customers with and without access to natural gas. Considering past Commission decisions on cross-subsidization, the Commission does not find that the ratios reported by BC Hydro indicate existence of cross-subsidy between BC Hydro customers that can be attributed to whether or not they have access to natural gas.

FortisBC's analysis for R/C ratios calculated on a future cost basis produces results that are similar to those for BC Hydro customers. Examining this ratio on its own, the Commission does not find it to be evidence of a cross-subsidy.

However, the R/C ratio for FortisBC calculated on a historic cost basis is 14.5 percentage points greater for customers without access to natural gas than for customers with access to natural gas. Although this ratio is greater than the 10 percent range cited in the RS 3808 decision for inter-class ranges, it does fall within the ranges the Commission has accepted for intra-class subsidies (per the RS 3808 decision and the Big White decision). Thus, the Commission finds this difference to be within the range of reasonableness for other FortisBC regions, and does not consider the difference to be unjust, unreasonable, unduly discriminatory or unduly preferential in the meaning of section 59 of the UCA.

Furthermore, the Commission has also looked into the issue as to why there was a significant difference in the FortisBC R/C ratios calculated using historic costs, but not for BC Hydro. The Commission is aware of the following differences in Commission-approved cost allocation approaches that could be contributing factors:

- FortisBC uses a minimum system approach to classify distribution costs as related to either peak demand or the number of customers. This approach reflects FortisBC's philosophy that the system is in place in part because there are customers to serve throughout its service territory, and that a minimally-sized distribution system is needed to serve these customers even if they only use 1 kWh of energy per year. The Commission considers that this approach may result in more costs being allocated to small-use

[8] BC Hydro RIB Report, pp. 9, 16.
[9] FortisBC RIB Report, pp. 5, 7.
[10] Average rate of 12.82c/kWh, divided by the long-run marginal cost estimate of 11.196 c/kWh (FBC Report, p. 7).
[11] Average rate of 12.52c/kWh, divided by the long-run marginal cost estimate of 11.196 c/kWh (FBC Report, p. 7).

FortisBC customers (and hence fewer costs to high-use customers) than the approach used by BC Hydro (where distribution costs are primarily allocated based on demand).

- FortisBC allocates demand-related costs based on the sum of the two highest summer and two highest winter peaks, which reflects FortisBC's philosophy that, while the summer peak is not at the same level as the winter peak, it is growing faster than the winter peak and will increasingly have a larger impact on the system. The Commission considers that this approach, while approved as fair, may allocate more costs to customers with summer consumption (and hence less costs to winter consumption) than the approach used by BC Hydro (which uses 4 winter peaks).[12]

The Commission considers that these two factors have the potential to reduce the cost factor in the R/C ratio for FortisBC customers with no access to gas (which have higher use), thus increasing the R/C ratio itself. Conversely, these factors may be increasing the cost factor in the R/C ratio for those customers with access to gas (who have lower use), and thereby reducing the R/C ratio. The Commission considers that the ability to decrease the 14.5 percentage point difference in FortisBC's R/C ratio based on historic costs by changing cost allocation assumptions, without any change to the RIB rate design, illustrates the caution that should be placed when interpreting BC Hydro and FortisBC's R/C ratio based on historic costs.

Taking all the above factors into consideration, the Commission does not find that the RIB rates cause a cross-subsidy between customers with and without access to natural gas for either of the Utilities.

The Commission also notes that it is important to consider the reasons for differences in R/C ratios before determining whether or not a subsidy exists. In Prince George Gas Co. v Inland Natural Gas Co.[13] (Prince George decision), a decision of the BC Court of Appeal cited by BC Hydro in its 2015 Rate Design Application, the court observed that payments from one group of consumers that reduce the rates of other consumers do not constitute a subsidy, as long as the reduction in rates is an "incidental result flowing from a proper rate based upon the cost of service." Such a reduction in rates would, however, be considered a subsidy if its "specific purpose" is to benefit other consumers without regard to the cost of providing service. [14] In other words, differences in R/C ratios do not inherently determine the existence of a subsidy, only the possibility of one.

The RIB rates are conservation rates; that is, their purpose is to conserve energy or promote energy efficiency by providing a higher incentive, in the form of a higher rate for electricity purchased in the second tier, for higher-use customers to reduce consumption. Since it is not the purpose of the RIB rates to benefit any customers at the expense of other customers, this supports the Commission's view based on the R/C ratios that there is no undue discrimination in the RIB rate.

Summary of comments of the parties

BC Hydro submits that this difference in R/C ratios is not substantive, and therefore there is no cross-subsidy between these two customer segments.[15] BCSEA and BCOAPO consider BC Hydro's conclusion to be reasonable.[16]

[12] FortisBC 2009 Rate Design Application, Exhibit B-9, Appendix A, pp. 18, 31; BC Hydro 2015 Rate Design Application, Cost of Service Study and Rate Class Segmentation Negotiated Settlement Agreement (G-47-16), Appendix A, pp. 33, 39.
[13] 1958 CarswellBC 37.
[14] BC Hydro 2015 Rate Design Application, BC Hydro Final Argument dated September 26, 2016, pp. 88–89.
[15] BC Hydro RIB Report p. 8.
[16] BCSEA November 24, 2016 submission, p. 4; BCOAPO November 24, 2016 submission p. 4.

FortisBC submits that postage stamp rates will result in some cross-subsidies within the customer class, but that this does not mean that separate rate classes should be pursued. FortisBC further submits that the difference in revenues as a percentage of costs is just outside the last accepted range of reasonableness, and does not consider that there is enough evidence to conclude that there is a cross-subsidy between these two customer segments. [17]

BCSEA considers FortisBC's conclusion to be reasonable, and agrees with FortisBC that even if the evidence did show a cross-subsidy this does not mean that separate rate classes or subdivisions within a particular rate should be pursued. [18]

BCSEA states they are concerned that there is a disconnect between the Utilities' responses to the Minister's Question 1 and the concerns expressed by the RIB critics:

> Question 1 asks whether the RIB rates cause "cross-subsidy" between customers with and without access to natural gas. Quite reasonably and properly, the Commission interpreted this question as requiring an examination of "cross-subsidy" as the term is used within the world of public utility regulation in B.C. The Commission required the utilities to use fully allocated cost of service (FACOS) and long run margin cost (LRMC) analyses to address whether the RIB rates cause cross-subsidization. The utilities did carry out these analyses, and their responses to Question 1 are discussed below. However, in BCSEA-SCBC's view, the utilities' analysis and results regarding "cross-subsidization" do not respond directly to the concerns and opinions of the RIB critics filed in this proceeding.
>
> It appears to BCSEA-SCBC that the concerns expressed by most of the Without Access to Natural Gas critics of the RIB rates are not primarily that RIB rates cause an intra-class "cross-subsidy" in a regulatory sense. Most don't use the term "cross-subsidy" and those who do refer it don't use it in the sense of FACOS and/or LRMC analysis.
>
> Rather, the concern evident in the letters of comment is that RIB rates cause customers without access to natural gas to have to pay 'too much' for electricity. 'Too much' in this context is not a rigorously defined concept, nor is it used in the same way by all the commentators. For some, 'too much' means more than they can afford. For others, 'too much' means paying more for electricity than they would if they did have access to natural gas. For others, 'too much' means paying more for electricity than is paid by customers With Gas Access. None of these concerns is directly addressed by Question 1 and the utilities' responses to Question 1.
>
> …
>
> In BCSEA-SCBC's view, the questions that arise out of the letters of comment are essentially:
>
> - Do the RIB rates cause Without Gas Access customers and Low-Income customers to pay too much for electricity?
> - What would be the consequences of moving to a flat rate for both Without Gas Access customers and With Gas Access customers, and Low-Income customers and Non-Low Income customers?

[17] FortisBC RIB Report, p. 6.
[18] BCSEA November 24, 2016 submission, p. 8.

> Although these questions were not explicitly stated by the Minister, BCSEA-SCBC respectfully submit that the Commission should ensure that these questions are addressed clearly and effectively in the Commission's report to the Minister.[19]

BCSEA further states:

> Most of the criticisms of the RIB rates in the letters of comment are based on the assumption that Without Gas Access customers would have lower electricity bills under a flat rate design than under the existing RIB rates. This assumption is quite incorrect. In fact, most Without Gas customers would likely pay more for electricity with a flat rate than with their current RIB rate. … If the Without Gas Access critics of the RIB rate succeeded in having the RIB rate replaced with a flat rate then most of the low-income electricity customers in the Without Gas Access areas (and in all other areas) would be worse off financially. The purpose of RIB rates is to incent conservation and efficiency and they achieve that objective."[20]

The Commission agrees with BCSEA that the purpose of RIB rates is to incent conservation and efficiency, and that the vast majority of low-income customers are better off financially under the RIB rate than a flat rate. However, there are some high-use/low-income customers who are negatively affected, and it is mitigating the negative impacts for these high-use/low-income customers that is an area of focus in this report.

The Commission also notes that electricity rates would have increased for high-use residential customers, even in the absence of the RIB rates. For example, when the BC Hydro RIB rate was introduced in October 2008, the flat energy charge for exempt residential customers at that date was 6.55¢/kWh, which has since increased to 9.93¢/kWh (2016). FortisBC's flat rate energy charge was 7.08¢/kWh in 2008 (and 10.22¢/kWh when their RIB rate came into effect in 2013), and has since increased to 11.43¢/kWh in 2016. As a result, only a portion of the bill increase experienced by high-use customers since 2008 would be attributable to the change in rate design. In addition, for low-income/low-use customers primarily consuming at RIB Step 1 levels, the Commission notes that moving back to a flat rate would increase energy rates by 20 percent for BC Hydro customers and 16 percent for FortisBC customers, which could also result in affordability concerns.[21]

BCOAPO notes that there is no obvious explanation for the difference in the R/C ratios between BC Hydro and FortisBC, and considers that additional analysis would be required before any firm conclusion can be drawn. However, they conclude that the Commission should respond to the Minister's question in a qualified affirmative. BCOAPO submits that the Commission should also note the existence of inherent cross subsidies in any customer classification when customers are grouped together and that eliminating the RIB rate would have a significant adverse impact on the vast majority of low-income customers.[22]

The Commission agrees with BCOAPO that there are inherent differences in R/C ratios in any customer classification when customers are grouped together. For example, postage stamp rates generally provide an

[19] BCSEA November 24, 2016 submission, pp. 1, 2.
[20] BCSEA November 24, 2016 submission, pp. 1-4. Emphasis in original.
[21] BC Hydro 2016 flat rate energy charge for exempt residential customers is 9.93 ¢/kWh, compared to the RIB Step 1 residential energy charge of 8.29 ¢/kWh. FortisBC 2016 flat rate energy charge for exempt residential customers is 11.433 ¢/kWh, compared to the RIB Step 1 residential energy charge of 9.845 ¢/kWh.
[22] BCOAPO November 24, 2016 submission p. 6.

advantage to rural communities, and so customers in regions without access to natural gas may already benefit from a postage stamp cross-subsidy inherent in their rates.

RDMW, Marty and DeCock do not concur with BC Hydro's conclusion that there is no cross-subsidy, and submit that BC Hydro arrived at this conclusion despite results showing the contrary.[23] RDMW assumed that the flat rate would be 5 percent higher than the Step 1 rate, and used consumption data for Port McNeill to estimate that RDMW residents in total would be paying $1 million more under the RIB rate than under the flat rates. RDMW concludes that the rates are structured to redistribute the extra-funds from high-volume users to low-volume users, and that this is a subsidy from customers without access to natural gas to those with access.[24] However, the Commission considers this analysis by itself is not evidence of a subsidy as it does not take into account the different costs to serve these customer segments, significantly understates the cost of electricity under a flat rate (which in 2016 was 20 percent higher than the Step 1 rate), and does not consider whether the magnitude of any difference found is within the range of reasonableness. In addition, the Commission disagrees that the purpose of the RIB rate is to redistribute funds between high-volume users and low-volume users, while acknowledging that this may be an unavoidable, incidental result in some instances.

For his part, Marty submits that assessing the existence of a cross-subsidy between customers by comparing those "with access" and those "without access" to natural gas greatly underestimates the situation as some in the "without access" benefit from the RIB rate (as they use wood or heating oil) and while some in the "with access" are paying significantly higher rates due to the RIB rate (as they use electricity for heating).[25]

DeCock raised concerns that the Utilities used annual consumption data to analyse rates that are affected by seasonal variation.[26] However, the Commission notes that the Utilities used actual revenues and load shape information to allocate costs between customer classes (FortisBC specifically refers to the use of hourly customer data in their report) which would have reflected seasonal variation.[27]

Public comments

The Commission received a number of comments from the public suggesting alternative implementations of the RIB rates, such as different rates for areas without access to natural gas (see Appendix A, sections 1.2 and 1.6). While the subjects of revenue neutrality and alternative rate structures are specifically out of scope for this review, the Commission notes in the earlier part of this section that it does not find that the RIB rate causes a subsidy between customers in areas with and without access to natural gas, and hence there is no compelling reason to consider restructuring the RIB rate on that basis.

[23] RDMW November 18, 2016 submission, p. 1; Marty October 19, 2016 submission, pdf p. 14; DeCock November 1, 2016 submission, p. 4.
[24] RDMW November 18, 2016 submission, p. 1.
[25] Marty November 29, 2016 submission, pdf p. 3.
[26] DeCock November 1 submission, p. 2.
[27] FortisBC RIB Report, p. 5.

3.0 Question 2 – What evidence is available about high bill impacts on low income customers?

The Commission presents here evidence gathered from the Utilities regarding high bill impacts on low-income customers. Specifically, the Utilities were asked to provide an analysis of low-income customers experiencing bill increases of over 10 percent as a result of the RIB electricity rates.

Bill impacts of the RIB rates in general

Before providing the evidence specific to low-income customers, the Commission examined the bill impacts of the RIB rate compared to a flat rate for any customer regardless of their income. We believe that these results provide context to the discussion that follows.

We have used tariff data for the FortisBC RIB rate structure for the purposes of illustration (BC Hydro's rate structure is similar but not identical). FortisBC also has a flat rate restricted to customers enrolled in the RCR control group. The FortisBC 2016 tariff is:

Table 2: FortisBC 2016 RIB rate and residential flat rate

FortisBC RIB rate	FortisBC Flat rate
Tier-1 rate: 9.845 ¢/kWh Tier-2 rate: 15.198 ¢/kWh Tier-1 cut-off: 1,600 kWh per billing period RIB rate basic charge: $31.23[28]	Equivalent flat rate: 11.433 ¢/kWh Flat rate basic charge: $36.39

The Commission notes that, since customers' bills fluctuate between billing periods and are often higher in the winter, it is not possible to translate directly from annual consumption to billing-period consumption. However, to illustrate the impact of RIB rates on individual customer bills, the Commission has provided the following calculation of bill amounts using several sample levels of use in a two-month billing period:

Table 3: FortisBC 2016 residential bill comparison (RIB vs. flat rate)

	Billing-period consumption (kWh)				
	1,000	1,600	2,500	5,000	10,000
Consumption compared to average of 1,917 kWh[29]	0.5x	0.8x	1.3x	2.6x	5x
Customer bill					
• RIB rate	$129.68	$188.75	$325.53	$705.48	$1,465.38
• Flat rate	$150.72	$219.32	$322.22	$608.04	$1,179.69
• Bill impact[30]	-$21.04	-$30.57	$3.32	$97.44	$285.69
• Percentage impact	-14%	-14%	1%	16%	24%

[28] Per billing period (two months).
[29] Average annual FortisBC residential consumption is 11,500 kWh per year (FortisBC RIB Report, p. 11), or 1,917 kWh per billing period (assuming flat load).
[30] RIB rate less flat rate.

As indicated by the table, there is a consumption break-even point, above which a consumer's bill will be higher under the RIB rate than under the flat rate. For FortisBC customers, this break-even point is around 2,500 kWh per billing period (per the table above), for BC Hydro it is approximately 2,300 kWh per billing period.[31] Conversely, for customers consuming less than the break-even point, their bills are lower under the RIB rate than under the flat rate. So, while FortisBC RIB rate customers pay more for each kWh consumed above the 1,600 kWh threshold than they would under a flat rate, their total RIB rate bill only exceeds what the bill would have been under the flat rate once their usage exceeds around 2,500 kWh per period.

The Commission notes that high use will cause high electricity bills for flat rate customers as well as for RIB rate customers. From the table above, a high-use customer consuming 10,000 kWh, 5 times the average use, would pay $1,465, but under the flat rate bill would still be $1,180.

It is also important to note that some RIB rate customers will have months of higher consumption (for instance during the winter) under which they pay more than the flat rate, but also months in which they pay less than the flat rate. Hence, the analysis by both Utilities considered annual bill totals when looking at the impact of the RIB rates.

Low-income bill impact – BC Hydro

BC Hydro states that only a minority of its low-income customers have experienced high bill impacts under the RIB rate compared to a flat rate. Specifically, BC Hydro estimates that 1 percent of low-income customers experienced high (i.e. great than 10 percent variance) bill impacts moving from flat to RIB rates, whereas 88 percent of low-income customers are better off under the RIB rate.[32] Conversely, if BC Hydro returned from the RIB rate to a flat rate, 72 percent of low-income customers would see an increase of over 10 percent.[33]

BC Hydro also provided an analysis of the impacts of the RIB rate on low-income customers, breaking the low-income customer segment into separate categories for single-family dwellings, apartments, use of electricity for heat and use of other energy sources for heat. The data show that high unfavourable bill impacts (greater than 10 percent) due to the RIB rate are experienced by 4 percent of low-income customers in single-family dwellings, 1 percent of low-income customers using electric heat, and 2 percent of low-income customers using non-electric heat. No low-income customers living in apartments experience high bill impacts.

[31] BC Hydro's April 1, 2016 RIB rate: basic charge: 18.35¢/day, first 1,350 kWh/two months at 8.29¢/kWh, balance at 12.43¢/kWh. RIB bill for consumption of 2,300kWh/billing period: $235.52. BC Hydro's April 1, 2016 flat rate: basic charge: 19.57¢/day, 9.93¢/kWh. Flat rate bill for consumption of 2,300kWh/billing period: $234.26.
[32] BC Hydro RIB Report, p. 19.
[33] BC Hydro RIB Report, p. 20.

Table 4: BC Hydro Customer Segment Bill Impacts – Moving from Flat to RIB Rate in F2015

Customer Segments	% better off	% worse off	% worse off & bill increase more than 10%
All low-income	88	7	1
Low-income & single family dwelling	74	17	4
Low-income & apartment	99	1	0
Low-income & electric heating	87	8	1
Low-income & non-electric heating	88	8	2

(Source: BC Hydro RIB Report, p. 23)

Low-income bill impact – FortisBC

FortisBC did not use the Statistics Canada Low-Income Cut Off level for its analysis, but provided alternative data based on self-reported income levels of respondents to its 2012 Residential End Use Study (REUS) that suggest that, for customers earning less than $30,000 per year, 9.7 percent[34] had bills impacted by more than 10 percent under the RIB rate, whereas 65.2 percent[35] had lower bills.

Table 5: FortisBC Customer Segment Bill Impacts – Moving from Flat to RIB Rate in 2015

Income Category			Average Annual Consumption (kWh)	Average RIB Bill ($)	Average Flat Bill ($)	Average Bill Impact	Bill Impact above 10%		Customers with Lower Annual RIB Bills	
	Count	Percent					Count	Percent	Count	Percent
Less than $20,000	61	6.3%	10,647	1,430	1,436	-5.0%	6	9.8%	41	67.2%
$20,000 to $29,999	94	9.7%	12,197	1,639	1,613	-3.9%	9	9.6%	60	63.8%
$30,000 to $39,999	91	9.3%	12,233	1,626	1,617	-4.1%	11	12.1%	62	68.1%
$40,000 to $49,999	76	7.8%	13,405	1,814	1,751	-2.7%	15	19.7%	48	63.2%
$50,000 to $59,999	79	8.1%	11,973	1,591	1,587	-5.1%	8	10.1%	57	72.2%
$60,000 to $79,999	117	12.0%	12,971	1,732	1,701	-3.7%	19	16.2%	76	65.0%
$80,000 to $99,999	71	7.3%	15,185	2,046	1,954	-0.3%	16	22.5%	40	56.3%
$100,000 to $124,999	78	8.0%	14,000	1,873	1,819	-1.7%	13	16.7%	43	55.1%
$125,000 or more	65	6.7%	14,738	1,986	1,903	-0.6%	13	20.0%	39	60.0%
Prefer not to answer	216	22.2%	13,483	1,816	1,760	-3.2%	30	13.9%	146	67.6%
No Answer	26	2.7%	10,956	1,448	1,471	-5.6%	1	3.8%	11	42.3%
	974	100%					141	14.5%	623	64.0%

(Source: FortisBC RIB Report, p. 10)

Summary of comments of the parties

BCSEA notes that changing from a flat rate design to a RIB rate lowers bills for lower-consuming customers, and increases them for high-consuming customers, and vice versa. BCSEA concludes that since low-income customers predominantly consume less electricity, RIB rates reduce the bills for the majority of low-income customers. BCSEA supports the Utilities' findings, and comments that reverting to a flat rate would exacerbate affordability problems for most low-income customers.[36]

BCOAPO concurs, but emphasizes that, while the RIB rate has benefited the majority of low-income customers, BC Hydro's data show that there is a small segment of low-income customers (1 percent) that will see bill impacts as a result of the RIB rate of greater than 10 percent, and bill impacts could be as high as 17 percent.[37]

[34] 15 (6+9) customers with bill impacts >10% out of a total of 155 (61+94) customers = 9.7%
[35] 101 (41+60) customers with lower annual RIB bills out of a total of 155 (61+94) = 65.2%
[36] BCSEA November 24, 2016 submission, pp. 8–10.
[37] BCOAPO November 24, 2016 submission, pp. 7, 8.

Marty states that it is the use of electricity for heating and hot water that predominantly determines high electricity use, and that low-income customers without access to gas are more likely to have high electricity bills than low-income customers with access. The Commission finds nothing to dispute in this regard.

However, Marty further submits: "The RIB, by targeting electric heat customers, imposed the highest rate increases on those low-income customers struggling the hardest to pay their energy bills. … The beneficial financial impact on a low-income, high electricity user of returning to a flat rate would be far greater than the corresponding negative impact on a low-income, low electricity user."[38] Marty contrasts two hypothetical customers to make his point.[39] As the Commission has already noted in its response to question 1, the purpose of the RIB rate is to conserve energy or promote energy efficiency, its purpose is not to target electric heat customers. The Commission also disagrees with the general characterization that Marty places on the impacts of the RIB rate, noting that the majority of low-income customers benefit from the RIB rate compared to the flat rate. The Commission also placed more weight to the Utilities' bill analysis than that provided by Marty as the Utility analysis is based on actual customer profiles.

RDMW highlights the different distribution of low-income customers across dwelling type in rural areas versus province-wide, which RDMW submits are heavily influenced by the Metro Vancouver region, and notes that BC Hydro does not take this into account in its report. RDMW submits that, in its region, single-family dwellings make up 77 percent of the housing stock, versus 34 percent in Metro Vancouver. RDMW estimates that, assuming the flat rate is 5 percent higher than the Step 1 RIB rate, as many as 91 percent of low-income households in its region may be worse off with the RIB rate than with the flat rate and that the actual impact will depend on housing type.[40]

The Commission accepts that the mix of housing stock in the RDMW may differ from that in other areas of the province, and that the effects of the RIB rate on the RDMW low-income population would therefore be different to the Utilities' overall customer base. However, the Commission notes that the RDMW's argument rests largely on the assumption that the distribution between single family and apartments is the same for low-income residents as is the case for all residents in the area. No data has been provided to support this assertion. In addition, the Commission notes that the 2016 BC Hydro flat rate for exempt residential customers (9.93¢/kWh) is 20 percent higher than the Step 1 RIB rate (8.29¢/kWh), and not 5 percent higher as estimated by RDMW.

DeCock submits that, while the majority of low-income customers benefit from the RIB rate, this does not support penalising a minority of other customers who are totally dependent on electrical energy, particularly for heating. DeCock highlights the following letters of comment as examples of negatively affected customers that are low-income, seniors or who invested in electric heating prior to the RIB rate:

- E-534 lives in northern BC and said that BC Hydro had encouraged them to use electric heat with low rates for this that have now been rescinded.
- E-528 also was encouraged by BC Hydro rates and went exclusively electric with a design that cannot be retrofitted to central-air gas heat and he is a senior with a disabled wife and has found the high cost difficult.

[38] Marty October 19, 2016 submission, pdf pp. 3, 4.
[39] Ibid., pdf pp. 15, 16.
[40] RDMW November 18 2016 submission, p. 2.

- E-530 is also a senior who says the rate unfairly targets seniors and families and says the Premier said it would be families first when elected.
- E-527 is a low-income customer who is a renter and so has no control over upgrades.[41]

The Commission agrees that, while the majority of low-income customers are better off under the RIB rate, there are some high use low-income customers who are negatively affected.

Public comments

Many public comments were received documenting bill increases since the RIB rates were introduced (Appendix A, section 1.1). The Commission understands that energy costs are a significant portion of some families' budgets, and that affordability is a concern to them. However, the Commission has already noted that all residential electricity prices have risen since the RIB rates were introduced, both RIB rates and flat rates, and that the vast majority of low-income customers are better off under the RIB rate. The question of affordability is a serious one, but is not primarily caused by the RIB rate itself. The scope of this report specifically excludes looking at alternative rate structures, although the responses to questions 4 and 5 regarding DSM may go some way to suggesting ways to alleviate affordability issues.

In addition, comments were received from members of the public for whom the impact of high electricity bills is to cause them to switch to alternative fuels (Appendix A, section 1.3). Customers report switching to natural gas and wood as alternative fuels, and some note their disappointment in switching to more greenhouse-gas intensive fuels than electricity. The scope of this review specifically excludes consideration of the effect of RIB rates on greenhouse gas emissions. In addition, the Commission notes that where all-electric customers have access to natural gas, they may not have the ability or financial means to switch to natural gas because of conversion costs.

[41] DeCock November 29, 2016 submission on BCOAPO utility report comments, pdf p. 2.

4.0 Question 3 – What evidence is available about factors that lead to high-energy use and, therefore, bill impacts for customers without access to natural gas, including low income customers?

High-use customers of electricity are most likely living in larger, single-family homes, and use electricity for space heating and hot water. There is some correlation between low-income and lower electricity use, but there are low-income customers in all use categories, including the highest.

BC Hydro results

BC Hydro's analysis defines "high energy use" customers as those using at or more than 20,000 kWh per year, twice the average consumption in the BC Hydro service territory, and "not-high energy use" customers as using less than 20,000 kWh per year.[42]

BC Hydro found that high energy use customers, regardless of income or access to natural gas, exhibit a higher proportion of factors that contribute to higher energy use relative to not-high energy use customers, making them more likely to have consumption in Step 2 of the RIB rate and hence higher energy bills. Examples of such contributing factors are:

- Living in a single, detached house;
- Use of electricity for heating and hot water;
- Ownership of appliances such as dishwashers, air conditioners and multiple refrigerators; and
- Customers who are less likely to exhibit energy conservation-related behaviour.[43]

BC Hydro provides data showing that customers living in single, detached homes are more likely to be high energy use customers than customers living in other dwelling types. This applies regard less of income level and/or access to natural gas.[44]

Table 6: BC Hydro High and Not-high energy users by Dwelling Type and Income Level

	Dwelling Type	Not-high energy use (<20,000kWh) (%)	High Energy Use (>20,000kWh) (%)
Not Low Income	Single Detached House	54.5	93.0
	Duplex/Row/Town	13.5	4.0
	Apartment/Condo	27.1	0.0
	Mobile/Other	4.8	3.0
Low Income	Single Detached House	29.7	91.7
	Duplex/Row/Detached	13.8	8.3
	Apartment/Condo	50.6	0.0
	Mobile/Other	5.9	0.0

(Source: BC Hydro RIB Report, p. 32)

[42] BC Hydro RIB Report, p. 26.
[43] Ibid., pp. 24, 25, 35.
[44] Ibid., pp. 31, 32.

Table 7: BC Hydro High and Not-high energy users by Dwelling Type and Access to Natural Gas

	Dwelling Type	Not-high energy use (<20,000kWh) (%)	High Energy Use (>20,000kWh) (%)
No Access to Natural Gas	Single Detached House	77.2	95.3
	Duplex/Row/Town	5.0	0.0
	Apartment/Condo	3.1	0.0
	Mobile/Other	14.7	4.7
Access to Natural Gas	Single Detached House	50.9	93.3
	Duplex/Row/Detached	14.0	4.5
	Apartment/Condo	30.7	0.0
	Mobile/Other	4.5	2.2

(Source: BC Hydro RIB Report, p. 32)

BC Hydro further notes that 98 percent of those using 30,000 kWh/year or more live in single family dwellings, compared to 67.8 percent and 88.6 percent for customers using 10,000 kWh/year and 20,000 kWh/year respectively.[45]

BC Hydro also observes that the age of homes does not appear to have a substantive effect on energy consumption, but that high energy use customers have higher average floor area than not-high energy use customers (regardless of dwelling type).[46] BC Hydro provides the following data to support this conclusion:

Table 8: Average Floor Area, High and Not-High Energy Users by Income Level

Total Floor Area (Sq. Ft.) Income Level Status		
	Not High Energy Use (<20,000kWh)	High Energy Use (>20,000kWh)
Not Low Income	1744.32	2859.97
Low Income	1400.37	2595.09
All	1717.02	2850.98

Table 9: Average Floor Area, High and Not-High Energy Users by Access to Natural Gas

Total Floor Area (Sq. Ft.) Access to Natural Gas		
	Not-high energy use (<20,000kWh)	High Energy Use (>20,000kWh)
No Access to Natural Gas	1639.28	2811.95
Access to Natural Gas	1720.89	2856.69
All	1717.02	2850.98

[45] BC Hydro RIB Report, p. 36, Table 21.
[46] Ibid., pp. 32, 33.

BC Hydro also finds that, with respect to customer behaviour, the "high energy use" group tends to have a higher proportion of customers who are less likely to exhibit energy conservation related behaviour.[47]

Turning to the aspect of the question concerning customers without access to natural gas, BC Hydro notes that although 5 percent of the population has no access to natural gas, they make up 14 percent of BC Hydro's high energy use customers.[48]

Considering customers without access to natural gas, BC Hydro high energy use customers have a larger share of all forms of electric heat, including baseboards, air-source heat pumps and forced-air electric furnaces, than not-high energy use customers. Such BC Hydro customers also have a larger share of electric hot water tanks compared to not-high energy use customers.[49]

BC Hydro presents an analysis of its customers considering income and consumption. The table below shows that, at the extremes, the very high income group ($120,000 or over) has a high proportion of higher consumption customers, while the very low-income group ($20,000 or less) has a high proportion of lower consumption customers. The Commission observes the apparent correlation between those in lower income categories and those who use less electricity, but also notes that there are consumers across all income categories who are in the highest use bands.

Table 10: BC Hydro Proportion of Population vs. Income vs. Consumption

Decile		combined total household income before taxes (from REUS Survey)												Total
		Under $20,000	$20,000 to under $30,000	$30,000 to under $40,000	$40,000 to under $50,000	$50,000 to under $60,000	$60,000 to under $70,000	$70,000 to under $80,000	$80,000 to under $90,000	$90,000 to under $100,000	$100,000 to under $110,000	$110,000 to under $120,000	$120,000 or over	Prefer not to say	
F15 kWh decile brackets	1st	1.5%	1.4%	0.9%	0.8%	0.8%	0.5%	0.9%	0.3%	0.3%	0.3%	0.1%	0.5%	1.4%	**9.8%**
	2nd	1.2%	1.0%	0.8%	0.9%	0.6%	0.9%	0.5%	0.5%	0.3%	0.3%	0.2%	0.7%	2.1%	**10.1%**
	3rd	0.7%	1.1%	1.2%	0.9%	0.9%	0.8%	0.4%	0.6%	0.4%	0.2%	0.2%	0.8%	2.0%	**10.1%**
	4th	0.6%	1.2%	0.9%	1.1%	0.6%	0.4%	0.9%	0.3%	0.3%	0.4%	0.3%	0.9%	2.0%	**9.9%**
	5th	0.5%	0.8%	0.7%	0.6%	0.8%	0.8%	0.8%	0.3%	0.8%	0.4%	0.5%	1.3%	1.9%	**10.1%**
	6th	0.4%	0.8%	0.8%	0.8%	0.7%	0.9%	0.7%	0.6%	0.4%	0.2%	0.2%	1.3%	2.3%	**10.1%**
	7th	0.3%	0.6%	1.0%	0.6%	0.6%	0.5%	0.8%	0.6%	0.5%	0.5%	0.3%	1.9%	1.7%	**10.0%**
	8th	0.3%	0.6%	0.7%	0.7%	0.5%	0.5%	0.7%	0.6%	0.6%	0.6%	0.3%	2.1%	1.8%	**10.0%**
	9th	0.3%	0.5%	0.4%	0.7%	0.6%	0.5%	0.7%	0.6%	0.5%	0.6%	0.6%	1.9%	2.1%	**9.9%**
	10th	0.2%	0.3%	0.4%	0.5%	0.4%	0.6%	0.5%	0.6%	0.5%	0.7%	0.5%	2.6%	2.1%	**10.0%**
Total		**6.0%**	**8.3%**	**7.9%**	**7.7%**	**6.4%**	**6.2%**	**6.8%**	**5.0%**	**4.7%**	**4.3%**	**3.3%**	**13.9%**	**19.5%**	**100.0%**

Note: Percentages shown are estimated percentages of the total F2015 population based on the 2014 REUS sample and self-selected income category.

(Source: BC Hydro RIB Report, p. 35)

FortisBC results

FortisBC defines high-use customers as those using 23,000 kWh per year or more (twice the average consumption), whereas not-high use customers are those consuming at or less than 11,500 kWh per year (the average consumption).[50]

[47] Ibid., pp. 24–25.
[48] BC Hydro RIB Report, p. 24.
[49] Ibid., Appendix C, pp. 1, 3.
[50] FortisBC RIB Report, p. 11.

FortisBC tested all differences in characteristics among sub-groups of customers assuming a confidence interval of 95 percent but cautions that the presence of a statistically significant difference does not necessarily mean a causal relationship exists between the characteristic and the differences in energy use between the groups.[51]

FortisBC found that the high-use customers have a higher proportion of characteristics that require more electricity use than not-high use. For instance, high-use dwellings are more likely to be:

- Larger single-family detached homes;
- Those that have more occupants and children;
- Using electricity as the primary fuel for heating and hot water;
- Using more electric appliances such as dishwashers, freezers and clothes dryers; and
- Those who have not reduced energy consumption as much as reasonably possible.[52]

Data from FortisBC show that high-use customers are more likely to be living in single-family detached dwellings than other forms of accommodation.[53]

Table 11: FortisBC Dwelling Type (% Incidence) – High-Use vs. Not-High-Use Households by Access to Natural Gas

	11,500 kWh/yr. or less		23,000 kWh/yr. or more		General Population	
	With Gas or Access to Gas	No Access to Gas	With Gas or Access to Gas	No Access to Gas	With Gas or Access to Gas	No Access to Gas
Base (n)	*647*	*26*	*80*	*14*	*1077*	*75*
Single family detached	59.2	82.0	93.0	84.5	70.1	90.8
Duplex	4.3	0.0	2.1	0.0	3.2	0.0
Row/townhouse	5.1	0.0	0.0	0.0	4.3	0.0
Apartment/Condominium	23.1	11.5	0.0	0.0	14.8	4.1
Mobile home	5.4	2.5	4.8	7.8	5.0	2.3
Other	2.9	4.0	0.0	7.8	2.6	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

(Source: FortisBC RIB Report, pp. 13, 14)

FortisBC also concludes that its high-use customers are more likely to have homes over 2,500 square feet.[54] FortisBC also provides the following table, showing the analysis of customers by dwelling size, electricity use, and whether or not they have access to natural gas.

[51] FortisBC RIB Report, p. 12.
[52] Ibid., pp. 12, 13, 17.
[53] Ibid., p. 13.
[54] FortisBC RIB Report, p.14.

Table 12: Dwelling Size (ft^2) – High-Use vs. Not High-Use Households by Access to Natural Gas

	11,500 kWh/yr. or less		23,000 kWh/yr. or more		General Population	
	With Gas or Access to Gas	No Access to Gas	With Gas or Access to Gas	No Access to Gas	With Gas or Access to Gas	No Access to Gas
Base (n)	*647*	*26*	*80*	*14*	*1077*	*75*
<1000	20.9	15.8	3.4	8.3	15.6	8.2
1,000 – 1,499	23.1	30.6	8.1	13.9	20.4	23.1
1,500 – 1,999	16.6	18.9	11.7	0.0	15.1	15.8
2,000 – 2,499	19.9	3.8	20.1	13.9	20.0	14.0
2,500 – 2,999	9.3	18.9	20.6	6.9	12.5	12.8
3,000 – 3,499	5.5	12.1	13.0	13.9	8.2	15.6
3,500 – 3,999	2.5	0.0	6.0	20.8	3.2	6.4
4,000+	2.3	0.0	17.1	22.2	4.8	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Turning to customers without access to natural gas, FortisBC found that within the sub-group of high users without access to natural gas, there is a larger share with electric heating (including baseboard and furnace) than the other comparison groups. High-use customers without access to natural gas also had a higher number of heating-degree days than other customers, signifying that they are likely located in areas with colder winters.[55]

FortisBC high-use customers without access to natural gas are more likely to use 60 gallon hot water tanks compared to the general population, whereas they are less likely to use small hot water tanks. FortisBC notes that hot water use is influenced by the number of occupants and the presence of children in homes, and that high-use homes without access to natural gas have a higher number of both compared to low-use customers.[56]

The Commission agrees that not all customers who have access to natural gas use it for space heating and hot water. We note that if those customers who use electricity for space and or hot water heating chose to convert to natural gas in an attempt to reduce their energy costs, they may be faced with significant conversion costs.

FortisBC did not provide data on low-income customers in response to this question. FortisBC concludes that differences in socio-economic characteristics between high-use and not-high use homes were "either statistically insignificant or unlikely to significantly contribute to significant differences in energy use between the two household groups."[57]

Summary of comments of the parties

BCSEA supports Commission acceptance of BC Hydro's and FortisBC's response to Question 3 as consistent with the Commission's requirements, while noting that BC Hydro's category "Not High Energy Use" is not the same as FortisBC's "Not-High Use" category. [58]

[55] Ibid., p. 15.
[56] Ibid., pp. 16, 17.
[57] FortisBC RIB Report, p. 19.
[58] BCSEA November 24, 2016 submission, pp. 11, 12.

RDMW presents its own assessment of the factors leading to higher average residential electricity use by region:

Table 13: RDMW: Factors Leading to Higher Average Residential Electricity Usage, by Geography

High Consumption Factors	RDMW Occurrence	Rural* BC Average Occurrence	BC Hydro Service area Average Occurrence
No Natural Gas Service Available	VERY HIGH (100%)	MEDIUM	LOW
Primary Electric Heat	VERY HIGH	HIGH	LOW
Electric Hot Water	VERY HIGH	HIGH	LOW
Single Family Dwelling	HIGH (77%)	HIGH	MEDIUM (~43%)
Mobile Home	MEDIUM-Low (5%)	MEDIUM-Low	LOW (~2%)
Electric Stoves & Ovens	VERY HIGH	HIGH	MEDIUM
Lower Winter Temperatures	LOW (3.3°C January Port Hardy)	HIGH (-9.6°C Jan. Prince George)	LOW (4.8°C January Vancouver)

(Source: RDMW November 18, 2016 submission, p. 2)

RDMW submits that, due to having few other viable options such as natural gas service, RDMW households have a much higher incidence of electricity used for heating, hot water heating and cooking than the BC Hydro average, which RDMW submits accounts for 66 percent of a household electricity use according to Figure 4 of BC Hydro's RIB Report.[59] The Commission accepts the general nature of the RDMW findings, and finds it a useful illustration of the situation in some areas of the province. However, it considers the analysis from the Utilities provides more comprehensive data for analyzing the situation across the entire province.

DeCock points out a factor that also contributes to higher energy consumption and which has been left out of BC Hydro's list: families that rent all-electric dwellings from landlords who have no reason to upgrade to reduce electricity consumption.[60] The Commission concurs, and notes that this is a limitation to the adoption of many of the existing DSM programs. The Commission further notes that there are some DSM programs that renters can participate in (such as behaviour and lighting programs) and that deeper DSM energy savings can be achieved by rental facilities owned by BC non-profit housing associations. However, the Commission considers that the Utilities could do more to address the landlord/tenant split incentive problem that occurs where the renter is responsible for the electricity bill but the landlord is responsible for energy efficiency investments.

Marty references data provided by the Office of Energy Efficiency for 2013, which Marty submits shows that space and water heating were "clearly the dominant factors determining a home's energy use, on a combined basis accounting for 77% of total residential energy use. … It follows that the dominant factor determining home electricity use is the fuel used for space and water heating. All things equal, the home that uses electricity for both space and water heating will, on average, consume four times the amount of electricity as a home that uses natural gas for both purposes."[61]

The 77 percent figure quoted by Marty in the preceding paragraph applies to total energy consumption – including gas, wood, etc. – rather than electricity specifically. This figure differs from the Utilities' data, since for all-electric dwellings, the use of electricity for space heating and hot water as a percentage of total electricity

[59] RDMW November 18, 2016 submission, p. 2.
[60] DeCock November 1, 2016 submission, p. 5.
[61] Marty submits that, according to data provided by the Office of Energy Efficiency, for 2013 residential energy use in BC can be attributed to the following factors: space heating (52.8%), water heating (24.5%), appliances (16.9%), lighting (5.5%), and space cooling (0.4%). Marty, October 19, 2016 submission, pdf p. 11.

consumption is estimated by FortisBC to be 59 percent,[62] and by BC Hydro to be 61 percent.[63] The Commission is inclined to accept the Utilities' figures for households in BC as more representative, but notes that this doesn't change the overall conclusion, which is that use of electricity for space heating and hot water is the prime determinant of high electricity consumption.

Marty further observes that the overlap between customers without access to natural gas and those using electricity for heating and the overlap between customers with access and those using natural gas for heating, while considerable, are not identical:

> Although many residents without access to natural gas use electricity for space and water heating, some use other fuels, particularly for space heating. Wood is the most economic of these alternative fuels and thus used to the greater extent. But heating oil and propane might also be used. As well, there are residents with "access" to natural gas, who use electricity for heating. Despite natural gas being the much cheaper fuel, homeowners with baseboard heating, who do not have basements or ductwork may be unable to convert their heating system to forced-air natural gas at a reasonable cost.[64]

These points were also raised by BCOAPO, and the Commission find that they are pertinent.[65]

Finally, BCOAPO points out that the Utilities do not appear to talk about the energy efficiency of the dwellings, which in BCOAPO's view is another important factor to consider. BCOAPO further submits that, in recent years, building codes have imposed increasingly stringent requirements that have the effect of increasing the energy efficiency of the housing stock.[66] The Commission agrees that the increasing energy efficiency of dwellings is a consideration, and that the Utilities should consider the need for customers to upgrade existing buildings to the standard of new construction in the design of their DSM programs.

[62] FortisBC RIB Rate Report, p. 22.
[63] BC Hydro RIB Rate Report, p. 39.
[64] Marty, October 19, 2016 submission, pdf p. 12.
[65] BCOAPO November 24, 2016 submission, pp. 3–4.
[66] Ibid., p. 12.

5.0 Question 4 – What is the potential for existing Demand Side Management programs to mitigate these impacts?

Demand-side management (DSM) programs offered by BC Hydro and FortisBC have the potential to mitigate bill impacts for high-use customers (including low-income, high-use customers) resulting from the RIB rate. However, there are barriers preventing some customers achieving these benefits, and the Utilities could do more to increase participation in their DSM programs.

Both BC Hydro and FortisBC offer residential DSM programs for existing homes (as at March 2017) which could mitigate the bill impact for high-use residential customers, including low-income customers. The table below tabulates the existing DSM programs offered by the Utilities:

Table 14: Residential DSM programs that could mitigate bill impacts for high use customers

Existing DSM programs	Incentive provided[67]	Estimated bill savings[68]
BCH/FBC home renovation ○ **Insulation**	Maximum of: $600 (attic), $1,200 (exterior wall), $1,000 (basement), $450 (other)	**BCH home renovation: $430/year** 8.5 year payback based on average customer cost of $3,650 **FBC home renovation: $290/year** 6 year payback based on average customer cost of $1,706 **Heat pump only: $627/year** 8 year payback based on incremental customer cost of $5,000 (FBC estimate) FBC also offers a 10 year loan at 1.9% (up to $6,500) for air heat pumps
○ **Heat pump – ductless air source**	$800	
○ **Home evaluation**	$150	
○ **Draft proofing**	Maximum of $500	
○ **Bathroom fan**	$25/fan (maximum $50)	
○ **Three or more eligible upgrades**	Additional $750	
Behavioural programs	BCH and FBC offer programs to encourage customers to adopt more energy efficient behaviours.	**$60/year** (BCH estimate)
Appliances	BCH: rebate program will return in May. FBC: $100 /appliance	**BCH: $50/year** **FBC: $56/year** 4 year payback based on customer upgrade cost of $200
Lighting	$2 - $10/bulb or pack of bulbs $5 - $20/fixture $3 – dimmer/timer	**BCH:$15/year** **FBC: $18/year** 2 year payback based on customer purchase of 3-pack of LED bulbs at $30
Heat pump – water heater (FBC only)	$1,000	**FBC: $161/year**

[67] BC Hydro: https://www.bchydro.com/powersmart/residential/savings-and-rebates/current-rebates-buy-backs.html
FortisBC: https://www.fortisbc.com/Rebates/RebatesOffers/Pages/Results.aspx?type=homes&city=Kelowna

[68] BC Hydro RIB rate report, p.41, FortisBC RIB rate report, p. 23.

Existing DSM programs	Incentive provided[67]	Estimated bill savings[68]
Heat pump – central air source (FBC only)	FBC - $1,200.	**FBC: $720/year** 4 year payback based on customer incremental cost of $2,991. FBC also offers a 10 year loan at 1.9% (up to $6,500) for air heat pumps.
Heat pump – service (FBC only)	$50	

The data in Table 14 show that BC Hydro residential customers participating in the behaviour, lighting and home renovation programs have the potential to generate bill savings of $505/year.[69] To achieve these savings, the customer would have to make an initial investment of $3,680, and hence the payback would be 7.3 years.[70] Similarly, FortisBC customers have the potential to generate bill savings of $368/year based on an initial investment of $1,726, representing a payback of 4.7 years.[71] Installing a ductless air source heat pump could provide additional savings of $627/year, from an incremental investment of $5,000, representing a payback of 8 years.[72]

In addition, BC Hydro and FortisBC offer DSM programs for qualified low-income customers, as shown in the table below:

Table 15: Low-income DSM programs that could mitigate bill impacts for high use customers

Existing DSM programs – low-income	Incentive provided[73]	Estimated bill savings[74]
Energy savings kit	Free 'easy-to-install' energy-saving products such as LED bulbs, high-efficiency showerheads, and weather stripping that customers can install themselves	**BCH: $125/year** **FBC: $177/year**
Home energy assessment and product installation (ECAP[75] basic)	Free home energy assessment and the installation of energy-saving products	
Upgrades for non-profit housing providers and Aboriginal communities (ECAP advanced)	Free installation of home insulation, fridge	**$683/year** (FBC estimate)

The data in Table 15 show that a low-income BC Hydro customer participating at no cost in the home energy assessment and product installation program should see bill savings of approximately $125/year, whereas a low-income FortisBC customer participating in the same program would save approximately $177/year.[76]

[69] From Table 14 bill savings: BCH home renovation ($430/year) + behavioural ($60/year) + lighting ($15/year) = $505/year.
[70] From Table 14 customer cost: BCH home renovation ($3,650) + behavioural ($0) + lighting ($30) = $3,680. Payback is $3,680/$505 = 7.3 years.
[71] From Table 14 bill savings: FBC home renovation ($290/year) + behavioural ($60/year) + lighting ($18/year) = $368/year. From Table 14 customer cost: FBC home renovation ($1,706) + behavioural ($0) + lighting ($30) = $1,736. Payback is $1,736/$368 = 4.7 years.
[72] Source: Table 14.
[73] https://www.bchydro.com/powersmart/residential/savings-and-rebates/savings-based-on-income.html
[74] BC Hydro RIB rate report, p.41, FortisBC RIB rate report, p. 23.
[75] Energy Conservation Assistance Program.
[76] To qualify maximum income ranges from $32,000 for a one person household, to $84,600 for a household of seven or

FortisBC notes that its high-use customers are "more likely to be…those who have not reduced energy consumption as much as reasonably possible"[77] and BC Hydro says "the high use group tends to have a higher proportion of customers who are less likely to exhibit energy conservation related behaviour."[78] The Commission finds this supports the use of DSM programs to mitigate high electricity usage, and hence high bill impacts.

However, the Commission recognises that the estimated bill savings for non-low-income and low-income residential customers assumes the customer: (i) is aware of the existing utility DSM programs; (ii) can achieve energy savings by participating in these DSM programs; and (iii) has the financial means and incentive to do so (for example, does not face low-income/renter barrier to participation). Where these barriers exist, a customer's ability to mitigate bill impacts through participation in existing DSM programs may be limited.

To the extent that these barriers exist, there are opportunities for the Utilities remove them. Awareness could be raised, possibly with efforts targeted to areas without access to natural gas and hard to reach customers such as renters and low-income residents. Also, innovative financing options could be considered to enable more low-income customers to participate in existing DSM programs.

In addition, the Commission considers that recent funding decreases of BC Hydro and FortisBC non-low-income residential DSM programs could also negatively affect participation levels. Appendix E contains an analysis of the Utilities' most recent DSM expenditure forecasts. The Commission notes the following highlights:

- BC Hydro recently proposed a 2 percent increase in DSM program funding for low-income residential DSM programs to $7.8 million, but a 39 percent decrease in non-low-income residential DSM programs to $30.1 million. This included a 35 percent decrease in the retail rebate program (to $8.1 million) and a 21 percent decrease in the behavioural program (to $11.1 million). In addition, BC Hydro proposed a 34 percent decrease in funding for public awareness and education/community engagement DSM programs to $20.9 million.[79]
- FBC recently increased its funding for low-income and rental residential programs by 44 percent to $1.4 million, but decreased funding for its other residential DSM programs by 44 percent to $1.4 million. This included a 61 percent decrease in annual program funding for the home renovation program (to $0.3 million) and a 93 percent decrease in annual program funding for the heat pump water heating program (with a 2017 annual budget of now $30,000).[80]

Regarding the level of incentives provided in existing DSM programs, the Commission notes that the average cost to BC Hydro and FortisBC of each kWh of energy saved from residential DSM programs (including low-income programs) is 4.1 ¢/kWh and 3.2 ¢/kWh respectively.[81] The Commission considers that there could therefore be the potential to increase incentives provided under of existing DSM programs, in particular for

more.

[77] FortisBC RIB Report, p.16.
[78] BC Hydro RIB Report, p.25.
[79] BCH 2017-2019 Revenue Requirements Application (RRA) proceeding, Exhibit B-9, BCUC IR 184.6.
[80] FBC 2017 DSM Expenditures Order and Reasons for Decision (G-9-17), p. 6; Application, p. A2.
[81] FBC 2017 DSM Expenditures Order and Reasons for Decision (G-9-17), p. 6; BCH 2017-2019 RRA, Exhibit B-9, BCUC IR 172.1.

high-use customers (including low-income customers) in regions without access to natural gas, while maintaining the cost-effectiveness of the program overall.

Summary of comments of the parties

BC Hydro states that within its current DSM Plan and expenditure level, it does not see any significant opportunity to improve the uptake of residential DSM programs by high electricity users, or any major barriers that its current programs do not already attempt to address. BC Hydro also states that the letters of comment received on this process showed that many customers are aware of their DSM opportunities and are taking significant steps to reduce consumption.[82] FortisBC did not comment on whether it could do more to increase uptake or overcome barriers to participation.

BCSEA and BCOAPO both disagree that BC Hydro can rely on the letters of comment in this process to support its view that there are no significant opportunities to improve the uptake of these DSM programs, and both express disappointment in FortisBC's lack of comment on whether it could do more to increase uptake. BCOAPO submits that there is reasonable room for the expansion of BC Hydro and FortisBC's low-income DSM programs, and that low-income awareness of existing DSM programs targeted at this customer class is quite limited.[83] BCOAPO also submits that BC Hydro's Advanced ECAP serves very few customers – 50 low-income homes a year out of 84,777 low-income customers.[84]

BCSEA submits that ramping up incentives provided in existing DSM programs could increase the potential for DSM programs to mitigate rate impacts.[85] RDMW also argues for an increase in DSM incentives to assist customers mitigate high bills caused by the RIB rate structure, such as incentive levels set at more than 25 percent of the cost.[86]

BCOAPO submits that BC Hydro could be more pro-active in reaching low-income customers, for example by seeking out the types of community partnerships that are generally used to deliver low-income DSM, developing a better understanding of the target market, using billing and payment records to target eligible customers, increasing efforts to provide DSM to non-profit housing units, and extending low-income DSM to all areas within BC Hydro's service territory.[87] BCOAPO also notes that some low-income customers do not experience many savings from the Energy Saving Kits they received from FortisBC as they do not know how to install the items, which end up "sitting on a shelf."[88]

The Commission finds that the evidence of BCSEA and BCOAPO is more compelling than that of the Utilities in this instance. The letters of comment, which BC Hydro submits show that many customers are aware of their DSM opportunities and taking steps to reduce consumption are not a rigorous basis for concluding that there is not significant opportunity to improve the uptake of DSM programs. The Utilities' own responses to question 3 state that high electricity use is correlated with customers who are less likely to exhibit energy conservation-related behaviour, or those who have not reduced energy consumption as much as reasonably possible. The

[82] BC Hydro RIB Report, pp. 41, 42.
[83] BCSEA November 24, 2016 submission, p. 14; BCOAPO November 24, 2016 submission, pp. 13–15.
[84] BCOAPO November 24, 2016 submission, p. A-2.
[85] BCOAPO November 24, 2016 submission, pp. 12, 13.
[86] RDMW November 18, 2016 submission p. 3.
[87] BCOAPO November 24, 2016 submission, pp. A-4 – A-6.
[88] Ibid., p. 15.

Commission finds that there are opportunities to improve uptake of the existing DSM programs, and that efforts could be targeted to low-income customers and renters facing barriers to participation.

Marty submits that DSM programs cannot significantly mitigate the adverse bill impacts of the RIB rate because those impacts have "virtually nothing to do with a customer's level of energy efficiency."[89] The Commission does not agree, for the reasons noted above. However, the Commission acknowledges that DSM programs have limitations, and that they are unlikely to mitigate the entire effects of all residential electricity rate rises since the RIB rates were introduced.

Public comments

There was public input on a number of topics related to the subject of DSM (Appendix A, section 1.4).

Some customers have reported that their conservation efforts to date, while comprehensive, have not been sufficient to reduce their consumption such that every RIB rate bill falls below the tier 1 step. The Commission accepts this, but notes that the break-even point where the RIB rate bill is higher than the flat rate bill is considerably higher than the tier 1 step, and also that many customers achieve savings on their RIB rate bills in the summer months that offset higher bill amounts in the winter (public comments did not include references to annual bill amounts, only winter or bi-monthly bills).

Other members of the public comment that they have now exhausted their conservation efforts, and that the RIB rate is therefore no longer an incentive to conserve, as they can do no more. The Commission acknowledges that, while the purpose of the RIB rate is to incent conservation and efficiency and that it does benefit the majority of low-income customers, there will be some customers who are negatively affected by its design. The Commission suggests that the Utilities investigate new DSM programs targeted to assist these customers.

Comments were also received from people who felt that they could not access DSM programs because of the investment involved. The Commission notes that there are programs for low-income customers listed in the table above, and that these could be better promoted by the Utilities.

[89] Marty October 19, 2016 submission, pdf p. 17.

6.0 Question 5 – Within the current regulatory environment, what options are there for additional Demand Side Management programs, including low income programs?

There are some opportunities for additional DSM programs that would benefit all customers, including those on low incomes. While there are limits on BC Hydro's DSM funding, there are opportunities for BC Hydro to reallocate DSM funding within its DSM budget.

Regarding which additional DSM programs could be offered, the Commission considers that, given the high level of analysis provided by the Utilities, it is difficult to determine where the Utilities' DSM programs fall short compared to those offered in other jurisdictions. However, the Commission considers that the Provincial dual-fuel Conservation Potential Review could be a useful starting point in identifying new DSM opportunities for the Utilities to pursue.

At a minimum, evidence provided by the Utilities indicates that additional DSM programs could include a heat pump water heater program for BC Hydro and community programs (such as the 'Energy Diet' program previously offered by FortisBC) for both Utilities to raise awareness and participation in home energy retrofits and targeting specific end uses.

The Utilities could also look to develop DSM programs intended specifically to assist high-use households (including high-use/low-income households) located in areas without access to natural gas to reduce their electricity consumption.

For FortisBC, the current environment would support an expansion of DSM funding to accommodate new programs. For BC Hydro, the Commission considers that there could be opportunities to move funding from other DSM programs to support new programs within the existing regulatory framework, while still maintaining program cost effectiveness and a broad range of measures for all customer groups. The Commission notes that in the F2017–F2019 BC Hydro Revenue Requirements Application:

- BC Hydro plans to spend 1 percent of residential revenues on residential DSM programs, compared to 3 percent for light industrial/commercial and 5 percent for large industrial sectors respectively.[90]
- BC Hydro proposes to spend $37.9 million on residential DSM programs (including low-income programs) at an average cost to the utility of 4.1 ¢/kWh, compared to $38.6 million on information gathering for capacity-focused DSM plans with no assumed energy or capacity savings, $99.4 million on commercial customers with a similar cost of energy saved (4.0 ¢/kWh), and $138.7 million on industrial customers with a cost of energy saved of 2.7 ¢/kWh.[91]

The Commission also notes that, under section 44.2 of the *Utilities Commission Act*, it cannot direct utilities to file a DSM expenditure schedule, make additions to a DSM expenditure schedule or change the design of a particular DSM program. However, the Minister has in the past directed utilities to undertake specific DSM programs through the DSM Regulations.

[90] BC Hydro F2017–F2019 Revenue Requirements Application (RRA) proceeding, Exhibit B-9, BCUC IR 176.1.
[91] Ibid., BCUC IR 172.1, 184.6, Exhibit B-1-1, p. 10-43.

Summary of comments of the parties

BC Hydro's position is that additional DSM programs are not warranted at this time as: (i) increasing the overall level of DSM funding for additional programs would place upward pressure on rates over the 2013 10 Year Rates Plan as it would increase utility costs and reduces sales; and (ii) shifting program funding from other DSM programs to support the new programs could decrease program cost-effectiveness and put at risk BC Hydro's objective to maintain a broad range of measures for all customer groups.[92]

The Commission agrees with BC Hydro that the 2013 10 Year Rates Plan limits the ability of BC Hydro to increase its overall level of DSM funding. However, the Commission disagrees that there are no opportunities to move funding from other DSM programs to support new programs.

FortisBC's position is that the current regulatory environment is supportive of additional DSM programs, including low-income programs (as long as they are cost effective). FortisBC also notes that it has previously run a number of successful campaigns, including broad-based community Energy Diets to raise awareness and participation in home energy retrofits, and targeting specific end-uses such as laundry.[93] The Commission agrees with FortisBC, but also notes concern raised by the Commission in previous proceedings that FortisBC's DSM proposals fall short of addressing the range of DSM possibilities that could be pursued. For example, although FortisBC proposed spending on low-income DSM programs increased by 44 percent for 2017 (from $0.95 million to $1.37 million), proposed spending on other residential DSM programs decreased by 44 percent (from $2.38 million to $1.35 million), with a 19 percent decrease in residential DSM funding overall.[94]

BCSEA disagrees with BC Hydro's position that there are no significant opportunities to add to or modify the DSM plan to target the key drivers of high-energy use, in particular for low-income customers and those without access to natural gas. BCSEA also disagrees with BC Hydro's position that such changes are not warranted at this time, and submits that these issues are to be determined in the BC Hydro F2017–F2019 Revenue Requirements Application proceeding. BCSEA agrees with FortisBC that the current regulatory environment is supportive of additional DSM programs, including low-income programs, as long as the measures are cost-effective on a total resource cost basis.[95]

For both utilities, BCOAPO states that given the high-level descriptions provided of the programs offered in other jurisdictions it is not immediately evident how the scope (e.g. measures included, planned installs per year, etc.) of the programs offered in other jurisdictions compare with the scope of BC Hydro and FortisBC's programs, particularly for the low-income programs. As a result, BCOAPO submits that in such instances, it is not possible to judge whether BC Hydro or FortisBC's programs compare favourably with those in other jurisdictions, particularly with respect to those programs targeted at the factors identified as leading to high electricity use.[96]

BCOAPO recommends that the Commission's report to the Minister notes that while BC Hydro and FortisBC's DSM programming addresses many of the characteristics of high-use customers and many of the same areas as those of other utilities, it is not evident that the scope of their programs are as comprehensive as those offered

[92] BC Hydro RIB Rate Report, pp. 44, 45.
[93] FortisBC RIB Rate Report, pp. 24, 25.
[94] FBC 2017 DSM Expenditures Order and Reasons for Decision (G-9-17), pp. 6, 10.
[95] BCSEA November 24, 2016 submission, pp. 14, 15.
[96] BCOAPO November 24, 2016 submission, pp. 17, 18.

by others. BCOAPO recommends that the scope of FortisBC's DSM programs be reviewed in FortisBC's long-term electric resource plan, and that the Commission should consider whether there is a need for closer scrutiny of BC Hydro's current proposed DSM plan in the F2017–F2019 Revenue Requirements Application proceeding.[97]

Marty submits that DSM programs cannot significantly mitigate the adverse bill impacts of the RIB rate as the bill impacts have virtually nothing to do with a customer's level of energy efficiency.[98] Marty further submits that, if the current energy-using equipment in the house is relatively new (i.e. less than 15 years old), the DSM program would have to offer major financial subsidies to make its replacement an economic proposition.[99] RDMW submits that targeted DSM programs (regions with no access to natural gas and a higher incidence of single family housing) providing subsidies of more than 25 percent of the cost for heat pumps and on-demand and solar assisted hot water tanks could assist customers mitigate high bills caused by the RIB rate structure.[100]

Public comments

Several public comments were received with suggestions for programs that would further reduce electricity demand (Appendix A, section 1.5). These included financial incentives for customers to install their own clean energy generation capacity, and to promote and expand the use of net metering solutions. The Commission is supportive of the Utilities mitigating market barriers to small clean distributed generation.

[97] Ibid.
[98] Marty October 19, 2016 submission, pdf p. 17.
[99] Marty October 15, 2015 submission, p. 3.
[100] RDMW November 18, 2016 submission p. 3.

APPENDIX A – Public comments

Below is a themed summary of the public comments received through the two public comment phases held by the Commission regarding the impact of RIB rates and the public's awareness of ways to mitigate the impacts.

669 letters of comment were received and entered into the record as part of this process, 16 of the letters were from regional districts, townships, and other groups. The Minister's letter suggested the Commission seek comments from ratepayers in regions not served by natural gas regarding the impacts of conservation rates and awareness of ratepayer mitigation options. Most of the comments highlighted concerns on the RIB rate.

The following themes emerged from the comments:

1. Large electricity bill increases since the implementation of the RIB rate and its impacts;
2. The RIB rate lacks consideration for diversity of the residential customer class;
3. Pricing signal and impact on fuel switching to high-carbon sources;
4. Effectiveness of electricity efficiency upgrades and energy conservation behaviour to mitigate high electricity bills;
5. Demand-side measures and self-generation possibilities;
6. Proposed modification to the RIB rates; and
7. RIB rates promote conservation.

These themes are discussed further in the following subsections, and quotes from the letters are included to illustrate each theme.

1.1 Large electricity bill increases since the implementation of the RIB rate and its impacts

In the letters of comment received, customers express that they have experienced increases in their electricity bills since implementation of the RIB rates. Many customers present analysis of their bills pre- and post-RIB rate implementation and express frustration that despite decreasing electricity consumption, their electricity bills have increased. Eight-two of the letters of comment received were from customers who indicated they are on a fixed income and that electricity bill increases due to the RIB rates are especially difficult for them.

Illustrative quotes

Bill increase

> Before the two-tier residential electricity rates were introduced, our bill for 2 months during the coldest time of the year was $525. On that basis we decided to stay with electric (heat pump) heating system when we built a new energy efficient home. After the residential two-tier rates were introduced our electricity bill during the coldest part of the year went up to $1700-1800 for 2 months.[1]

> Between 1993 and the time of B.C. Hydro introducing their 2 tiered rating system, our annual electricity costs never exceeded $900 per year. Since introduction of this new billing platform our annual costs from 2008 through 2015 averaged $1392.87 per annum or a 50+% increase. According to our bi-monthly Hydro bills our "Daily Average Consumption" billing period to billing period is exactly the same year to year.[2]

> After moving in, our first winter months' electricity consumption (Dec 16, 2011 - Feb 16, 2012) was 9308KW. Whereas, last winter's electricity consumption (Dec 16, 2015 - Feb 16, 2016) was 6899KW, a decrease of 26% since we moved in! And yet we paid $1021 for this last period as 74% was in Block 2!![3]

> a) our power consumption has remained steady and in fact a trendline shows our usage declining slightly over time, b) in the winter months our consumption increases by a factor of 10 compared to summer (heating impact), c) in the winter months - 94% of our po wer consumption falls into Tier 2 rates, d) using 2007 (year we moved in) as the base our annual power $ have gone up 87% in a cold winter (2013) while our total annual consumption has in fact been trending downwards! An 87% increase over 7 years is well above the rate of inflation/wage growth and has the making of a money grab.[4]

Impact on affordability and comfort

> Im on a very limited income of $900. I pay equal payments of 100$ a month year round. In the warm months step 1rates are never exceed. Overall electricity as frugally used as possible. Even with equal pay plan there are often extra amounts billed to make up billing shortfalls once a year. This years total of $178 was extremely hard to pay from my very strict budget and was covered by groceries money. Cupboards are empty. The stress was overwhelming and affected my head injury very badly.[5]

[1] Mathes, A. Letter of Comment E-226, August 15, 2016.
[2] English, F. Letter of Comment E-214, August 24, 2016.
[3] Barlow, W. Letter of Comment E-26, August 2, 2016.
[4] Arnott, C&B. Letter of Comment E-320, September 2, 2016.
[5] Sharp, S Letter of Comment E-92 dated August 11, 2016.

> There are only two of us (average age 80) living here who close off all the heat in all bedrooms but one upstairs so the furnace is only heating one bedroom and one bathroom. We keep the temperature during the day at 20C and 16C at night but nothing we do is helping to lower our hydro bill and it always feels cold. Our bill from January 15 to March 15 last winter was $1,186.00. [6]

> The impact of the two-tier billing system in the winter period is drastic. I wear long underwear inside the home and when I rise in the morning, I put on a hat and coat until the temperature is up to 18c. As we have an air to air heat pump it takes from one to two hours (subject to the outside temperature) to raise the temperature to 18c in increments of 1/2 c to avoid using the electric back up heaters which all heat pumps engage when too much additional heat is called for at once. Electric resistance heating is from 150 % to 200 % more expensive than the heat pump alone. We have our electric hot water on a timer and have 4 hours of heating in the morning and again in the evening. We seldom use the electric stove and instead use foods that we can cook in the more efficient microwave. We support conservation but the RCR fails to be fair. [7]

Impact on customers with inability to use alternative fuel

> "The major reason 70% of my electricity consumption is in Block 2 is because I use electricity for space and water heating and to pump water from my well. Space heating accounts for 59% of the energy requirements of an average single detached home in BC. Water heating accounts for a further 18%. Customers who use natural gas for space and water heating (most residents in urban areas) can therefore maintain virtually all of their electricity consumption at the Block 1 rate. Since the introduction of two-tier rates, such customers have seen an increase in their electricity rate of only 4% (compared to my rate increase of 44%)." [8]

> As we do not have access to natural gas in our community, seven years ago we purchased an air source heat pump in an effort to limit our electrical consumption. We also had an energy audit done on our house and subsequently insulated our basement and upgraded the insulation in our attic to improve our energy efficiency. The heat pump helped reduce our electricity costs, however, our winter heating bills were still very expensive and we had to resort to supplementing with wood heat. A comparison of our June-August 2009 power bill with the same period for 2016 shows that our Fortis bill has increased by 235%. [9]

[6] MacKinnon, S Letter of Comment E-128 dated August 14, 2016.
[7] McGinnigle, J. Letter of Comment E-218, August 25, 2016.
[8] Marty, N. Letter of Comment E-154, August 17, 2016.
[9] Work, M. Letter of Comment E-290, August 31, 2016.

> Financial incentives were offered to builders and initial owners that determined that hydro became the preferred energy source for home heating. Our single family home was designed with this in mind. It does not have a basement below the living quarters (slab on grade). This configuration does not allow for the installation of retrofitted ductwork to facilitate a return air and forced heated air distribution system. Therefore, a more economical natural gas heating system is not feasible at this point. We have been repeatedly shocked by our electricity charges in the winter. This higher cost has made it difficult for me (a pensioner) and my wife (disabled for many years).[10]

> In 2012 we invested in costly upgrades for our older home built in 1977, as recommended by the LiveSmart BC program promoted by Fortis BC. We installed a new furnace and heat pump, new attic insulation, and new low flow toilets, and we have implemented a variety of energy-saving measures such as installing a split unit in our bedroom which serves as our primary AC and heating unit, washing in cold water, lowering the furnace thermostat, only to find that despite achieving sometimes as much as a 40% reduction in our energy consumption, our bills continue to rise and we are still being charged a disproportionately high amount because we do not have access to gas.[11]

Impact on customers with electrified and/or energy efficient homes

> In 2010 I decided to make a large investment (for me) and purchased an air source heat pump system for my home to cut my energy costs and do the right thing by doing my part by becoming a more 'green' consumer. I actually got the idea from the BC Governments website suggesting this. When the two tiered billing system went into place shortly after I installed the heat pump electricity bills skyrocketed to what is now our families largest expense per year.[12]

> We live in a house without ducting and in July, 2010 we had a ductless heat pump system installed due to the high power consumption during the winter from baseboard heating. The ductless heat pump is a wonderful option to decrease power consumption. Compared to the five years before the heat pump, we now use 21.5% less power on a yearly basis. The difference between the heating months is impressive. We now use 4098 kWh less power between November and March. We paid $500 **less** for electricity during the year after installing the heat pump compared to the year before. Of course this was prior to the two-tier billing system. We paid $500 **more** per year after the two tier system came into effect despite having the heat pump.[13]

[10] Underwood, J Letter of Comment E-528 dated November 19, 2016.
[11] Manea, B and Wiener, S. Letter of Comment E-107 dated August 12, 2016.
[12] Comeau, M. Letter of Comment E-51 dated August 8, 2016.
[13] Jones, R. Letter of comment E-68, August 10, 2016.

> When I first moved to our last house outside of Parksville, the initial 2 month winter bills we got were for approx. $540.00. I change over to florescent lights, put a timer on our furnace (electric furnace), manage to get two children to move out on their own reducing showers and laundry and I brought my Hydro bill down to approx. $420.00 for a two month winter period. Then the two tiered system came out and with electric heat you have no chance of staying on tier #1, so my bill went back up to $620.00 for a two month period. So much for being power smart! [14]

> We can only do so much up in the rural parts. I've already spent about $10,000 on upgrades to a heat pump, led lighting and insulation upgrades. I still have to burn wood in the winter or my bills would be around $1,200 to $1,500 during the winter months. [15]

1.2 The RIB lacks consideration for diversity of the residential customer class

Customers raised a number of factors that contributes to the difference in electricity usage at each dwelling, including the fuel type used for heating, availability of alternative fuel options, feasibility of fuel switching, different energy needs in rural areas, size of homes, number of residents per premise, and climate differences due to varying geographical locations. Customers raised that having the same electricity usage threshold to be charged under tier 1 rates for all residential customers, without consideration of different circumstances, is not appropriate. For example, rural customers expressed that they must use more electricity than others for basic household functions such as water pumps, and customers with multiple residents in one dwelling expressed that they must use more electricity than others because the rate is applied per dwelling without taking into account the number of residents.

Illustrative quotes

General comments

> The policy fails to achieve its stated goal of conservation because while it does provide an incentive to use less, it does not differentiate between the reasons certain customers use more than others. The rate is based on use per meter, rather than per capita consumption. As a result, a household of four persons is more likely to invoke the higher tier rate even when they use far less on a per capita basis as a result of their conservation efforts than is a household of one or two persons. If that same household of four were to split into two households of two people each, they could consume more electricity and still stay within the lower tier. [16]

[14] Armour, K. Letter of Comment E-410, October 21, 2016.
[15] Montogmery, G., Letter of Comment E-63 dated August 9, 2016.
[16] McInnes, C. Letter of Comment E-408 dated October 20, 2016.

> Two-tier pricing, as a conservation initiative, only works if it is applied to a homogeneous set of residents. In that situation, a high level of consumption can be viewed as a proxy for energy inefficiency. But this is clearly not the situation in BC, where there is a very wide range among electricity customers in their activities (space and water heating, pumping water, heated barns etc) and circumstances (e.g. outside temperatures in winter and summer).[17]

Areas with vs. without fuel alternatives

> I feel inclining block rates are fair but I strongly urge the BCUC to establish Tier One and Tier Two rates for (in our case) BC Hydro which take into account the necessity of using electricity or #2 oil in areas where no natural gas is available for heating.[18]

> The introduction of RCR's has been grossly unfair for residents of homes with electric heating, especially for those with no access to natural gas. In these cases it has led to dramatic increases in electric costs with no meaningful way to conserve. RCR's have also been unfair relative to the electric costs homes with natural gas enjoy. They incur block 2 rates less often and their overall cost of electricity is much less, providing little incentive to conserve.[19]

> ...our home was built in the 1980s when BC Hydro was promoting "all-electric" homes. That means it has no ducting or vents for furnace heating; in fact our minimal crawl space wouldn't even accommodate a furnace. So effectively I have no natural gas option for space heating... Part of the incentive for building/buying an all-electric home was a two-tier rate where the second tier was lower. The theory was that the first tier supported the electricity needs of homes heated by oil or gas (or wood), and the second tier made all-electric homes economical. That "fair" approach was made unfair when Hydro switched to a one tier system, and subsequently made even more unfair when they went back to two tiers, but with the second tier higher.[20]

Energy needs in rural areas

> The RIB, as structured ignores the fact that there is a small percentage of BC residents (often rural) who use electricity for space and water heating and will, regardless of their efficiency levels, always consume far more electricity than the BC average. This is because most BC residents, particularly those in major urban areas, have access to natural gas and use that fuel for space and water heating, significantly reducing their need to consume electricity (since 75% of the average energy use in single detached homes in BC is for space and water heating).[21]

[17] Marty, N. Letter of Comment E-154 dated August 17, 2016.
[18] Sexsmith, F Letter of Comment E-24 dated July 29, 2016.
[19] Rudzcki, D Letter of Comment E-13 dated July 25, 2016.
[20] Day, M Letter of Comment E-50 dated August 8, 2016.
[21] Gabelhouse, R. & J. Letter of Comment E-6 dated July 21, 2016.

> It is not possible for rural customers with no access to natural gas and who also have to provide their own industrial-like water systems and night time lighting and may have livestock animals to care for to live within the tier 1 allotment and have a reasonable lifestyle…[22]

> We live in a rural area of, British Columbia that is not serviced by city water or sewer. This means that we must have electrical pumps to supply water and treat our sewer. We also do not have access to natural gas. All our heating, hot water and cooking requires electricity, If the two tier electrical policy does not take this fact into consideration, rural properties are unfairly treated[.] Rural residents move to the more expensive electricity sooner because of this unfair application of the second tier electrical rate.[23]

Dwelling size

> This two tier system is unfair because it takes no account of house size or how many people are in the house using electricity. My house has six bedrooms with six people using the services so I will consume more electricity - is this a sin that needs to be punished. I had an old rental unit in downtown Penticton with baseboard heaters, which are very inefficient, but because the bill was less than 1600 kWh there was no need to improve or conserve. I fail to see how this new system encourages conservation and if you have a large house well then just pay up even if you are consuming less power per person than a smaller house![24]

> The issue is, with 2 households living off one meter we reach the second tier, and therefore pay the higher rate, much sooner each billing cycle than either household would separately. As putting in a separate line to the home was not an option, we feel we have been trapped into paying higher hydro fees. In a market with very few rental vacancies, and home purchases not being an option for many people, it is a shame to penalize home owners that are investing in legal suites to rent out. I understand that any home with an in-law suite of this kind would be in the same situation. Though I understand the need for 2 tier rates, I believe the system should be altered slightly for suited home with one meter.[25]

Difference due to customer needs

> This system unfairly targets Seniors and families with children, as they are bound to need more electricity than in a single or two person adult residence. Also seniors are targeted. My wife is in her mid eighties and like most seniors, she feels cold easily… Most seniors need less sleep and so turning down the heat at night just doesn't work… Our Premier promised that it would be families first when she was elected, so let's be fair to families and delete the two tier rate fee system[26]

[22] DeCock, J. Letter of Comment E-256 dated August 28, 2016.
[23] Mennie, S. Letter of Comment E-396 dated October 18, 2016.
[24] Jevons. Letter of Comment E-416 dated October 17, 2016.
[25] Rodall, A. Letter of Comment E-503 dated November 7, 2016.

> I own and operate a wood manufacturing and residential design business that is also home-based. I have a large workshop full of electrical machinery and a kiln-drying room. My wife makes prepared foods for weekly markets in our kitchen, and this business involves substantial cold storage and cooking/baking. Since all the Hydro for our home and businesses run through one meter, our Hydro bills are HUGE, especially since most of the consumption is billed at the higher rate… I would like to see some recognition by BC Hydro for home based business consumption of electricity. It is not practical in our situation to have multiple meters on our property to separate business use from domestic use, since there is no clear boundary between the two, and the infrastructure change costs are high. We are thus trapped into paying a very high price for our electrical consumption. [27]

Geographical differences

> I live in a high alpine zone with an average winter temperatures between -4 to -10C and can therefore never reduce my energy consumption to the 'average' rate, no matter what energy-saving measures I take. [28]

1.3 Pricing signal and impact on fuel switching to high-carbon sources

To save money on their electricity bill, customers report switching to natural gas, propane or wood to heat their homes but they express concern about these fuel sources' carbon emissions and their effect on air quality. Customers also express concern about a perceived contradiction that the RIB rates are designed to achieve environmental benefits through electricity conservation but the rates result in behaviour with increased carbon emissions. Customers also express that the RIB rates are a disincentive to invest in electric vehicles.

Illustrative quotes

Pricing signal of the RIB rate

> The only other sources of energy we could use to heat our home at this time are oil or wood, however, as neither of these are in keeping with the BC governments commitment to increasing the use of clean energy, one would hope to be rewarded rather than penalized for choosing electricity as an energy source. [29]

> People were encouraged to use electric heat, as it was cleaner than wood or gas. In the past there was a half price system offered as an incentive. However this was discontinued and no longer available to later users of electric heating. [30]

[26] Alden, J Letter of Comment E-530 dated November 16, 2016.
[27] Shipway, D Letter of Comment E-44 dated August 6, 2016.
[28] Benedet, A Letter of Comment E-174 dated August 21, 2016.
[29] Cline, B. Letter of Comment E-48 dated August 5, 2016.
[30] Milburn, M Letter of Comment E-534 dated November 15, 2016.

> From an environmental standpoint this punitive rate structure encourages the use of alternate heat sources, primarily the cutting down of trees and use of wood stoves but also burning of pellets, refuse and I am sure in some areas of the province - coal. This negates the green philosophy upon which Hydro base their RIB rate.[31]

> It is my belief that this system unfairly promotes natural gas heating and is huge dis-incentive for people who wish to adopt electric cars. It is unfair that the government is allowing such a punitive pricing structure for green alternatives that should be generating carbon credits, while at the same time not imposing a progressive carbon tax on conventional energy sources. The playing field needs to be at very least leveled and potentially reverse the pricing to give credits to those people not burning natural gas or conventional fuels in electric automobiles. I find it amusing the BC Hydro publicly promotes electric cars but by their own pricing structure are providing huge disincentive to adoption.[32]

> We will not have an electric car any time soon since the RCR pricing prohibits decent house heating. More electric load is too expensive. Instead we will continue to use our 1997 gasoline mini-van which has a single level of fuel cost and is subject to the basic law of demand (when the price goes up past a reasonable amount, then consumption decreases)[33]

> Indeed the RIB / Residential Conservation Rate encourages people to burn fossil fuels with their concomitant pollution and Green House gas emission consequences. These high costs are turning people back to burning wood, fibre and coal pellets and even waste oil fuels. These are retrograde steps directly harmful to the energy and environmental objectives BC.[34]

Customer fuel switching to higher carbon sources

> I am in the process of installing a fan in my propane fireplace, so that I can get more supplemental heat from it and hence lower the thermostat further on my geothermal system. Unfortunately, greater use of the propane fireplace in place of my geothermal heat pump will result in increased greenhouse gas emissions but I have no other option.[35]

> We considered supplementing our wood burning stove so our house was more comfortable by installing a ductless heat pump system, but the heat pump uses electricity to help convert the air to heat so running it would be unaffordable, as the electricity it uses would be at the Block 2 rates. Burning wood is more economical for us due to the cost of electricity even though I know the adverse effects wood burning has on the environment.[36]

[31] McGovern, P Letter of Comment E-111 dated August 12, 2016.
[32] Hunt, G. Letter of Comment E-547 dated November 21, 2016.
[33] McGinnigle, J. Letter of Comment E-218 dated August 25, 2016.
[34] McKenney, M. Letter of Comment E-16 dated July 22, 2016.
[35] Marty, N. Letter of Comment E-154 dated August 17, 2016.

> As a result, we have resorted to burning more wood in 2 wood fireplaces in order to keep warm and to try and keep our hydro bills under control. I would surmise that our bills would be over $900/month during the winter if didn't do this. Of course, we are now pumping extra carbon dioxide and particulate matter into the atmosphere. [37]

> Furnaces, water heaters, stoves/ovens, bbq's, clothes dryers must all be serviced by electricity or alternately by fossil fuel (propane). Using propane to reduce electrical consumption is contrary to world opinion regarding climate change and fossil fuel reduction targets. Travel costs for delivery, volatile market prices, equipment rentals all add to direct extra costs for BC residents forced to move to fossil fuel (propane) to reduce electrical consumption so that they may reap the same benefits afforded all urban residents and those with natural gas delivery…We have no alternative other than increasing our carbon footprint. [38]

> I used to heat mainly by electricity but since BC Hydro instituted a second step with a higher rate I have now switched to wood for most of my heating needs. I realize this is not environmentally friendly and is a large source of greenhouse gases but as I am on a low fixed income and own acreage with timber I have opted to cut trees for my heating rather than going hungry or forgoing other necessities in order to pay the high BC Hydro heating bills. [39]

Environmental impact from fuel switching

> The following explains my experience with the conservation rate. In our house we have a natural gas furnace as well as an air-source heat pump. Until BC Hydro introduced the conservation rate structure, we heated our house primarily with the air-source heat pump with the natural gas furnace being in place as a back-up heat source. An air source heat pump uses considerable more electricity than a natural gas furnace, but reduces our annual greenhouse gas emissions by approximately 6,000 kilograms. However, with BC Hydro's conservation rate, it became considerably more costly to hear our house with a heat pump and we have heated our house with natural gas since 2009. As a result, our annual carbon dioxide emissions have increased by approximately 6,000 kilograms per year with use of natural gas compared to a heat pump. Since 2009, that has resulted in over 40,000 kilogram of carbon dioxide emission. [40]

> Since this 2 tier system came into effect and the recent increases in rates the amount of wood burning in the community has risen to an alarming rate – meaning smoke and breathing problems are now increased. [41]

[36] Forster, R. Letter of Comment E-66 dated August 9, 2016.
[37] Wright, J. Letter of Comment E-60 dated August 8, 2016.
[38] Leffingwell, G. Letter of Comment E-58 dated August 8, 2016.
[39] Spring, C. Letter of Comment E-189 dated August 22, 2016.
[40] Shead, R. Letter of Comment E-432 dated October 23, 2016.
[41] Collins, J. Letter of comment E-105 dated July 22, 2016.

> The Government has encouraged the BCUC to implement the RIB as part of its clean energy policy. However, the consumption of hydroelectricity produces no greenhouse gas emissions and the RIB, as structured is making rural electricity consumers switch to wood-burning which produces greenhouse gas emissions and a variety of other air pollutants. [42]

> Many households have a fireplace or stove that is burning almost continuously through the winter months. There are some consequences to this:
>
> - Greenhouse gas emissions increase.
> - In some cases, internal air quality suffers. This is particularly true where the home does not have a sealed fireplace insert or high quality stove. These conditions are more likely to be seen in lower income housing
> - Air quality in the area suffers, due to the increase in particulates, etc. that are released and trapped in our valley.
>
> So, for those who most struggle to pay their electricity bill, they are faced with an unfortunate choice: stick with clean electric heat but pay a lot, or save money but suffer from poor air quality and contribute to climate change. This is not the kind of choice we should be putting to our fellow citizens. [43]

1.4 Effectiveness of electricity efficiency upgrades and energy conservation behaviour to mitigate high electricity bills

Customers expressed that for those who either have an existing energy efficient home, or have responded to the RIB rates with additional energy efficiency upgrades and conservation behavioural changes, demand-side management (DSM) has been ineffective in reducing energy consumption to within the tier 1 consumption threshold and reducing electricity bills. Customers with electrified homes and electricity efficiency upgrades installed prior to the RIB rate expressed frustration that, with the higher cost of electricity under the tier 2 rate, their financial investment to electrify turned out to be higher than what they budgeted for. Other customers expressed that there are no additional energy efficiency upgrades they can implement to further reduce electricity bills. Some low-income and rental customers also raised that they do not have access to DSM.

[42] Seghal, A. Letter of Comment E-5 dated July 20, 2016.
[43] Nott, R. Letter of Comment E-440 dated October 25, 2016.

Illustrative quotes

DSM ineffective in reducing energy consumption to within the tier 1 threshold

> We have put in a high efficiency electric boiler with in floor heating and on cooler winter evenings we burn wood to supplement. We have participated in the reduce energy challenge by 10% per year and have always exceeded that. We consider ourselves to be power smart! (sounds like a good logo…). We have no problems in the summer with staying well within the reasonably priced level 1. But then the winter comes and no matter how hard we conserve, short of wearing parkas inside, we go over the level 1 tier to the much higher price level 2 tier.[44]

> My experience has been that even if you replace older style lighting with LED, increase insulation, replace all the windows with E2 argon windows, keep heat at sixty degrees in the winter, only wash on cold cycle, do not use a dryer, and do other upgrades your electricity consumption is still in the two tier rate.[45]

> In late 2013 my wife and I replaced all of our old inefficient aluminum frame windows with energy star rated windows. As well, we installed a high efficiency Mitsubishi split-ductless air source heat pump in an attempt to offset the high cost of our electric baseboard heaters. Both of these were done at a cost of $7600 - an onerous expense for two retirees. We had this work done with the hope of bringing our consumption under the 1600 kWh ceiling for tier 1 rates. We can prove by looking at previous kWh/day consumption figures from our FortisBC Electricity bills that we have been successful in reducing our consumption on average by 15 – 20 %. This is a significant savings in consumption. We have also undertaken other less expensive measures to improve our home's energy footprint. In fact with an energy audit we were advised that our home has an EnerGuide Rating System of 74 which is the top of the range for an energy efficient upgraded older house. It is impossible for us to undertake any further significant energy use improvements for this building. That leaves us with an energy efficient home that can not achieve consumption under the 1600 kWh ceiling during the winter months.[46]

> We have invested in Energy Star appliances, changed many fixtures to either LED lights or energy savings bulbs, washing is done using cold water and drying outside, if at all possible. Even so, our 2nd tier rate still ends up being around 2000 kWh with each billing.[47]

[44] Hollo, T., Letter of Comment E-18 dated July 29, 2016.
[45] Rockandel, C. Letter of Comment E-417 dated October 20, 2016.
[46] Abbott, R. Letter of Comment E-525 dated November 20, 2016.
[47] Finlay, R. Letter of Comment E-242 dated August 29, 2016.

DSM ineffective in reducing electricity bill

> We quickly learned that our Hydro bill was incredibly expensive. Our first BC Hydro bill for the Nov 10/2011-Jan 10/2012 period was over $1,100. We called BC Hydro thinking it was a mistake. It wasn't. I took all of their advice regarding on how to save on our bill. Since then our TV, cable, modem, all computers and lights are on various power bars which are always turned off until they are used. We installed foam-backed curtains to keep the cold back; replaced the front doors and some windows; replaced the entire heating system (twice); put on a new roof and replaced the old skylights. In addition, in the winter we shut down the bottom floor and turn everything down to 5C there just so things don't freeze. The 2 extra bedrooms are closed with the heat down to 15C. We removed the old fireplace and installed an energy-efficient woodstove to supplement the living area so that the electric heat can be turned down in the afternoons and evenings. Our bill for Nov 2015-Jan 2016: $1,004. We can't seem to win during the heating season. [48]

Cannot recover cost of energy efficiency improvement through energy savings under the RIB rate

> Our home was constructed in 2006, to an R2020 energy standard, with Insulated Concrete Formed walls with R16 rating, along with state-of-the-art energy conservation technology incorporated into the design of the home. This includes an in ground geothermal heat pump system which of course is operated on electricity, triple pane argon-filled glass in the windows; and extra insulation in the attic area. The geothermal heat pump was a conservation measure recommended by the BC government at the time that we were designing the home….it cost > $30,000 to install, and so far due to the high cost of electricity we question whether that investment was worthwhile, since energy costs have been a escalating negative drain on our finances, even though our home is state-of-the art energy efficient…Since moving into the home in early 2007, we have experienced an 108% increase in our electrical energy costs…During the period that we have lived in this home we have conserved electrical energy. For example, in 2016 we will use 23 % less electricity (33,798 total kw/ hr 2016 (estimated) vs 44,082 kw/ hr in 2010). [49]

> Our home was built to relatively high energy efficient standards and incorporates an environmentally responsible private waste water management. Heating and climate control is provided by a fully programmed electric variable speed Infinity Greenspeed heat pump. We use the setbacks. Hot water is generated with a propane Condensing 98% on demand tankless system, our stove/oven is dual fuel, and most of our lighting is LED driven. Appliances and electronics are relatively current and energy efficient. In service of the environment we installed a programmed BioMicrobics MicroFAST Residential Wastewater System that is environmentally superior to regular septic systems. It does however use a 24/7 220 electrical load. The point in describing this is to show that we have taken steps to invest in energy efficiency and the environment. Even with this electrical power use places us in the Tier 2 rate zone. Our winter billings are more than 50% at Tier 2. [50]

[48] Atkins, A. Letter of Comment E-94 dated August 11, 2016.
[49] McKenney, M. Letter of Comment E-16 dated July 22, 2016.
[50] Dickson, D. Letter of Comment E-112 dated August 12, 2016.

> I researched the most energy efficient heating and cooling systems for our new home and justified the extra $20,000 for the best system available as we don't have access to natural gas. We had the best insulation installed. All our lighting is LED technology. Highly efficient windows and doors used. The household appliances are all new and to the highest efficiency. We also installed 22 solar panel at a cost of $28,000…Building an energy efficient house was our number one priority. We wanted to conserve energy yet our electricity bills are always higher than we ever imagined or budgeted for. [51]

Lack of opportunities to further reduce bill

> I have taken the steps available to me to mitigate these bill impacts – e.g. turning down my thermostat; washing clothes on the cold cycle – but such actions have had little impact on my bill. My house was constructed in 1977, is well insulated, and heated and cooled by a geothermal heat pump (the option recommended by governments for its efficiency and environmental benefits). My upper floor does not have ducting from the heat pump and has electric base board heaters installed in the 4 rooms. There is virtually no opportunity to reduce my bill through improving the energy efficiency of my house without costing me tens of thousands of dollars in renovations. [52]

> When we built our house I actually called BC Hydro to find the most efficient heating system and was told to go with in floor hot water heat which I installed according to their recommendations. I have R40 walls (ICF construction) and over two feet of ceiling insulation along with triple pane windows. I am still well above the base rate even in summer with no air conditioning and no use of a clothes dryer as we line dry outside. [53]

> A major impact in the design of our home (new in 2015) was the severe cost of heating due to the "Conservation Rate". As we could not afford electricity bills as described above, we reduced our floor plan, adopted the Passive Solar Heating conce pt, recovered attic heat and installed a geothermal heating system. The initial cost of such a system will eventually be offset by the savings compared to heating with an electric boiler. Even with our very energy efficient home, during the period Dec. 16, 2015 to Feb. 16, 2016, our Block 1 usage was at 32% and Block 2 usage was at 68%. We had a home energy audit done and Total Home Solutions could not recommend any action we could take to reduce our energy usage. [54]

[51] Martineau M., Letter of Comment E-3 dated July 18, 2016.
[52] Belsher, S. Letter of Comment E-310 dated September 1, 2016.
[53] Vaughan, R, Letter of Comment E-10 dated July 22, 2016.
[54] Beckmann, S. Letter of Comment E-98 dated August 11, 2016.

> I live in a rural area at an elevation of 1100 metres and it's cold and snowy from October until March. My home is quite new and well-built and insulated, with modern appliances, including the furnace. There are only 2 people living in the house and we turn the heat down to 13C at night and only have 1 light on in the room where we're sitting when needed, but we still consistently go deep into tier 2 in the winter and my Fortis bill is astronomical. I truly believe there is nothing more I can do to conserve energy, which was supposed to be the incentive of this system. [55]

Inability to access DSM to mitigate bill impacts (low-income/renters)

> You offer money off various items, however, low income families cannot afford these items. [56]

> The landlord is not going to upgrade anything I pay the electric bill it is irrelevant to landlords how much we the tenants pay for utilities. So this two tier system punishes me the tenant low income families not the owner [57]

> While I can certainly understand the intent, encouraging everyone to try to conserve electricity, I feel it unfairly discriminates against those who rent, rather than own, their homes. I live in a townhouse that, like many rental properties, only has electric baseboard heating. During the winter months it is not unusual for our heaters to be running nearly 24/7 just to keep our place livable. Being on a fixed, disability income it can sometimes be a struggle just to meet our basic needs as well as pay high electricity bills. Given the current low vacancy rate and high rental costs moving is simply not an option for many like us. Your two-tiered business model is great incentive for homeowners but I think it is simply unfair to those of us who rent. [58]

1.5 Demand-side measures and self-generation possibilities

Some customers raised further promoting demand-side measures as a way to reduce electricity consumption and lower electricity bills. Customers feel that additional energy conservation and retrofit incentive programs are needed, and DSM programs can be better promoted.

Customers also raised that distributed generation and net metering can reduce their electricity bill, and encourage the utilities and the government to better communicate and provide financial incentives for customers to pursue these options.

[55] Brazeau, P. Letter of Comment E-233 dated August 27, 2016.
[56] Sterne, D Letter of Comment E-483 dated November 8, 2016.
[57] Langager, K Letter of Comment E-418 dated October 21, 2016.
[58] Harley, N Letter of Comment E-527 dated November 18, 2016.

Illustrative quotes

Demand side measures

> I'm not sure how well aware most people are about the variable rate structure or what they can do to take advantage of potential energy and dollar savings. [59]

> Utilities throughout North America and Europe have engaged in energy conservation programs; there are many successful reduction models beyond the price-it-high-so-they-can't-afford-it approach. [60]

> Develop energy conservation and retrofit incentive programs that do not require high initial financial outlays from lower income residents. [61]

> Also, as a suggestion, I think it would be a constructive move to have both FortisBC and BC Hydro initiate education programs for their employees (and perhaps customers) to learn about Community-Based Social Marketing as a way of accelerating the adoption of desirable energy consumption goals. [62]

Distributed generation

> I suggest that financial incentives could be provided by BC Hydro to encourage residential customers who don't have access to natural gas an alternative heating option, to pursue "green energy alternatives". These would include, but not necessarily be restricted to:
>
> - Solar panel installation to mitigate or replace utility power for heating and hot water
> - Micro wind generation
> - Geothermal heating
>
> [63]

> Provide subsidies and financing to homeowners for the capital cost and installation of alternative energy systems that could be used for net metering. Also provide assistance to property owners to help them understand the net metering system including consultants to assist property owners in determining the best alternative energy systems for their situation, including potential savings and return on investment. This program should either be exclusive to areas that don't have access to natural gas, or the subsidies should be higher for people living in those areas. [64]

[59] Rhebergen, F Letter of Comment E-398 dated October 19, 2016.
[60] Wardle, R Letter of Comment E-200 dated August 18, 2016.
[61] Gauthier, J. Letter of Comment E-279 dated August 31, 2016.
[62] Abbott, R. Letter of Comment E-525 dated November 20, 2016.
[63] Bailey, T Letter of Comment E-36 dated August 5, 2016.

1.6 Proposed modifications to the RIB rates

Customers provided a number of changes they would like to see to the existing RIB rates. For customers without access to natural gas, the suggested changes include providing a rate subsidy or rate rebate, increasing the tier 1 consumption threshold and vary the tier 1 consumption threshold by season.

Other suggested alternatives to the current RIB rates include time of use rates, seasonal rates, declining block rate, flat rate and interruptible rates for residential customers. Customers also raised that the RIB rate is not necessary for conservation.

Illustrative quotes

Recommended changes to the RIB for customers with no access alternative fuel

> A similar rate structure subsidy could be applied to customers who are dependent on electricity for heating and hot water production in those areas not serviced by natural gas supplies. Although not exactly the same as the [BC Hydro] Zone 2 concept, I believe the fundamental driver behind the Zone 2 rate subsidies was robust and appropriate, because an undue financial burden would be imposed on customers in Zone 2, if total cost pricing were applied to those customers. Similarly, the current rate structure penalizes customers who do not have access to natural gas as an alternative fuel source. To "level the impact" of rates across the Province, I therefore believe that a rate subsidy is appropriate and is consistent with the past BC Hydro/BCUC/Provincial Government policies, thus achieving rates that are, "fair, just and reasonable [65]

> There is no way I can further reduce my electricity use, already conserving the most feasible. I would suggest a modification of the tier limits, perhaps 1800 KWH, with a slight increase in the basic rate, to allow for a small reduction in the tier 2 rate. Since I am in a semi-rural area without gas service perhaps a special rural rate could be instituted, or a rebate offered to those with no gas options. [66]

> In our view there should be two different breakpoints between Tier 1 and Tier 2 with the determining factor on rate schedule being the ability to obtain natural gas service. The switch to more costly Tier 2 should be set at a higher usage point for rural customers who do not have access to natural gas. An innovation to this would be to allow any residential user (rural or urban) who meets the criteria of energy efficiency (Home Energuide Rating > 75) to use this more beneficial rate structure. [67]

[64] Wilki Walker, S. Letter of Comment E-338 dated September 2, 2016.
[65] Bailey, T. Letter of Comment E-36 dated August 5, 2016.
[66] King, G. Letter of Comment E-38 dated August 7, 2016.
[67] Dickson, D. Letter of Comment E-112 dated August 12, 2016.

> My suggestion for customers like us who have no option other than electric heat is to vary the Step 1 cut-off by season: keep the rate as it is from June 21 - September 21 (we do want to conserve electricity), up it by perhaps 10% from March 21 - June 21 and from September 21 - December 21, and by no more than 20% from December 21 - March 21. This should be doable by having such customers register for the eased rates, confirming that they do indeed live in an area without access to natural gas and have no other source of heat. [68]

> No credit are available for home owners who use power frugally to offset against future bills! Would it not be a better "incentive" to encourage consumers to be given a credit of unused kWh below 1,600 kWh to be carried forward to their next billing period? [69]

> As a suggestion I would propose any of the following for winter usage :
>
> - Electric dependent customers should have a less expensive tier two rate.
> - Electric dependent customers should have a higher tier one level.
> - Electric dependent customers should have a flat rate. [70]

Other possible rate structures in place of the RIB

> The only way to mitigate the adverse impacts that the RIB it is having on a small percentage of BC residents is to move to a different pricing system. This could be done readily by replacing the two-tier system with some combination of float/time-of-use pricing, at least for those residents who use electricity for space and water hearting. [71]

> I would like to state that the availability of the Time of Use [TOU] rate initiated very modern technologies to be implemented in home heating systems for a limited time. It actively helped reduce peak demand and lowered the need for Infrastructure load capability expansions in this area…Today TOU rate is available in the majority of states and countries in America and Europe. It should be made available again in British Columbia and its use should be actively encouraged by the Utility companies. [72]

> Continue with a two tier residential rate but have it operate as industrial rates do. The more I use, the CHEAPER the rate! This would encourage electricity use by residential property owners and decrease natural gas and other polluting sources of energy. This is something the Utility Commission, on behalf of the Provincial Government should be promoting. [73]

[68] Hall, C. Letter of Comment E-9 dated July 23, 2016.
[69] Walker, S. Letter of Comment E-338 dated September 2, 2016.
[70] McGinnigle, J. Letter of Comment E-218 dated August 25, 2016.
[71] Seghal, A. Letter of Comment E-5 dated July 20, 2016.
[72] Bergendahl, F. Letter of Comment E-21 dated July 31, 2016.
[73] Pflueger, D Letter of Comment E-425 dated October 21, 2016.

> Another option that could probably work is to return to the E-Plus program that Hydro had implemented in 1987. I would gladly install dual metering system and an alternate back-up power supply for power interruptions if Hydro rates were low enough to warrant it. [74]

> Either return to a single-tier rate structure, or, as suggested by the RDOS, set the baseline low-rate ceiling much higher for rural residents. We would also note that Fortis, in not providing a natural gas supply to this area, is in conflict of interest in imposing a two tier electricity rate structure. [75]

> It is conclusively shown from BC Hydro's annual reports that electricity usage in BC is not increasing, but has been flat for several years. Conservation efforts have worked. We do not need a two-step rate for electricity, and I suggest the Commission's best option is to get rid of it. [76]

1.7 RIB promotes conservation

A few of the comments submitted expressed that the RIB rate fosters responsible use of energy and promotes energy conservation, and supports the two-tier rate structure.

Illustrative quotes

> I would like the current two tier rate structure to continue. I find from personal experience that it fosters and rewards the responsible use of energy. [77]

> I fully support the concept of a two-tier (or more) rate structure for electrical energy consumed by residential rate payers. For our family, we are well aware of the higher rate to be paid when we exceed the current threshold and we make efforts to minimize consumption and conserve energy. It is a good incentive for promoting energy conservation, which is very important for all of us to strive for. I would encourage going further with the concept by increasing the difference between the prices for lower and higher consumption rates and perhaps adding another step: a lower rate yet for those households whose consumption rate is below another lower threshold. [78]

[74] Pelletier, R Letter of Comment E-143 dated August 15, 2016.
[75] Turnbull, J Letter of Comment E-287 dated August 31, 2016.
[76] George, D Letter of Comment E-308 dated September 1, 2016.
[77] Renneberg, S Letter of Comment E-395 dated October 17, 2016.
[78] Rhebergen, F Letter of Comment E-398 dated October 19, 2016.

APPENDIX B – Minister Bennett's Letter to BCUC

JUL 06 2015

BRITISH COLUMBIA

Ref.: 90892

Mr. Len Kelsey
Chair and Chief Executive Officer
British Columbia Utilities Commission
Box 250, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Kelsey:

I am writing to request that the British Columbia Utilities Commission (BCUC) report to the Government of British Columbia on the impact of BC Hydro's Residential Inclining Block Rate and FortisBC's Residential Conservation Rate (referred to as the "residential inclining block rates").

My colleagues and I have heard concerns from the public that the residential inclining block rates may have unreasonable bill impacts on some customers. One of the concerns was that rural customers do not have the option of heating their homes using natural gas. Please provide me with information on customers with significant (over 10 percent) bill impacts as a result of the adoption of the residential inclining block rates including, to the extent available, low income customers. I am requesting that the BCUC provide me with information on several issues, including:

- Do the residential inclining block rates cause a cross-subsidy between customers with and without access to natural gas service?;
- What evidence is available about high bill impacts on low income customers?;
- What evidence is available about factors that lead to high-energy use and, therefore, bill impacts for customers without access to natural gas, including low income customers?;
- What is the potential for existing Demand Side Management programs to mitigate these impacts?; and
- Within the current regulatory environment, what options are there for additional Demand Side Management programs, including low income programs?

.../2

Ministry of
Energy and Mines and
Minister Responsible
for Core Review

Office of the Minister

Mailing Address:
PO Box 9060, Stn Prov Govt
Victoria, BC V8W 9E2

Telephone: 250 387-5896
Facsimile: 250 356-2965

FortisBC and BC Hydro have both demonstrated that their respective residential inclining block rates are resulting in residential electricity conservation, and that they are revenue neutral to the utilities. The Government is unaware of any evidence that the residential inclining block rates result in higher greenhouse gas emissions, and BC Hydro has indicated that they have no evidence of this. Any analysis of alternative rate structures and the issues listed in this paragraph would be best left to existing regulatory processes, which in BC Hydro's case is the 2015 Rate Design Application (RDA).

I would like the BCUC to work with the utilities in collecting the information it deems necessary to provide the BCUC's assessment of the five questions I have raised, and any other relevant issues with the rate that the BCUC believes have not been addressed adequately by previous reports and regulatory processes. I would also recommend the BCUC gather information from ratepayers in regions not served by natural gas regarding the impacts of conservation rates and awareness of ratepayer mitigation options.

FortisBC

In its March 26, 2015 letter to FortisBC, the BCUC observed that there was an opportunity for FortisBC to communicate with its customers receiving bill impacts greater than 10 percent as a result of stepped rates. I understand that FortisBC is working on further outreach and the development of an additional low income Demand Side Management program. I ask that the BCUC work with FortisBC to ensure that this outreach and the development of the report complement each other.

BC Hydro and the 2015 RDA

BC Hydro has already undertaken a significant amount of consultation on its residential inclining block rate to inform its upcoming RDA. The Government understands that BC Hydro will be filing the first phase of its 2015 RDA with the BCUC in mid-September 2015, and that the first phase will include analysis of BC Hydro's residential inclining block rate. The BCUC should use the 2015 RDA regulatory review as the process to collect information for the report, rather than a separate process.

The BCUC's report should include its review and analysis of the data provided by the utilities and the BCUC's conclusions regarding the five questions listed above. The report should be provided to the Government after the evidentiary phase of BC Hydro's 2015 RDA concludes, which we expect to occur sometime in the second quarter of 2016.

…/3

This request for a BCUC report would not preclude either utility from seeking approval to launch or expand Demand Side Management programming prior to the heating season this fall.

Sincerely,

Bill Bennett
Minister

pc: Honourable Suzanne Anton
Minister of Justice and Attorney General

Ms. Jessica McDonald
President and Chief Executive Officer
BC Hydro

Mr. Michael Mulcahy
President and Chief Executive Officer
FortisBC

APPENDIX C – Detailed description of BCUC process to gather information for report

In August, 2015 the Commission established a process to gather information to address the Minister's questions. All documents filed in the process are posted on the Commission's website. The following four steps occurred in the process:

1. The Commission sought information and comments from Stakeholders[1] to determine the methodology by which BC Hydro and FortisBC would prepare reports to the Commission on the Minister's five questions and definitions of specific terms in the Minister's questions. A copy of the Commission letter establishing the methodology is attached as Appendix B to this report.
2. Public comments were sought on the impacts of the RIB rates and the public's awareness of ways to mitigate the impacts. A full list of the newspapers, regional districts and municipalities to whom notice of the request for public comments was published or sent is included as Appendix F.
3. BC Hydro and FortisBC filed their reports on the Minister's five questions with the Commission.
4. Public and Stakeholder comments were sought on the utility reports.

1.1 Determining the methodology for BC Hydro and FortisBC's reports on the Minister's five questions

As the first step in the process, the Commission invited comments on the methodologies BC Hydro and FortisBC should use to answer the Minister's five questions. The purpose of this step was to align the methodologies used by the two utilities as much as possible so the information provided by each in its report to the Commission was as comparable as possible.

Comments were sought from BC Hydro, FortisBC and all registered interveners in two previous Commission proceedings which addressed the RIB rates: the BC Hydro 2013 Residential Inclining Block Rate Re-Pricing Proceeding and the FortisBC Inc. 2011 Residential Inclining Block Rate Proceeding. Comments were sought from the utilities and interveners in previous RIB proceedings because the nature of the information sought was best suited to parties that had knowledge of the RIB rates. These participants with knowledge of the RIB rate were designated as Stakeholders in this process. Stakeholders also provided comprehensive comments and analysis of the utility reports. Stakeholders in this process were:

- British Columbia Old Age Pensioners' Organization *et al.* (BCOAPO);
- B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA);
- Commercial Energy Consumers Association of British Columbia (CEC);
- COPE 378;
- Mr. N. Marty;
- Mr. F. Bergdahl;
- Regional District of Mount Waddington;
- Mr. D. Tarris;
- Ms. J. DeCock; and
- Mr. N. Gabana.

[1] As this process was an information-gathering process and not a hearing, the process included "stakeholders" rather than "interveners" (Exhibit A-1).

Broad public notice was not published at this stage because a public comment period was planned to occur subsequent to the report methodology(ies) being established.

In response to the Commission's request for comments, by October 16, 2015, BC Hydro and FortisBC provided their proposed methodologies and the following six stakeholders provided submissions in response: BCOAPO; BCSEA; CEC; COPE 378; Mr. N. Gabana; and Mr. N. Marty.[2]

On November 10, 2015, the Commission and Stakeholders asked BC Hydro and FortisBC information requests on their submissions. Responses to information requests and responses to stakeholder comments were received from the utilities on December 18, 2015.[3]

The Commission reviewed the Utilities' proposed methodologies, submissions from Stakeholders and responses from the Utilities and established specific methodologies and definitions for each of the Minister's five questions. These methodologies and definitions are set out in Commission letter dated January 19, 2016 attached as Appendix D to this report.

BC Hydro 2015 Rate Design Application Proceeding

Minister Bennett's letter directed the Commission to "use the 2015 RDA regulatory review as the process to collect information for the report [for BC Hydro], rather than a separate process" and "the [Commission's report] should be provided to the Government after the evidentiary phase of BC Hydro's 2015 RDA concludes."[4]

The evidentiary phase of the BC Hydro Rate Design Application proceeding closed on August 24, 2016 after an oral hearing. The Utilities' reports were filed with the Commission on September 30, 2016.

1.2 Public comments were sought on the impacts of the RIB rates and the public's awareness of ways to mitigate the impacts

On July 15, 2016, the Commission established the first phase of public comments directed at the approximately 200 communities without access to natural gas identified by BC Hydro and FortisBC. Public notice of the comment period was initially published in 21 community newspapers and sent to 29 regional districts and 41 municipalities and was set to finish on August 15, 2016. The Commission chose to publish a public notice in specific community newspapers and provided notice to regional districts and municipalities directly in an effort to target the approximately 200 communities identified as having no access to natural gas.

During this time the Commission received comments from the public and stakeholders that the comment period did not provide the public sufficient time to respond and that notice was not published broadly enough. In response, the Commission extended the comment period until September 2, 2016, published notice in seven major newspapers in the province, and contacted an additional four regional districts.

[2] Exhibit A-9, p. 1.
[3] Exhibit A2-2, FortisBC IR Responses December 17, 2015.
[4] Minister Bennett, Letter to BCUC, July 6, 2015, p.2 (Attached as Appendix x to this Report).

This broadening of the public notice moved the Commission away from an approach targeted at the 200 communities identified. However, the Commission felt this was warranted to gather as broad public input as possible on the impacts of the RIB rates and the ways to mitigate those impacts. Of note is that this broadening of public notice may have resulted in more members of the public with access to natural gas providing comments in this process than the original targeted approach may have.

A complete list of the newspapers, regional districts and municipalities provided public notice is in Appendix F to this report.

1.3 BC Hydro and FortisBC filed their reports on the Minister's five questions with the Commission

On September 30, 2016, BC Hydro and FortisBC filed their reports on the five questions.

1.4 Public comments were sought on the utility reports.

On October 7, 2016, the Commission established a second public comment phase seeking comments on the utility reports which was open until November 24, 2016.[5] The Commission published public notice of the comment period in 92 community and major newspapers in the province, and sent notice directly to the same 29 regional districts and 41 municipalities as were contacted in the first phase of public comments.[6]

In addition, an email was sent to all parties that commented in the first comment phase (July-September) informing them of the opportunity to comment.[7]

In total over 750 comments were received in this process.[8]

[5] Exhibit A-20, p. 1.
[6] Exhibit A-21, pp. 1–2.
[7] Exhibit A-20-1.
[8] Of the total received by the Commission, 669 were submitted with the customer's consent to have the letter posted to the public record. The Commission is not able to publish the remaining approximately 85 comments due to the customer's lack of consent to have their letter published but has reviewed them in developing the public comment themes. Thus 669 letters of comment are available for viewing on the Commission's website; 380 of which were published in phase one and 287 in phase two.

APPENDIX D – Definitions and methodology for utility reports

British Columbia Utilities Commission

Erica Hamilton
Commission Secretary

Commission.Secretary@bcuc.com
Website: www.bcuc.com

Sixth Floor, 900 Howe Street
Vancouver, BC Canada V6Z 2N3
TEL: (604) 660-4700
BC Toll Free: 1-800-663-1385
FAX: (604) 660-1102

Log No. 50648

VIA EMAIL
bchydroregulatorygroup@bchydro.com
electricity.regulatory.affairs@fortisbc.com

January 19, 2016

BCUC RIB RATE REPORT
EXHIBIT A-9

Ms. Jessica McDonald
President and Chief Executive Officer
British Columbia Hydro and Power Authority
16th Floor – 333 Dunsmuir Street
Vancouver, BC V6B 5R3

Mr. Michael Mulcahy
President and Chief Executive Officer
FortisBC Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Dear Ms. McDonald and Mr. Mulcahy:

Re: Residential Inclining Block Rate Report to the Government of British Columbia

By letter dated July 6, 2015, Minister Bennett, the Minister of Energy and Mines and the Minister Responsible for Core Review, requested the British Columbia Utilities Commission (Commission) report to the Government of British Columbia on five specific questions concerning the impact of the British Columbia Hydro and Power Authority (BC Hydro) and FortisBC Inc.'s (FortisBC) residential inclining block rates.

On August 17, 2015, the Commission issued a letter (Exhibit A-1) establishing the Residential Inclining Block (RIB) Rate process and requested submissions from BC Hydro and FortisBC on the methodology by which they proposed to answer the Minister's five questions. The Commission also requested input from select stakeholders on the proposed methodologies submitted by the utilities.

On September 24, 2015 and September 30, 2015 BC Hydro and FortisBC, respectively provided their submissions on the methodology by which they proposed to answer the Minister's five questions. By October 16, 2015 select stakeholders provided their submissions on proposed methodology for the utility reports on the five questions. Submissions were received from:

- British Columbia Old Age Pensioners' Organization *et al.* (BCOAPO);
- B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA);
- Commercial Energy Consumers Association of British Columbia (CEC);
- Canadian Office & Professional Employees Union 378 (COPE);
- Norman Gabana; and
- Teresa and Nick Marty;

On November 10, 2015, the Commission and stakeholders asked information requests (IR) to BC Hydro and FortisBC on their submissions. Responses to IRs were received on December 18, 2015. Based on the information provided to date, the Commission is satisfied that sufficient information has been provided to establish the

methodologies for the reports. The Commission is establishing these methodologies based on the information provided by BC Hydro, FortisBC and the stakeholders in the submissions and IR responses.

The established definitions for key terms are provided below followed by the requirements for each of the five questions posed by the Minister. The methodologies established below apply to both BC Hydro and FortisBC, unless specifically notated.

Definitions

Access to natural gas: The "community approach" as proposed by BC Hydro at page 5-70 of the 2015 Rate Design Application and further elaborated on in IR response 1.48.2, shall be used for the purpose of defining "access to natural gas." FortisBC confirmed it will use the same approach as proposed by BC Hydro.[1] As proposed, this approach will use a list of communities that have access to natural gas and a list of communities that do not have access to natural gas. Communities with access to piped propane (e.g. Revelstoke) shall be considered to have access to natural gas. For each respective service territory the utilities shall work together to confirm the final list of communities with access and without access.

Some stakeholders mentioned that a broader definition of access to natural gas such as customers that have natural gas at their premises versus those who do not, or customers who cannot afford to switch to natural gas from electricity.[2] Both BC Hydro and FortisBC responded that they do not have information on access to natural gas at that level.[3] We accept that it would not be feasible for the utilities to consider the definition of access to natural gas at such a detailed level as suggested and, therefore, it is appropriate to use to the community approach to define access to natural gas for the purposes of answering the Minister's questions.

Low-income customer: The Statistics Canada low-income cut-off (LICO) shall be used to define "low-income" customers for the purposes of this report. Pre-tax income shall be used.

While analysis of energy or fuel poverty was suggested by one stakeholder,[4] BC Hydro and FortisBC submit that they either have no research on this topic or that the analysis is "not a simple task" and the Minister's letter does not require this analysis and thus does not include an analysis of fuel or energy poverty in the definition of low-income.[5]

One stakeholder also suggested that it may also be useful to include the DSM definition of LICO (1.3 times LICO).[6] While this may be useful, for the purposes of this report, the Commission is satisfied that one single definition of low-income should be used.

Factors leading to high-energy use: The factors that may lead to high energy use are discussed under question 3.

Energy use: This term will refer to electricity use only for the purposes of this report for feasibility reasons. As stated by BC Hydro, it is not "…feasible to report on combined electric and natural gas usage as BC Hydro does not have access to the natural gas usage by its customers nor does FortisBC have access to BC Hydro's

[1] FortisBC Response to BCUC IR 3.1.
[2] BCOAPO October 18, 2015 Submission, p. 12; BCSEA October 18, 2015 Submission, pp. 3–4.
[3] BC Hydro Response to BCUC IR 1.48.2; FortisBC Response to BCUC IR 3.2.
[4] COPE October 18, 2015 Submission, p. 5.
[5] FortisBC Response to BCUC IR 1.1; BC Hydro Response to BCUC IR 1.46.2.
[6] COPE October 18, 2015 Submission, p. 2.

customers' electricity consumption. There would be confidentiality issues with sharing the information amongst the utilities."[7]

Minister's Questions

1. **Do the residential inclining block rates cause a cross-subsidy between customers with and without access to natural gas service?**

   To the extent data is available or can be reasonably approximated, the utilities will unbundle residential electric load data used in their most recent fully allocated cost of service (FACOS) study into two sub-classes: customers with access to natural gas and customers without.

   The utilities shall then use both (i) a FACOS approach and (ii) a comparison of average rates to long-run incremental costs approach, to analyze whether the RIB rates cause a cross-subsidy between customers with and without access to natural gas.

   i. For the FACOS analysis, no changes should be made to the costs or cost allocation methodology used in the most recent FACOS study, including the use of coincident and non-coincident peak cost allocation approaches, and the utilities shall develop unbundled revenue to cost ratios for these two sub-classes.

   ii. For the long-run incremental cost based analysis, there is no requirement to prepare a marginal cost of service study. Rather, the utilities should use the unbundled residential load profiles to compare (i) average customer rates for these two sub-classes to (ii) the utilities most recent long-run marginal cost estimate to serve these customer sub-classes.

   All key assumptions made in the above analysis shall be provided.

   In response to suggestions by stakeholders the utilities are not required to analyze a cross subsidy by comparing the RIB rate to a theoretical rate where each customer has an individual baseline or where each resident experiences the same percentage of electricity consumption in tier 2 of the RIB rate. The Commission notes that any analysis of alternative rate structures is out of scope for this proceeding.

   The utilities are also requested to comment on the potential cross-subsidy between customers using electricity for space and hot water heating, and those using natural gas, to the extent data is available.

   If a cross-subsidy is found to exist, a general discussion of any impacts or relevance of this cross-subsidy should be provided.

2. **What evidence is available about high bill impacts (greater than 10 percent as a result of the adoption of the residential inclining block rates) on low income customers?**

   A comparison of the 2015 RIB rate to a 2015 equivalent flat rate that would have been in place if the RIB rate was not implemented shall be used to aid in the research required to answer this question. Analysis of impacts of moving from the RIB to a flat rate and vice versa shall be provided. The Residential End Use Surveys (REUS) shall be used for the purposes of answering this question.

[7] BC Hydro Response to BCUC IR 1.47.1.1.

According to both utilities, it will not be possible to obtain actual numbers of customers based on income that would be worse off or better off under the RIB or the flat rate. Accordingly, percentages are acceptable to the Commission.

The Commission requires FortisBC to conduct the additional research and analysis of the REUS in conjunction with their research partner. FortisBC has submitted that this additional research and analysis will cost approximately $15,000. The Commission recognizes the need for cost efficiency regarding this proceeding, and is of the view that this cost is reasonable. FortisBC indicates that this estimate may change if additional consulting time is required.[8] If the cost of this work is expected to or does exceed this amount FortisBC must inform the Commission and seek approval.

3. **What evidence is available about factors that lead to high energy use and, therefore, bill impacts for customers without access to natural gas, including low income customers?**

For the purposes of answering this question, the utilities shall provide analysis of:

a. all factors that lead to high energy use and therefore bill impacts;

b. factors that lead to high energy use and therefore bill impacts for customers with access to natural gas;

c. those factors from a) that lead to high energy use and therefore bill impacts for customers without access to natural gas; and

d. those factors from c) that lead to high energy use and therefore bill impacts for customers without access to natural gas who are also low income.

The most current Residential End-use Surveys (REUS), as proposed by the utilities in their submissions on the methodology for responding to the Minister's questions shall be used for the purpose of answering this question.[9]

To the extent the data is available, the Commission requests each utility to examine the following list of factors that may lead to high energy use (if any of the factors listed below do not correlate with high energy use, please explain why):

- all end-uses as listed in FortisBC IR 2.2.1 and 2.3.1 and BC Hydro IR 1.47.2.1 and 1.47.4.1, and including primary space heating and cooling equipment, secondary space heating equipment, water heating equipment, air cleaning systems, cooking appliances, laundry and dishwashing appliances, fridges and freezers, small household appliances, water use items, swimming pools, hot tubs, saunas, lighting, computers, televisions, entertainment appliances, plug load power management items, miscellaneous electric end uses.
- housing type
- presence of electric vehicles
- size of house
- owner occupied vs. rented
- urban vs. rural location

[8] FortisBC Response to BCUC IR 1.1.
[9] FortisBC September 30, 2015 Submission, p. 4 and BC Hydro September 24, 2015 Submission, p. 5-69.

- number of occupants
- households with / without children
- age of primary occupant
- whether primary occupant is retired or not retired
- regional climate or heating degree days
- age of house
- household energy inefficiency
- customer behaviour

In addition, to the extent that data is available, the Commission also requests the utilities to:

- produce a chart to display the following three dimensions of data:
  i. on the x axis: household income by quintile (bottom 20%, 20% to 40% etc.) or decile
  ii. on the y axis: kWh consumption by decile, and
  iii. with the number and/or percentage of customers in each category.
- provide examples of typical residences that consume 10,000, 20,000 and 30,000 kWh/year and explain, to the fullest extent possible, the difference in electricity consumption among them.
- include discussion on the usefulness of this data in relation to the sample size of the REUS survey.

4. **What is the potential for existing Demand Side Management programs to mitigate these impacts?**

The Commission acknowledges BC Hydro's position that this is not the appropriate venue for an assessment of Demand Side Management (DSM) programs or any direction on these programs. However, the Commission notes that this is an information gathering and research process. Accordingly, to answer this question the utilities are to provide a list and brief description of existing programs that customers can participate in that can impact the factors identified in question 3 that lead to high energy use.

The utilities shall examine the potential for existing DSM programs to mitigate the key factors that lead to high energy use and therefore bill impacts, in particular for low-income customers and those without access to natural gas. The utilities should also address the aspect of household energy inefficiency, even at a high level, in examining the potential for existing DSM programs to mitigate high energy use and therefore bill impacts.

The utilities should assume no changes to existing DSM programs or incentive levels. In identifying DSM programs, it would be useful if utilities also identified typical bill reductions that an illustrative high use customer participating in the DSM programs would see, and the extent to which these bill reductions (less any customer participation costs) mitigate bill increases resulting from the RIB rate.

In addition, utilities are also invited to comment on whether improvements could be made to increasing uptake or overcoming barriers to participating in these existing DSM programs by high-use customers, in particular low-income customers and those without access to natural gas.

5. **Within the current regulatory environment, what options are there for additional Demand Side Management programs, including low income programs?**

   As stated above, this process is an information gathering one and, for the purposes of this report the utilities are required to identify any additional DSM programs (for example, offered in other jurisdictions) that are targeted at the key drivers of high-energy use, in particular for low-income customers and those without access to natural gas.

   Utilities should also identify typical bill reductions that a high use customer participating in these potential additional DSM programs would see, and the extent to which these bill reductions (less customer participation costs) could mitigate bill increases resulting from the RIB rate.

   Utilities are invited to indicate (in general terms) if they are supportive of any of the potential additional DSM programs identified, and if so, whether they could be funded out of the existing DSM funding envelope.

Yours truly,

Erica Hamilton

PW/kbb
cc: Stakeholders

APPENDIX E – DSM funding analysis

BC Hydro

The following data were included in the most recent BC Hydro Revenue Requirements Application (RRA):[1]

	Expenditures			
	F14-F16 $ 000	F17-F19 $ 000	Variance $ 000	%
DSM Programs				
Residential Sector				
Behaviour	14,002	11,114	(2,888)	(21%)
Refrigerator Buy-back	5,010	-	(5,010)	(100%)
Low Income	7,647	7,802	156	2%
New Home	6,363	-	(6,363)	(100%)
Retail Rebate	12,583	8,135	(4,447)	(35%)
Home Energy Retrofit Offer	7,447	8,280	832	11%
Sector Enabling Activities	3,784	2,552	(1,232)	(33%)
Residential Sector Total	56,835	37,883	(18,952)	(33%)
Supporting Initiatives				
Public Awareness and Education	19,430	20,883	1,452	7%
Community Engagement	12,302		(12,302)	(100%)

Based on the above data, the Commission has created the following tables for analysis:

Table 1: Residential BC Hydro forecast DSM expenditures (F2014-F2016 and F2017-F2019)

	F14-F16 $'000	F17-F19 $'000	Variance $'000	Variance %
Residential – low income	7,647	7,802	156	2%
Residential – other				
• Behaviour	14,002	11,114	(2,888)	(21%)
• Fridge buy-back	5,010	-	(5,010)	(100%)
• New home	6,363	-	(6,363)	(100%)
• Retail rebate	12,583	8,135	(4,447)	(35%)
• Home renovation (HERO)	7,447	8,280	832	11%
• Sector enabling	3,784	2,552	(1,232)	(33%)
• Total	49,188	30,081	(19,108)	(39%)
Total	**56,835**	**37,883**	**(18,952)**	**(33%)**

Table 2: BCH awareness/community forecast DSM expenditures (F2014-F2016, F2017-F2019)

	F14-F16 $'000	F17-F19 $'000	Variance $'000	Variance %
Public awareness and education	19,430	20,883	1,452	7%
Community engagement	12,302	-	(12,302)	(100%)
Total	**31,732**	**20,883**	**(10,849)**	**(34%)**

[1] BC Hydro 2017-2019 Revenue Requirements Application (RRA) proceeding, Exhibit B-9, BCUC IR 184.6

FortisBC

The following data were included in the most recent FortisBC DSM expenditure applications:[2]

Portfolio area	2016 Approved	2017 Planned	% change
Residential (excl. low income)	2,397	1,351	(44%)
Low income & rental	952	1,367	44%
Residential (total)	3,349	2,718	(19%)

	Program Area	2016 Approved		2017 Plan	
		Savings MWh	Cost ($000s)	Savings MWh	Cost ($000s)
1	Home Improvement	3,106	884	364	348
2	Heat Pumps	1,618	302	781	298
3	New Home	1,179	390	126	151
4	Lighting	1,547	189	2,735	190
5	Appliances	288	96	126	133
6	Water Heating	948	430	17	30
7	Low Income & Rentals	3,175	952	3,247	1,367
8	Behavioural	1,048	106	3,097	200
9	**Total**	**12,909**	**3,349**	**10,493**	**2,718**

Based on the above data, the Commission has created the following table for analysis:

Table 3: Residential FortisBC forecast DSM expenditures (2016 and 2017)

	2016 $'000	2017 $'000	Variance $'000	Variance %
Residential – low income and rental	952	1,367	415	44%
Residential – other				
• Home renovation	884	348	(536)	(61%)
• Heat pumps (air)	302	298	(4)	(1%)
• New home	390	151	(239)	(61%)
• Lighting	189	190	1	1%
• Appliances	96	133	37	39%
• Water heating	430	30	(400)	(93%)
• Behavioural	106	200	94	89%
• Total	2,397	1,351	(1,046)	(44%)
Total	**3,349**	**2,718**	**(631)**	**(19%)**

[2] FortisBC 2017 DSM Expenditures Order and Reasons for Decision (G-9-17), p. 6, FortisBC 2017 DSM Expenditures Application, p. A2.

APPENDIX F – Newspapers, regional districts and municipalities to which public notice was sent/published

1st Public Comment Phase – July 15 – September 2, 2016

Newspapers[1]		
100 Mile Free Press	Kamloops This Week	Smithers Interior News
Barriere North Thompson Star Journal	Kootenay News Advertiser	Sunshine Coast – The Local
Bridge River Lillooet News	Lake Cowichan Gazette	The Okanagan Sunday
Burns Lake District News	Nakusp Arrow Lakes News	The Province
Campbell River Mirror	Nanaimo News Bulletin	Times Colonist
Clearwater North Thompson Times	North Island Gazette	The Vancouver Sun
Golden Star	Northern Connector	Tofino – Ucluelet Westerly News
Gulf Islands Driftwood	Prince George Citizen	Valley Voice
Haida Gwaii Observer	Shuswap Market News	Williams Lake Cariboo Advisor
Invermere Valley Echo		

Regional Districts		
Alberni Clayoquot	Fraser-Fort George	Nanaimo
Bulkley - Nechako	Kitimat-Stikine	Skeena Queen Charlotte
Capital	Mount Waddington	Squamish – Lillooet
Cariboo	North Okanagan	Strathcona
Central Coast	Kootenay Boundary	Sunshine Coast
Columbia Shuswap	Peace River – Fort St. John Branch	Thompson Nicola
Comox Valley	Peace River – Head Office	Northern Rockies
Cowichan Valley	Powell River	Okanagan-Similkameen
Fraser Valley – Deroche Office	Central Kootenay	Central Okanagan
Fraser Valley – Head Office	East Kootenay	

Municipalities[2]			
Alert Bay	Barriere	Bowen Island	Canal Flats
Clearwater	Gingolx(Kincolith)	Gitsegukla	Gold River
Golden	Granisle	Hazelton	Invermere
Kispiox	Lake Cowichan	Laxgalt'sap (Greenville)	Lillooet
Lions Bay	Lytton	Manning Park	Masset
Nakusp	New Denver	New Hazelton	Pemberton
Port Clements	Port Hardy	Port McNeill	Powell River
Queen Charlotte	Radium Hot Springs	Sayward	Sicamous
Silverton	Stewart	Tahsis	Takla
Tl'azt'en Nation (Tahcie Reserve)	Tofino	Ucluelet	Valemount
Wells			

[1] Exhibits A-13, A-14.
[2] Exhibit A-21.

2nd Public Comment Phase – October 7 – November 24, 2016

Newspapers			
100 Mile House Free Press	Abbotsford News	Agassiz-Harrison Observer	Alberni Valley News
Aldergrove Star	Ashcroft Cache Creek Journal	Barriere N. Thompson Star Journal	Bridge River Lillooet News
Burns Lake District News	Campbell River Mirror	Castlegar News	Chilliwack Progress
Chilliwack Times	Clearwater N. Thompson Times	Cloverdale Reporter	Comox Valley Echo
Comox Valley Record	Cranbrook Kootenay News Advertiser	Cranbrook Townsman	Creston Valley Advance
Duncan Cowichan Valley Citizen	Fernie Free Press	Fort St. James Caledonia Courier	Golden Star
Goldstream News Gazette	Grand Forks Gazette	Greenwood Boundary Creek Times	Haida Gwaii Observer
Hope Standard	Houston Today	Invermere Valley Echo	Island Tides
Kamloops This Week	Kelowna Capital News	Keremeos Review	Kimberley Bulletin
Kitimat Northern Sentinel	Ladysmith Chronicle	Lake Cowichan Gazette	Lakeshore News- Salmon Arm
Langley Advance	Langley Times	Maple Ridge/Pitt Meadows News	MapleRidge Times
Merritt Herald	Mission City Record	Nakusp Arrow Lakes News	Nanaimo News Bulletin
Nelson Star	North Delta Reporter	North Island Gazette	Northern Connector
Oak Bay News	Okanagan Valley	Oliver Chronicle	Osoyoos Times
Parksville Qualicum News	Peace Arch News	Peachland View	Peninsula News Review
Penticton Western News	Prince George Citizen	Prince Rupert Northern View	Princeton Similkameen Spotlight
Quesnel Cariboo Observer	Revelstoke Times Review	Rossland News	Saanich News
Salmon Arm Observer/Market News	Sicamous Eagle Valley News	Smithers Interior News	Sooke News Mirror
Summerland Review	Sunshine Coast - The Local	Surrey/N. Delta Leader	Surrey/N. Delta Now
Terrace Standard	The Province	Times Colonist	Tofino/Ucluelet Westerly News
Trail Times	Valemount Valley Sentinel	Valley Voice	Vancouver Sun
Vanderhoof Omineca Express	Vernon Morning Star	Victoria News	Stuart/Nechako Advertiser
West Kootenay Advertiser	Williams Lake Tribune Weekend Advisor	Williams Lake Tribune	Winfield Lake Country Calendar

The regional districts and municipalities identified in the 1st public comment phase were sent public notice in the 2nd public comment phase.[3]

[3] Exhibit A-21. Note: Exhibit A-20 states that the list of Regional Districts in included. Unfortunately this list was inadvertently omitted from that exhibit. The full list is included here.

APPENDIX G – List of Communities without access to natural gas

1.1 BC Hydro

In conjunction with Fortis BC, BC Hydro has identified customers in the following communities without access to natural gas for the purpose of analysis for its RIB Report.[1]

108 MILE HOUSE	108 RANCH	ADAMS RIVER	ALERT BAY
ALEXIS CREEK	ALKALI LAKE	ALTONA	ANAHIM LAKE
ANGLEMONT	ARGENTA	ARRAS	ATLIN
BALDONNEL	BAMFIELD	BARRIERE	BAYNES LAKE
BEAR LAKE	BELLA BELLA	BELLA COOLA	BIG LAKE
BLACKPOOL	BOWEN ISLAND	BOWSER	BRENNAN CREEK
BRIDGE LAKE	BRITANNIA BEACH	BULL RIVER	BURTON
CANAL FLATS	CANIM LAKE	CANOE	CASSIDY
CASTLEDALE	CECIL LAKE	CEDARSIDE	CEDARVALE
CELISTA	CHERRYVILLE	CHILANKO FORKS	CHU CHUA
CLAYHURST	CLEARWATER	CLUCULZ	CLUCULZ LAKE
CORTES ISLAND	DARCY	DEKA LAKE	DENMAN ISLAND
DEROCHE	DOE RIVER	DONALD	EAGLE BAY
EAST ARROW PARK	EDGEWATER	EDGEWOOD	EGMONT
ENGEN	FAIRMONT	FAIRMONT HOT SPR	FANNY BAY
FARMINGTON	FAUQUIER	FIELD	FOREST GROVE
FORT BABINE	FORT STEELE	FRANCIS PENINSLA	FRANCOIS LAKE
GABRIOLA ISLAND	GALENA BAY	GALIANO ISLAND	GAMBIER ISLAND
GARDEN BAY	GILLIES BAY	GITSEGUKLA	GOLD RIVER
GOLDBRIDGE	GOLDEN	GRANISLE	GRASMERE
GREENVILLE	GROUNDBIRCH	HAGENSBORG	HANCEVILLE
HAZELTON	HENDRIX LAKE	HILLS	HONEYMOON BAY
HORNBY ISLAND	HORSEFLY	INVERMERE	JORDAN RIVER
KINCOLITH	KINGSGATE	KISPIOX	KITKATLA
KITWANGA	LAC LE JEUNE	LAKE COWICHAN	LEE CREEK
LIKELY	LILLOOET	LIONS BAY	LUND
LYTTON	MADEIRA PARK	MAGNA BAY	MALAKWA
MANNING PARK	MARA	MARBLEHEAD	MARYSVILLE
MASSET	MAYNE ISLAND	MCBRIDE	MCLEESE LAKE
MCLURE	MEADOW CREEK	MOBERLY LAKE	MONTNEY
MOUNT LEHMAN	MOYIE	NAKUSP	NASS CAMP
NAZKO	NEW ANGLEMONT	NEW DENVER	NEW HAZELTON
NICHOLSON	NIMPO LAKE	PANORAMA	PARSON
PAVILION	PEMBERTON	PENDER ISLAND	PORT CLEMENTS
PORT HARDY	PORT MCNEILL	PORT RENFREW	PRESPATOU
PRIESTLEY	PROGRESS	QUADRA ISLAND	QUEEN CHARLOTTE

[1] BC Hydro RIB Report, Appendix A.

RADIUM	RADIUM HOT SPRINGS	RANCH	REVELSTOKE
ROSE PRAIRIE	ROSEBERY	ROSSWOOD	RUMBLE BEACH
S GREEN LAKE	SALMON BEACH	SALT SPRING ISLAND	SANDSPIT
SATURNA ISLAND	SAYWARD	SCOTCH CREEK	SETON PORTAGE
SHERIDAN LAKE	SICAMOUS	SILVERTON	SKIDEGATE
SKOOKUMCHUCK	SOINTULA	SOUTH HAZELTON	SOUTH KIMBERLEY
SOUTHBANK	ST IVES	STEWART	SUN PEAKS
SUNSHINE VALLEY	TA TA CREEK	TAHCIE RESERVE	TAHSIS
TAKLA LANDING	TAKYSIE LAKE	TATLA LAKE	TELEGRAPH CREEK
THETIS ISLAND	TLELL	TOD MOUNTAIN	TOFINO
TOMS LAKE	TOPLEY LANDING	TYEE LAKE	UCLUELET
UNION BAY	UPPER LOUIS CREEK	VALEMOUNT	VAN ANDA
VAVENBY	WALACHIN	WASA	WATCH LAKE
WELLS	WILMER	WINDERMERE	WONOWON
YALE	YOUBOU		

1.2 FortisBC

The list of communities in the FortisBC service area identified as lacking natural gas service is below:[2]

Tulameen	Riondel
Bridesville	Kaslo
Beaverdell	Winlaw
Ymir	Slocan
Crawford Bay	

[2] FBC RIB Report, p. 4.