Diane Roy
Director, Regulatory Services

Gas Regulatory Affairs Correspondence
Email: gas.regulatory.affairs@fortisbc.com

Electric Regulatory Affairs Correspondence
Email: electricity.regulatory.affairs@fortisbc.com

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (604) 576-7349
Cell: (604) 908-2790
Fax: (604) 576-7074
Email: diane.roy@fortisbc.com
www.fortisbc.com

November 28, 2014

Via Email
Original via Mail

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC V6Z 2N3

Attention: Ms. Erica M. Hamilton, Commission Secretary

Dear Ms. Hamilton:

Re: FortisBC Inc. (FBC)

Residential Conservation Rate Information Report for the Period July 1, 2012 to June 30, 2014

British Columbia Utilities Commission (BCUC or the Commission) Orders G-182-13A and L-7-14 Compliance Filing

---

On January 13, 2012, the Commission issued Order G-3-12, directing FBC to implement a Residential Inclining Block (RIB) rate. On October 31, 2013, pursuant to Commission Order G-127-13, FBC filed its preliminary Residential Conservation Rate Information Report (RCR Report) with the Commission. On November 7, 2013, the Commission issued Order G-182-13A, extending the filing date for the RCR Report directed by Commission Order G-3-12 from December 31, 2013 to November 30, 2014. On January 30, 2014, the Commission issued Letter L-7-14, directing FBC to collect data from customer consultations and analysis of individual monthly billing impacts for potentially heavily impacted customers, and to file its next RCR Report on November 30, 2014.

Please find attached the RCR Report covering the period July 1, 2012 to June 30, 2014.

If further information is required, please contact Corey Sinclair, Manager, Regulatory Affairs at 250-469-8038.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

FORTISBC INC.

Residential Conservation Rate Information Report

For the Period July 1, 2012 to June 30, 2014

November 28, 2014

Table of Contents

List of Appendices

Index of Tables and Figures

1. INTRODUCTION AND BACKGROUND

1.1 *EXECUTIVE SUMMARY*

This 2014 Residential Conservation Rate Report (the 2014 Report) is the second report filed by FortisBC Inc. (FBC or the Company) with the British Columbia Utilities Commission (the Commission or BCUC). The intent of the report is summarized by the Commission as providing, *"…FortisBC, the Commission and the Interveners the opportunity to evaluate the effectiveness of the Residential Conservation Rate program, in particular with respect to its impact on conservation."*[1]

The report examines the impact of the Residential Conservation Rate (RCR) on customers, in terms of its impact on customer bills generally and on specific segments of customers such as those with electric heat, no access to natural gas service, and those that have installed alternative heating methods such as heat pumps.

Both the report filed in 2013 and the current report were to examine the potential impact of structural changes to the RCR. As the potential changes remain the same as in 2013, the Company relies on the discussion in last year's report in fulfillment of this requirement.

The conservation impact of the RCR is determined through an extensive analysis of billing records and consumption history to arrive at an estimate of energy savings driven solely by the RCR, and provides a measure of the elasticity of demand for the residential customers in the FBC service area. The work done in this area was performed by an external consultant and the full results are included in Appendix B.

Key findings from the body of this report include:

- 68.5% of customers were billed less under the RCR than they would have been billed under the flat rate that would have been in place if the RCR was never implemented. This is a smaller proportion of customers than the 70.3% identified in the first year of the rates existence.
- 8.4% of customers received total billing greater than 10% higher under the RCR than they would have received under the flat rate over the report period.
- Bill impact has increased at least in part due to the manner in which rate increases have been applied to the components of the RCR.[2] The increasing spread between the Tier 1 and Tier 2 rates will end with the January 1, 2015 rate increase after which, per standard practice, general rate increases will be applied to all billing determinants equally. At that time, it will also be possible apply any future rate increases in a manner (such as over-collecting Tier 1 revenue) that would bring the differential down closer to that which existed when the RCR was first approved.

[1] Commission Order G-182-13A, Directive 2
[2] These "Pricing Principles" were established by Commission Order G-3-12

- Bill impacts were greater for those customer groups with electric heat, no access to natural gas, and alternative heating systems such as heat pumps. (This is unsurprising as bill impact is greater on *any* group with higher consumption relative to other customers *regardless* of the reason).
- The RCR is delivering conservation results of between 36 and 46 GWh, or 2.6-3.3% of total system requirements. This range is narrower and lower at the high end than the estimate for first year savings of 19 to 57 GWh included in the original Application.
- The Elasticity of Demand for the FBC residential customer group is estimated at -0.16 to -0.20.
- The RCR continues to be revenue neutral to FBC when considered in light of revenues expected from billing solely under an equivalent flat rate. The RCR results in no additional revenue for FBC.
- Survey results from high-use customers confirm that their premises tend to have characteristics that would be expected to lead to high consumption (such as swimming pools, hot tubs and secondary suites) in higher percentages than customers overall, but do not generally show a great difference in demographics such as age or income level except at the highest income category (>$125,000 / year) which made up a much higher percentage in the high-use group.
- Survey results from high-use customers confirm the positive correlation between electric heat, heat pump use and lack of natural gas availability with the generally higher bill impacts shown by billing impact analysis specific to those groups.
- Indirect customers (those served by the Wholesale Municipal customers of FBC) exhibit similar consumption characteristics as do direct customers of FBC. It is difficult to determine the impact of a stepped Wholesale rate due to a lack of industry information; however, the Company has identified some potential concerns with the concept.
- Wholesale stepped rates are possible and should not be dismissed however further analysis and direct involvement of the Wholesale customers is required.

While the additional year of data included in the 2014 Report has been useful in narrowing both the range of the elasticity measure and conservation results, the Company does not consider any of the results surprising given that any customer attribute resulting in consumption greater than approximately 2,500 kWh in a billing period will lead to bills that are greater than under a flat rate, and this impact will increase with consumption. The Company does not expect that further analysis of the items included in the Orders outlining the report requirements, or the filing of another report in a years' time will add much of value to the findings or understanding of the RCR impact. The Company respectfully submits that the impact of the RCR is generally understood and the reporting requirement should end with the filing of this report.

1.2 *REGULATORY BACKGROUND*

The Regulatory background of the Residential Conservation Rate (RCR) for the period preceding the filing of the first RCR Report on October 31, 2013 (the 2013 Report) was provided as part of that report which is available for viewing or download on the FortisBC website and has been included as Appendix E to this report.

The 2013 Report fulfilled the reporting requirements that were issued by the Commission in Order G-3-12. That Order mandated that FBC implement the Residential Conservation Rate (RCR) beginning with the July 2012 billing period. Prior to July 2012, FBC residential customers were billed under a flat rate consisting of two rate components – a fixed Customer Charge, and a flat Energy Charge that did not vary with the level of consumption.

In addition, Commission Order G-3-12 specified the manner in which future rate increases were to be applied to the various rate components,

> *FortisBC is directed to apply Pricing Principle 1 to future rate increases for the years 2012 to 2015. Specifically:*
>
> *(a) The Customer Charge is exempt from general rate increases, other than rate rebalancing increases;*
>
> *(b) The Block 1 rate is subject to general and rebalancing rate increases; and*
>
> *(c) The Block 2 rate is increased by an amount sufficient to recover the remaining required revenue (i.e., the residual rate).*[3]

Commission direction regarding the filing of the 2013 eport on the RCR is summarized below:

The 2013 Report	
Order G-3-12	The Order that established the parameters for the RCR and also specified the information that was to be included in the 2013 Report. This Order also directed FBC to establish a control group in conjunction with the introduction of the RIB rate to develop elasticity data for its own customers. Order G-3-12 is attached as part of Appendix A.
Order G-127-13	Required an interim report to be filed by FBC by October 31, 2013 covering the period between the date of implementation and July 31, 2013, and amended the scope of the report to include additional items required by the Commission (the 2013 Report). Order G-127-13 is attached as part of Appendix A.
Order G-153-13	At the request of the Company, this Order changed the period to be included in the 2013 Report to July 1, 2012 to June 30, 2013 inclusive. Order G-153-13 is attached as part of Appendix A.

[3] The final rebalancing rate increase was applied to the residential rates on January 1, 2013.

Subsequent to the filing of the 2013 Report, the Commission issued a number of Orders concerning the information to be provided by the current report (the 2014 Report). The requirements of Order G-182-13A are fundamentally the same as those included in Order G-127-13 for the 2013 Report, (and summarized below) and thus the 2014 Report represents an updating of that information, with the benefit of an additional year of data. Letter L-7-14 includes additional reporting requirements. As such, this 2014 Report generally follows the format of the 2013 Report. The particulars of the more recent Commission Orders are below.

The 2014 Report	
Order G-182-13A	This Order specified the information that was to be included in the 2014 Report. Order G-182-13A is attached as part of Appendix A.
Letter L-7-14	This letter directed FBC to collect "additional information from potentially heavily impacted customers including residences that do not have access to other sources of heating fuel {such as natural gas) as well as customers using heat pumps." Letter L-7-14 is attached as part of Appendix A.

Key Directives for FBC contained in Order G-182-13A, as they appear in the Order, are:

1. The filing date deadline for the 2014 Residential Conservation Rate Evaluation Report is November 30, 2014;
2. The Report must cover the period from the date of implementation (July 1, 2012) to June 30, 2014 and should provide FortisBC, the Commission and the Interveners the opportunity to evaluate the effectiveness of the Residential Conservation Rate program, in particular with respect to its impact on conservation. The Report must include, but is not limited to the following:
3. The energy consumption reductions achieved;
    a. Whether the consumption reductions persist or are temporary;
    b. How the rate design impacts electric heat customers including how has the rate impacted customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available;
    c. Evaluate the impact the rate is having on customers that have no access to natural gas;
    d. The resulting cost implications to the utility including the resulting change in revenue earned to the utility (is the rate revenue neutral?);
    e. Provide an evaluation of the feasibility of changing the rate structure and/or the threshold. Potential options to be evaluated include:
        i. Threshold set too high or too low

ii. Household threshold

iii. Advanced Metering Infrastructure (AMI) based individual threshold

iv. Other;

f. Provide an evaluation as to how the rate structure works with the Equal Payment Plan and indicate what action FortisBC is taking to ensure estimated bills are accurate; and

g. Overall impact on customers due to the introduction of the RCR:

i. Percentage who have seen their bills decrease and by how much?

ii. Percentage who have seen their bills increase and by how much?

iii. How many customers have taken advantage of the Residential Demand Side Management Reduce Your Use program, which was introduced in 2012 to coincide with the introduction of the RCR?

iv. Comparison of the actual impacts of the RCR versus anticipated impacts. Please indicate if any lessons were learned on this matter.

4. The Report must also include an in-depth analysis of:

a. The full long-run marginal cost to acquire energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate;

b. The combined effect of integrating Time of Use and RCR rates on the conservation achieved by the RCR, should that information be available;

c. An update of the Conservation Potential Review and report on the potential effects of interaction between RCR rates and Demand Side Management targets;

d. Comparison of energy usage of indirect customers with the energy usage of direct customers; and

e. An analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers.

The collection of additional data on potentially heavily impacted customers, pursuant to Letter L-7-14, has been accomplished through the use of a survey instrument. This information is presented in detail in a later section of this report.

1.2.1 Scope of the 2014 Report

The 2014 Report is the second report produced by FBC that summarizes the impact on customer bills and consumption resulting from the implementation of the RCR on July 1, 2012. The first report was dated October 31, 2013 and covered the 12 month period from the implementation of the RCR (July 1, 2012) to June 30, 2013. This report covers a 24 month period from the implementation date through to June 30, 2014.

With only minor differences, the information required by the Commission for the 2014 Report is consistent with that required for the 2013 Report.[4] By virtue of this, the 2014 Report is primarily an update of the data contained in the 2013 version. An additional requirement for the 2014 Report is the analysis of high-consumption customers that was mandated by Commission Letter L-7-14.

The 2014 Report is an information report. FBC understands that certain stakeholders wish to alter the RCR rate structure in order minimize the negative impacts on high-consumption customers. However, the Company is not aware of new information that has come to light during the period that has elapsed since the filing of the 2013 Report, and believes that the analysis of potential rate changes included in that report continues to be valid. The fact that the RCR has an adverse bill impact on high consumption customers, regardless of the reason for that consumption, was known prior to the implementation of the RCR, was confirmed by the 2013 Report, and is again confirmed by this report.

As discussed in the 2013 Report, structural changes to the RCR that favour one set of customers (such as those with electric heat), would generally disadvantage another set of customers (such as those with non-electric heat). FBC does not believe that the regulatory regime within the Province provides for rate-setting on a social, demographic, or geographic basis. The information required to design rates on a cost-to-serve differential relative to these groups, (should there be one), does not exist and will not exist until adequate data has been delivered by the Automated Metering Infrastructure ("AMI" or "Smart Meter") program.

1.3 *REPORT PARAMETERS*

There are generally two types of information required by the Commission directives related to the report. First, there is an analysis of data related to the consumption habits and billing impact of customers that are billed on the RCR. This information is produced directly from billing data and is presented in the same manner as was done in 2013.

Second, the Commission required in 2013, and repeated in the 2014 Report directives, some analysis of hypothetical changes to the structure of the RCR such as changes to the level of the consumption threshold that results in a change in billing rate from Tier 1 to Tier 2. The Company notes that this requirement is a carryover from the requirements of the initial report and while the information related to consumption and billing is affected by the longer period covered by this report, the options for structural changes are generally the same. In meeting this requirement, the Company relies on the opinions that it presented in the 2013 Report. Readers can refer to the 2013 Report for the discussion on the subject.

[4] The requirements for the 2013 Report are best gleaned from Commission Order G-127-13. The 2014 Report requirements are found in G-183-13A and Letter L-7-14.

1.4 *CUSTOMER CONCERNS AND COST SHIFTING*

The RCR continues to result in concern with certain customers related to its impact on customers with relatively high consumption. Both the Company and the Commission have fielded complaints and received input from customers with respect to perceived inequities inherent to the structure of the RCR. In many cases, it is the inability of the rate to distinguish the nature of the consumption, and the assertion that the nature of the consumption should be a consideration when applying the rate, that is at the heart of this input. What both the 2013 and 2014 versions of this report indicate is that the level of consumption is determinative in the level and direction (positive or negative) of bill impact that customers will experience. While the Company has been required to provide bill impacts segmented in a number of ways, (such as customers with electric heat, no access to natural gas, or with heat pumps), it should come as no surprise that any factor that causes consumption to be high will result in high bills relative to those that would result under the flat rate that would be in effect in the FBC service area were the RCR not in place[5]. Factors that drive higher consumption include large, leaky or poorly insulated houses, multiple buildings on one meter, or partial commercial use. In other words, a home that includes any characteristic that is likely to cause high consumption can safely be assumed to also receive higher than average bills. This is the first unavoidable conclusion regarding the RCR.

The second unavoidable aspect of the rate is that any change in the implementation of the rate that provides some relief to any customer sub-group with high consumption will result in an adjustment to rates that will negatively impact any customer sub-group of FBC's electric ratepayers with low consumption. This is because changing the structure or applicability of the RCR does not change the approved amount of revenue that must be collected from residential customers overall.

It has been variously suggested that some accommodation be provided on the basis of geography, heat source, family size or income among other factors. Any of these will result in subsidization of one group of customers by another. The information concerning customer impact was available and discussed prior to and during the regulatory process that originally considered the RCR. As such, some level of subsidization was expected and has already been deemed to be acceptable by the Commission with the approval of the rate structure. The Company does not presume that high consumption is the result of wasteful or inefficient use of electricity by its customers and acknowledges that in some cases (such as with some heat pump customers) may be the result of a conscious decision to install an option perceived to make less of an environmental impact.

[5] If FBC did not have the RCR, the flat rate would be the same as the rate used for customers in the RCR Control Group and those that qualify for the farm status exemption. This is RS03. The RCR is calculated to provide the same revenue as RS03 were RS03 the rate under which all residential customers were billed.

1.5 *BACKGROUND INFORMATION*

1.5.1 Rate Components

The rate components in effect since the introduction of the RCR are as follows:

Table 1-1: Residential Conservation Rates since Implementation

Date	July 1, 2012	January 1, 2013	January 1, 2014
Customer Charge	$29.65 Bi-Monthly	$30.33 Bi-Monthly	$30.33 Bi-Monthly
Tier 1 Rate	$0.08258/kWh	$0.08803/kWh	$0.09093/kWh
Tier 2 Rate	$0.12003/kWh	$0.12952/kWh	$0.13543/kWh
Threshold	1,600 kWh Bi-Monthly	1,600 kWh Bi-Monthly	1,600 kWh Bi-Monthly
Block Differential	1.45	1.47	1.49
Equivalent Flat Rate (Customer Charge / kWh Charge)	$30.52 / $0.09589	$32.53 / $0.10222	$33.60 / $0.10559

The structure above provides that consumption up to the threshold during a two month billing period is billed at the Tier 1 Rate and consumption above the threshold is billed at the Tier 2 rate. While the price increases at the threshold, a customer will not actually receive a higher bill than he or she would receive under the flat rate until about 2,500 kWh are consumed over a 2-month period. The differential between the Tier 1 and Tier 2 rates is intended to provide an incentive to reduce consumption. The design of the rate including the pricing of the tiers and the threshold is revenue neutral to FBC as compared to the same overall residential consumption on a flat rate.

1.5.2 Customer Composition

The aggregate FBC customer consumption profile used in the report considers information from 94,929 customer accounts, including consumption billed from July 1, 2012 to June 30, 2014 (the Report Period). These customers were drawn from the following rate types:

Table 1-2: 2014 RCR Report - Customer Composition

Rate Type	Number of Customers
Residential - Bi-Monthly Billing	79,862
Residential - Monthly Billing	15,067
Total	94,929

These customers were drawn from the total population of FBC customers (excluding those formerly served by the City of Kelowna directly as they were not billed on the RCR for the entire Report Period), and then filtered in a manner intended to ensure that those accounts with the potential to skew the results were removed. In the 2013 Report, only those accounts with consumption between 120 kWh and 100,000 kWh of consumption over the Report Period were included. For the 2014 Report, since the Report Period examines two years rather than one,

these parameters were doubled to 240 kWh and 200,000 kWh respectively. In addition, accounts without at least 120 kWh in each of the individual years were excluded. This prevents accounts that were only present in one of the years yet still satisfy the initial filter from being included. The consumption distribution for the 2013 and 2014 Report are consistent. Both are shown below.

Figure 1-1: 2013 Report Distribution (July 2012 – June 2013)

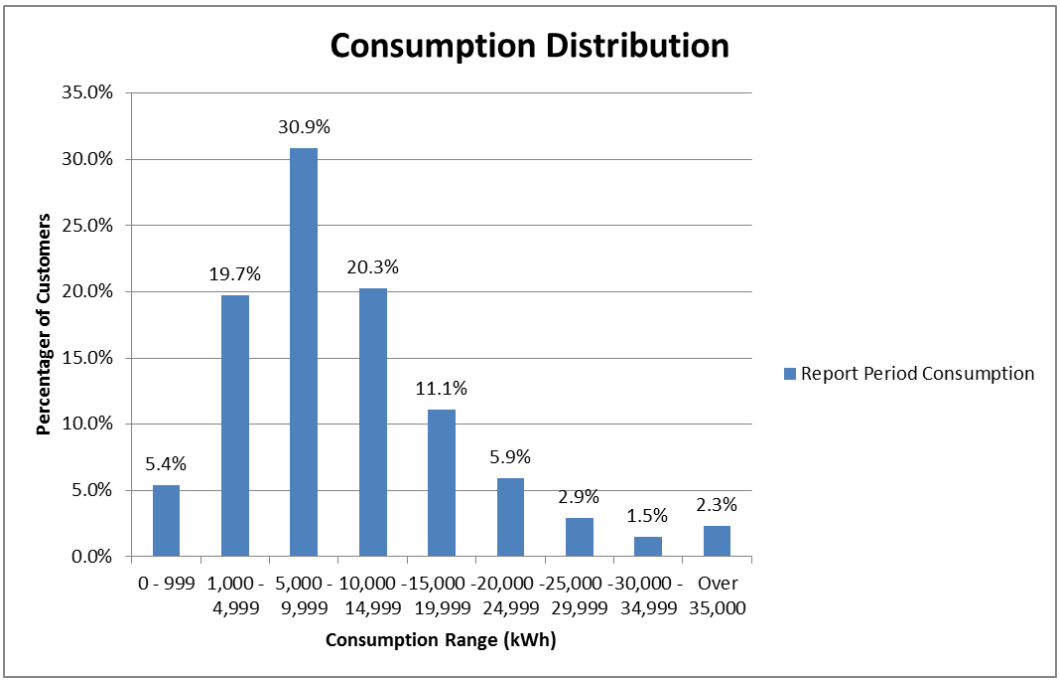


Figure 1-2: 2014 Report Distribution (July 2013 – June 2014)

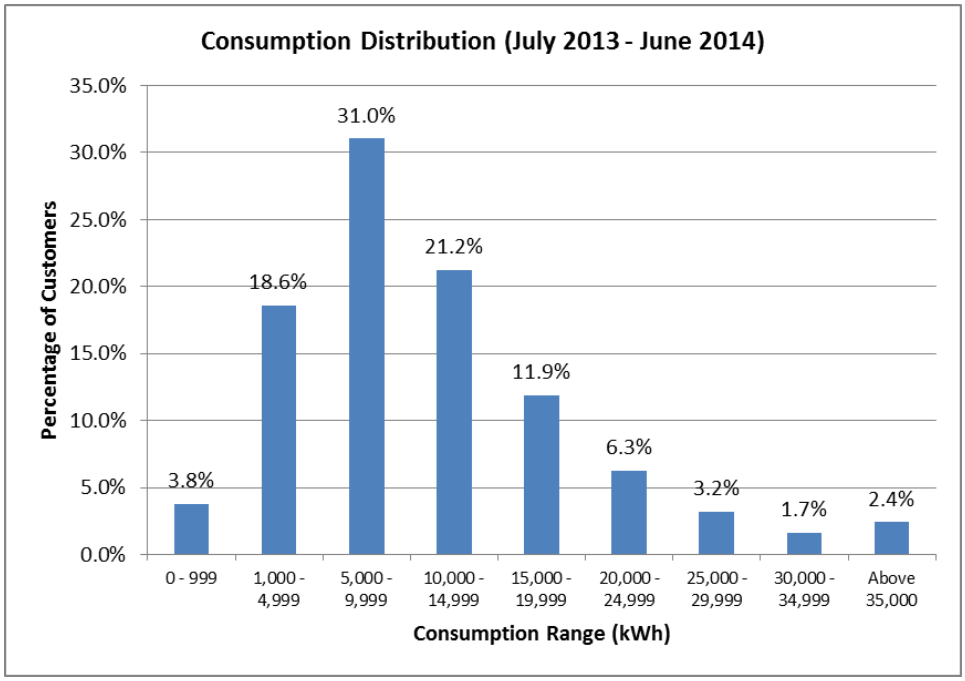


Figure 1-3: 2014 Report Cumulative Distribution (July 2013 – June 2014)

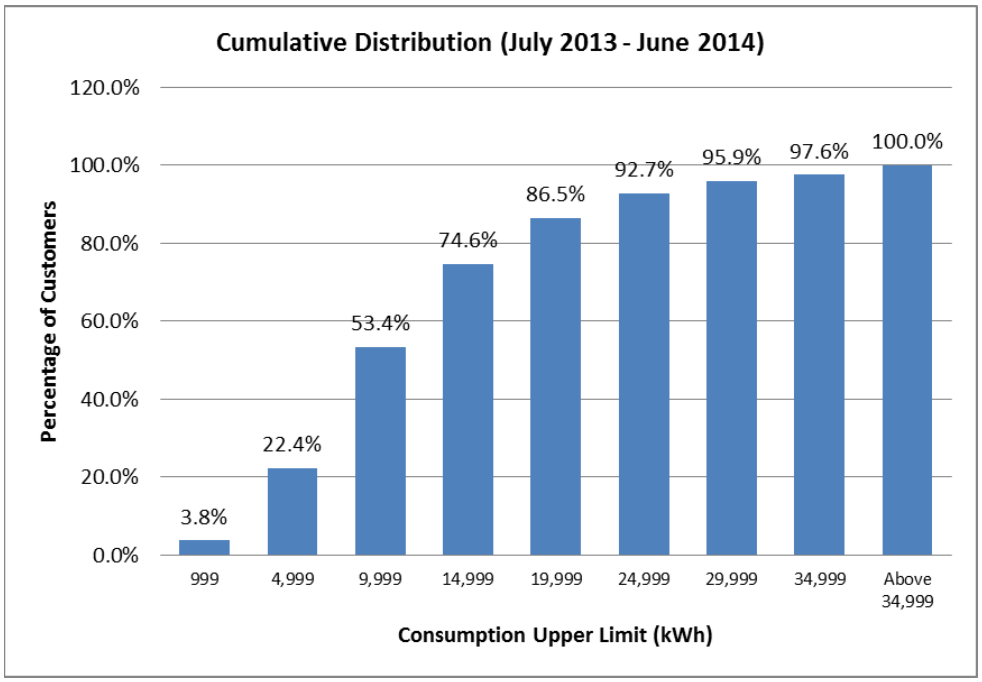


Figure 1-3 above displays the percentage of customers with consumption below a certain level. For example, 22.4% of customers had consumption during the Report Period of 4,999 kWh or less, 92.7% of customers had consumption during the Report Period of 24,999 kWh or less.

The simple annual mean consumption of the customer group is 11,512 kWh/year over the two years covered by the Report.

1.5.3 Bill Impact Methodology

The methodology employed for the 2014 Report is the same as that used in the 2013 Report. That is, the impact of the RCR on customer bill amounts over the Report Period is determined by comparing the aggregate revenue obtained by applying the RCR to the aggregate revenue that would have otherwise been collected using the equivalent flat rate. This is the same basis for comparison that was used in evaluating the original RCR Application.[6]

The customer bill impact measures included in this report are based the aggregation of individual customer consumption over the Report Period. In other words, they reflect the impact on all customers included in the analysis. Individual customer accounts will vary from the averages presented. This measure is concerned primarily with the relative level of bills received under the RCR versus the bills that would have been received under a flat rate given the same level of consumption. Such an examination provides information assuming that a customer made no behavioural or investment decisions as a result of the rate and also allows for the assessment of the revenue neutrality of the RCR.

[6] The original Application was called the Residential Inclining Block (RIB) Application.

In order to isolate the customer bill impact of the RCR it is necessary to compare the billing information calculated using the RCR against that calculated using the flat rate that would be in effect had the RCR never been implemented.[7] This rate is the same as the Residential Exempt Rate (RS03 and RS03A which differ from each other only in the level of the Threshold and Customer Charge).

The Customer Bill Impact for the Report Period was determined using the rates in effect during the period covered by the report as follows,

Table 1-3: Rates Used for Billing Impact Assessment

Date	July 1, 2012 - December 31, 2012	January 1, 2013 - December 31, 2013	January 1, 2014 - June 30, 2014
Customer Charge	$29.65 Bi-Monthly	$30.33 Bi-Monthly	$30.33 Bi-Monthly
Tier 1 Rate	$0.08258/kWh	$0.08803/kWh	$0.09093/kWh
Tier 2 Rate	$0.12003/kWh	$0.12952/kWh	$0.13543/kWh
Equivalent Flat Rate (Customer Charge / kWh Charge)	$30.52 / $0.09589	$32.53 / $0.10222	$33.60 / $0.10559

For example, a residential customer on RS01 (Residential RCR with bi-monthly billing) would normally get 6 bills per year. These six bills could have consumption as follows:

- Bill 1 1,200 kWh
- Bill 2 1,800 kWh
- Bill 3 1,900 kWh
- Bill 4 2,000 kWh
- Bill 5 1,200 kWh
- Bill 6 1,100 kWh

Total consumption is 9,200 kWh which under the RCR would be billed 900 kWh at the Tier 2 Rate and 8,300 kWh at the Tier 1 Rate assuming a 1,600 kWh Threshold.

Under the flat rate, all 9,200 kWh would be billed at the flat rate per kWh.

In each case, the applicable Customer Charge would be billed once for each of the 6 bills.

This would result in annual bills at the 2013 rates of:

[7] This comparison is the basis of the Residential Conservation Calculator available online at http://www.fortisbc.com/Electricity/CustomerService/ForHomes/ElectricityRatesExplained/ResidentialConservationRate/Pages/default.aspx

Table 1-4: Sample Bill Impact Comparison

		8,300 kWh	900 kWh	
	Customer Charge	**Tier 1 Charges**	**Tier 2 Charges**	**Total Bill**
Rate				
RCR	$ 183	$ 731	$ 117	$ 1,030
Flat Rate	$ 195	$ 940	n/a	$ 1,136

The annual totals under both scenarios are compared for all customers to determine the impact due to the RCR for each customer. This basic process was repeated for close to 95,000 customers' bills over the Report Period to arrive at the aggregate bill impact statistics for the residential customer base.

2. CUSTOMER BILL IMPACT

This section reports on the measure of, ***"Overall impact on customers due to the introduction of the RCR"*** as required by Commission Order G-183-13, as well as the impact on the specific customer groups identified within the Order.

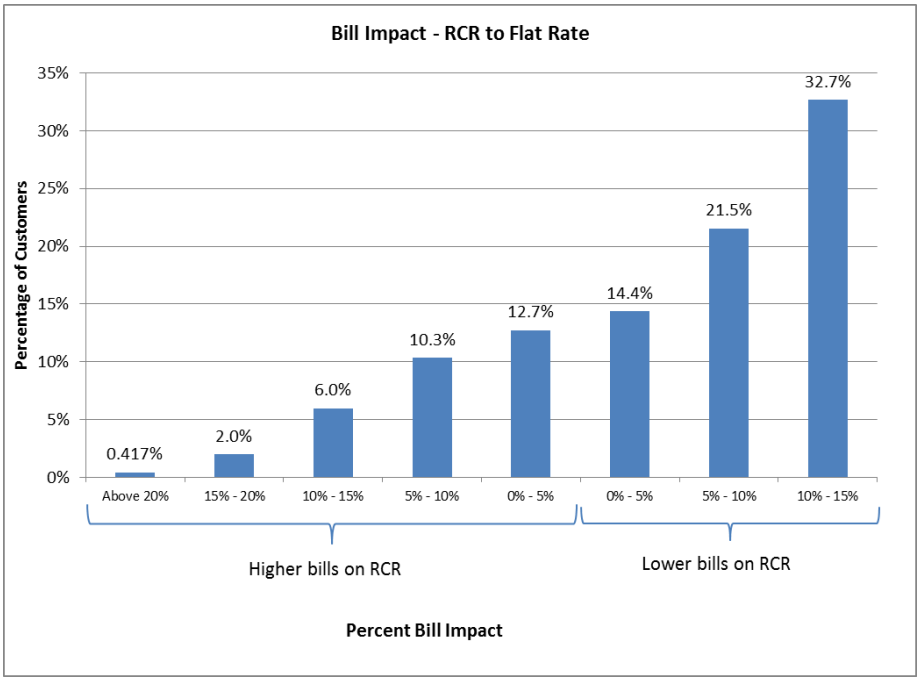
2.1 *OVERALL CUSTOMER IMPACT*

Using the bill comparison methodology described earlier, the Company has calculated the bills for the filtered customer list under both the RCR and the alternate flat rate. The table and chart below summarize the bill impact of the RCR over the 2-year Report Period on the basis of percentage of customers that would have higher or lower bills as a result of the implementation of the RCR when compared to the alternate flat rate.

Table 2-1: Customer Bill Impact by Percentage

	Bill Impact	# Records	Percent of Total
Bill Increase	Above 20%	396	0.4%
	15% - 20%	1894	2.0%
	10% - 15%	5681	6.0%
	5% - 10%	9816	10.3%
	0% - 5%	12072	12.7%
Bill Decrease	0% - 5%	13645	14.4%
	5% - 10%	20423	21.5%
	10% - 15%	31002	32.7%
Total Accounts		94929	100%

Figure 2-1: Customer Bill Impact by Percentage



With respect to both Table 2-1 and Figure 2-1 above, it can be seen that of the 94,929 customer service points analyzed, 31,002, or 32.7% had total billings over the Report Period that were between 10%-15% lower on the RCR than they would have been on the flat rate.

By totaling the three percentage categories that represent a bill saving under the RCR (14.4%, 21.5% and 32.7%) it can be seen that approximately 68.5% of customers received a benefit through lower bills under the RCR.

It is also informative to examine the impact of the RCR relative to the total dollar amount of bills received by customers over the Report Period.

The table below shows customer information segmented by ranges of total customer electric bill amounts over the 2 year Report Period, showing the dollar range, the number of customers in that range, and the average bill impact of the RCR on those customers. The table shows the same 68% of customers receiving a benefit (which varies slightly from the 68.5% above due to the rounding rules applied). On average, customers that spent less than $3,000 over the 2 year period were better off on the RCR. Above that expenditure level, on average, customers are worse off and the negative impact increases with expenditures.

None of this is surprising given the positive correlation between consumption, expenditures, and RCR impact, but does provide a different means of evaluating the results.

Table 2-2: Customer Bill Impact by Electricity Expenditures

Total Cost of Electricity over 2-Year Report Period ($) (not including tax)	Customer Count	Customer Count as Percentage of Total	Cumulative Customer Count	Avergae Bill Impact
Less than 1,000	12,525	13.2%	13.2%	-10.1%
1,000 - 1,499	16,642	17.5%	30.7%	-10.6%
1,500 - 1,999	15,226	16.0%	46.8%	-9.2%
2,000 - 2,499	11,436	12.0%	58.8%	-6.1%
2,500 - 2,999	8,740	9.2%	68.0%	-2.5%
3,000 - 3,499	6,780	7.1%	75.2%	0.5%
3,500 - 3,999	5,229	5.5%	80.7%	3.1%
4,000 - 4,499	4,109	4.3%	85.0%	5.2%
4,500 - 4,999	3,170	3.3%	88.3%	7.0%
5,000 - 5,499	2,451	2.6%	90.9%	8.5%
5,500 - 5,999	1,866	2.0%	92.9%	9.9%
6,000 - 6,499	1,363	1.4%	94.3%	11.0%
6,500 - 6,999	1,101	1.2%	95.5%	12.0%
More than 7,000	4,291	4.5%	100.0%	15.6%
	94,929	100.0%		

2.2 COMPARISON OF THE ACTUAL IMPACTS OF THE RCR VERSUS ANTICIPATED IMPACTS

Commission Order G-182-13A, Directive 2(g) requires FBC to provide information on the overall impact on customers due to the introduction of the RCR:

> *Comparison of the actual impacts of the RCR versus anticipated impacts. Please indicate if any lessons were learned on this matter.*

The table below shows the bill-impact related results of the RCR implementation as compared to the results forecast in the original Application. The table shows both the results as reported in the 2013 Report as well as the results updated for the 2 year period covered by this report.

The lessons learned from a review of the billing data after 2 years with the RCR are consistent with the conclusions drawn after the first year. Overall, the results continue to be similar to those anticipated in the original Application, but do show a trend towards an increasing bill impact due to the widening gap between the Tier 1 and Tier 2 rates within the RCR. This increasing differential between the Tier 1 and Tier 2 rate is likely responsible for some of the greater impact seen in the 2014 results, however it is also important to note that no accommodation has been made in the results for the impact of weather or other influences and conclusions drawn from the billing information below should be undertaken with caution.

Table 2-3: Comparison of the Actual Impacts of the RCR versus Anticipated Impacts

Residential Conservation Rate Customer Impact Summary July 1, 2012 - June 30, 2014			
	Original Application Forecast	**Current RCR All Customers**	**Current RCR All Customers as in 2013 Report**
Percentage total consumption in the second Tier:	**36.6%**	**38.2%**	**39.7%**
Percentage of customers with lower annual bills under the RCR	**75.7%**	**68.5%**	**70.3%**
Maximum percentage increase by any customer due to the RCR	**22.6%**	**27.3%**	**23.0%**
Percentage of customers with increase over 10% due to the RCR	**5.0%**	**8.4%**	**8.2%**
Percentage of customers with increase over 20% due to the RCR	**0.2%**	**0.4%**	**0.4%**
Percentage of customers with consumption in Block 2 at least once	**72.8%**	**77.8%**	**68.7%**

2.3 *ELECTRIC HEAT CUSTOMERS*

Commission Order G-182-13A includes direction to FBC to report on,

> *How the rate design impacts electric heat customers including how has the rate impacted customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available; (Directive 2c)*

The impact on customers with heat pumps is examined in another section of this report; this section focuses on electric heat customers.

As noted in the 2013 Report, FBC does not, in the normal course of business, keep record of what type of heat source a customer uses at a given premise. In order to differentiate customers on that basis, heating choice was recorded when the RCR Control Group was assembled pursuant to the original RCR Order (G-3-12). These 374 customers were, however, specifically excluded from being placed on the RCR as the original purpose was to help determine an elasticity value to be associated with FBC electrical supply. FBC does not have a group of customers taking service on the RCR, for which heating choice is known.

Therefore, the relative impact of the RCR on customers based on heating choice must be inferred from the general level of consumption. We know that customers with relatively high consumption are adversely impacted by the RCR when compared to customers with lower consumption. It follows that if customers with electric heat have higher consumption than customers generally, heating source is determinative of the RCR impact.

Over the two years covered by the Report Period, the difference in the consumption of the electric heat vs non-electric heat customer portions of the Control Group is summarized in the report below. Note that these customers were not actually billed on the RCR, so the billing impact is hypothetical and reflects the impact that the customers would have experienced if on the RCR assuming that consumption would be unchanged from that billed under the flat rate.

The key point here is that electric heat customers have higher annual consumption, on average, and as such would be expected to have relatively high adverse billing impacts if billed under the RCR. Furthermore, the bill impact has increased relative to the bill impacts contained within the Application due to the increasing spread between Tier 1 and Tier 2 rates.

Table 2-4: Comparison of the Actual Impacts of the RCR by Heating Type

Residential Conservation Rate Customer Impact Summary July 1, 2012 - June 30, 2014			
Control Group	Application	Electric Heat	Non-Electric Heat
		n = 153	n = 221
Percentage total consumption in the second Tier:	37%	51%	41%
Percentage of customers with lower annual bills under the RCR	76%	65%	78%
Maximum percentage increase by any customer due to the RCR	23%	24%	23%
Percentage of customers with increase over 10% due to the RCR	5%	16%	6%
Percentage of customers with increase over 20% due to the RCR	0%	2%	2%
Percentage of customers with consumption in Block 2 at least once	73%	81%	65%
Average Annual Consumption (kWh)	11513*	13358	10768
* All Customers over Current Report Period			

2.4 *CUSTOMERS WITHOUT ACCESS TO NATURAL GAS*

In order to assess the impact on the availability of natural gas to customers within the FortisBC electric service area as it related to the RCR, the Company is able to identify accounts without access to natural gas. This analysis focusses on customers without natural gas availability as opposed to customers that could have natural gas service in the area in which they live but choose not to connect to the FortisBC natural gas system. This information is available due to the shared service area of the electric and gas utilities of FortisBC.

Table 2-5: Impacts of the RCR on Customer without Access to Natural Gas

	Current RCR All Customers	All No Gas Customers
	n = 94929	n = 15,823
Percentage total consumption in the second Tier:	38.2%	50.2%
Percentage of customers with lower annual bills under the RCR	68.5%	50.2%
Maximum percentage increase by any customer due to the RCR	27.3%	24.9%
Percentage of customers with increase over 10% due to the RCR	8.4%	17.7%
Percentage of customers with increase over 20% due to the RCR	0.4%	1.3%
Percentage of customers with consumption in Block 2 at least once	77.8%	84.3%

As expected, customers with no access to natural gas (and thereby no opportunity to use gas for heat or hot water) are more adversely impacted than customers in general.

2.5 *CUSTOMERS WITH ALTERNATIVE HEATING/COOLING SYSTEMS*

Order G-182-13A included Directive 2b, as repeated below,

2a; How the rate design impacts electric heat customers including how has the rate impacted customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available;

In order to gather information on a subset of customers that use alternative heating/cooling systems, FBC pulled records from its PowerSense database. The billing records of customers that the Company could identify as having installed a heat pump between 2008 and 2011 inclusive were processed using the same bill-impact calculations as utilized for the other customer segments that have been analyzed for this report. In total 586 accounts were included. The results appear in the table below.

Table 2-6: RCR Customer Impact Summary July 1, 2012 – June 30, 2014

Residential Conservation Rate Customer Impact Summary July 1, 2012 - June 30, 2014		
Heat Pump Customers (n=586)	Application	Current RCR
Percentage total consumption in the second Tier:	36.60%	54.79%
Percentage of customers with lower annual bills under the RCR	75.70%	29.18%
Maximum percentage increase by any customer due to the RCR	22.60%	22.13%
Percentage of customers with increase over 10% due to the RCR	5.00%	24.23%
Percentage of customers with increase over 20% due to the RCR	0.20%	0.03%
Percentage of customers with consumption in Block 2 at least once	72.80%	96.76%
Mean Annual Consumption in Year 2 (kWh)		19,573

The analysis shows that, as a group, customers that use a heat pump as a primary heat source are impacted to a greater degree than customers in general. This result is not unexpected given the higher than average usage of these customers.

3. CONSERVATION IMPACT AND ELASTICITY RESULTS

In order to determine the impact that the introduction of the RCR has had on customer consumption (i.e. the conservation impact), and to develop estimates for the price elasticity of electricity within the FBC residential customer base, the Company engaged EES Consulting (EES) to analyze the consumption data gathered over the Report Period. The full report which covers both the methodology employed by EES and the results in detail is attached as Appendix B. The EES report also contains comparative information on the consumption differences between customers with electric heat and without access to natural gas as required by the Commission in its directives related to the 2014 Report. A brief summary of those findings follows.

The EES report recognizes that the primary goal of the RCR is the promotion of energy conservation through reductions in use driven by the higher Tier 2 rate. Customers have two types of responses to prices. The first type of response is behavioral and includes actions such as turning off lights or turning down the thermostat. The second type of response is related to appliance choice and other types of measures within the home such as weatherization and is normally considered to take longer to realize.

Elasticity is the standard measure of the customers' response to changes in price. The elasticity measures the percent change in consumption associated with a 1 percent change in price. Elasticity numbers are usually negative as an increase in price leads to reduced consumption.

To develop the observed elasticity values, regression analysis was used to develop the statistical relationship between consumption and electric prices. This same approach was used in the 2013 Report to calculate elasticity values.

Because price is not the only factor that affects the consumption level, both heating degree days (HDD) and cooling degree days (CDD) were included to reflect weather impacts. The demand-side management (DSM) programs employed by FBC also have an impact on consumption levels that is distinct from the price impact associated with RCR alone. These DSM savings were incorporated into the analysis to separate out savings due to DSM program spending and the RCR impacts.

3.1 *RESULTING RCR CONSERVATION*

In the original RCR Application, FBC provided a range of elasticity and related savings associated with the proposed rate. Based on the rate structure that was adopted, the total savings for the residential class were estimated as follows:

Table 3-1: Original Estimate of RCR Savings*

	Low Case	Medium Case	High Case
Tier 1 Elasticity	-.05	-.10	-.20
Tier 2 Elasticity	-.10	-.20	-.30
Residential % Savings	1.9%	3.7%	5.5%
GWh Savings	19.7	38.4	57.0

* Reproduced from Table A-4 of the EES Report

The residential savings percentages estimated in the Application are the combined impacts associated with Tier 1 and 2. To derive the corresponding gigawatt (GWh) savings amounts, these percentages were applied to the actual 2011-2012 GWh consumption for the residential class. This year was used as it would reflect the consumption prior to the implementation of the RCR. Resulting savings were estimated to be in the range of 19.7 to 57 GWh for the first year of implementation.

Based on the elasticity estimates found in the regression analysis conducted for the 2014 Report, updated energy savings resulting from the implementation of the RCR can be determined.

Table 3-2 provides the results based on the measured elasticity of -0.16 and the new upper end value of -0.20, which is the result based on the second regression analysis in the EES report that shows the best statistical fit given the parameters used in the calculation.

Table 3-2: Updated estimate of RCR Savings*

	Measured Amount	Upper End
Tier 2 Elasticity	-0.16	-0.20
% Price Differential	28%	28%
Resulting % Savings on Tier 2	4.4%	5.7%
2011-2012 GWh in Tier 2	818.3	818.3
Estimated GWh Savings	36.2	46.3

* Reproduced from Table A-5 of the EES Report

These results show a range of savings from 36 to 46 GWh. The measured savings is within the range of the original estimate, but on the low side as compared to the upper end estimate of 57 GWh in the original Application. With the updated estimates, the values fall within the original range of savings but the range is smaller than originally thought. This is an expected result as the impact of calculating elasticity values is to provide a greater level of certainty, which results in a narrower range.

When compared to the overall system rather than just the residential Tier 2 GWh, the estimated savings are in the range of 2.6% to 3.3% of total system energy. For comparison purposes, the system-wide savings expected from FBC's DSM programs are 14 GWh (1.0%) for 2014 and 22 GWh (1.6%) for 2015.

For electric space heat customers and those with no gas availability, the higher Tier 2 rate impacts a greater portion of their bills and kWh usage.[8] This was confirmed by the elasticity estimate of -0.19 found for electric heat customers. The results for the customers without access to natural gas were not statistically significant, although the resulting elasticity value was only -0.10. It is possible that these customers have a lesser price response because they do not have the ability to switch to a more cost-effective heat source.

In summary, the work performed by EES confirms that the RCR has had an impact on the consumption habits of FBC residential customers, though less than originally forecast in the 2009 Application. In addition, elasticity estimates indicate electric heat customers are more sensitive to the price signals contained in the RCR, and customers with no access to natural gas, likely due to a lack of alternatives, are less sensitive.

[8] Electric space heat customers may or may not have access to natural gas service but choose to heat with electricity. Customers with no gas availability are those customers that do not have natural gas service available in their area. These customers may heat with electricity or some alternate source such as wood.

4. OTHER 2014 REPORT DELIVERABLES

4.1 *REVENUE NEUTRALITY*

FBC maintains a flat rate option in its tariff that is used for customers that are part of the RCR Control Group and those that qualify for an exemption from the RCR for farm status. This rate, RS03, has had annual rate increases applied to it in the manner historically used for all rates. That is, the rate increase has been applied as an equal percentage to all rate components (the Customer Charge and the Energy Charge) without change despite the Pricing Principles that are applied to the RCR. This enables FBC to calculate the forecast revenues from the residential customer class each year as though the entire class was still billed on a flat rate, and then to use the assumptions approved in the RCR Decision to set the RCR components (the Customer Charge, Tier 1 and Tier 2 rates) such that the same amount of revenue is forecast. This calculation is submitted to the Commission each year as part of the annual rate approval process.

In other words, the RCR is set so as to be revenue neutral to the flat rate under which all residential customers would otherwise be billed. The following general description of revenue variances was included in the 2013 Report and is repeated here as it remains the case today.

> *In practice, actual revenues collected by the Company can vary from the forecast for a number of reasons that are common to most classes. Both the load and number of customers can vary from the forecast amounts. As well, the amount of capacity versus energy can vary for those classes that are billed on capacity, and for classes where there are tiered rates such as commercial and residential classes, if the percentage of load that occurs in each block is different than that assumed when the rate is designed, all else equal, an over-collection or under-collection of revenue as compared to the forecast may occur.*
>
> *Since it is not practical to adjust rates in response to variances during the year, rates are typically set once and stay in place for the entire year. If there is a variance between the forecast and actual revenue during the year it is captured in a Revenue Variance Deferral Account and is either returned to or collected from customers through an adjustment to rates in subsequent years. These fluctuations will vary from year to year and for residential load are especially sensitive to weather.*

Similar to the results in the 2013 Report, and based on the customers included in the analysis, there is a small positive variation in calculated revenue from the RCR to the prevailing flat rate of less than 1.4%. This number is approximate as it does not include City of Kelowna customers, the large and small users that were excluded from the data, and uses an assumption of RCR revenue from those customers that are part of the exempt group not actually billed on the RCR. The actual variance is expected to be similarly small and in any case will not accrue to the benefit of the Company as it would be reflected in the Flow Through

deferral account and returned to or recovered from customers in a subsequent year. The RCR continues to be considered revenue neutral.

4.2 *THE LONG-RUN MARGINAL COST*

Commission Order G-182-13A maintained the requirement from previous RCR specific orders to include an in-depth analysis of:

> *The full long-run marginal cost to acquire energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate.*

FBC notes that while the Long-Run Marginal Cost (LRMC) was the subject of considerable discussion during the regulatory process that led to the approval of the RCR, it is not used in any way to determine the level of either the Tier 1 or Tier 2 rate. It is therefore only of interest as a comparator. The initial RCR rates were determined by setting a customer bill impact, threshold level and customer charge, and through the tiered structure reflect the concept of higher cost of marginal power but are not directly linked to any measure of LRMC.

The Commission has approved the setting of the Tier 2 rate by calculating the residual revenue required to be collected from the Tier consumption after the Customer Charge and Tier 1 rate revenue has been determined.

The current Tier 2 rate of 13.54 cents/kWh exceeds any value for LRMC that has been discussed in any FBC filing during or since the original RCR Application.

FBC acknowledges that the Commission is seeking an, "…in-depth analysis…" of the LRMC to be included in this 2014 Report. However, the Company has been consistent in its use of the measure of LRMC included in the IR response below filed in September of this year. FBC intends to provide an in-depth analysis of LRMC in its next Long-Term Resource Plan and Long Term DSM plan expected to be filed in 2016, for which consultation is currently underway. Without the benefit of the detailed work being undertaken as part of that process, it would be premature to file anything substantive that differs from the LRMC discussed in recent regulatory submissions. As noted above, FBC has recently provided the derivation of its current view on the LRMC as follows[9]. Until the evidence that will be in the LTERP can inform an update to the LRMC, FBC considers the value discussed below to be the appropriate comparator for the Tier 2 rate for information purposes.

> *Please provide the detailed supporting calculation and justification for FBC's Long Run Marginal Cost (LRMC) energy estimate of $112/MWh. Please state whether this estimate has been adjusted for inflation, transmission losses and distribution losses.*

[9] FBC Response to BCUC IR 3.1 in Exhibit B-5, FBC Application for Approval of Demand Side Management (DSM) Expenditures for 2015 and 2016

Response:

The $111.96/MWh LRMC for BC New Clean Resources was derived from the BC New Resources Market Curve2 13 in the FortisBC 2012 Long Term Resource Plan (filed as part of the 2012-13 Revenue Requirements and 2012 Integrated System Plan Application). This price curve was developed from the BC Hydro Standing Offer Program average price in 2011, which represents an active power acquisition process for new projects consistent with the Clean Energy Act requirements.

In turn, the price used in the BC Hydro Standing Offer Program was derived from volume targets and a price curve developed from the BC Hydro 2008 Clean Power Call, which was completed in 2010.

The calculation of the BC New Clean Resources levelized price from the BC New Resources Market Curve is demonstrated in the following table. It is a nominal dollar levelized price, which means that it does not escalate for its duration. It has not been adjusted for transmission or distribution losses.

Table 4-1: BC New Clean Resources Price Calculation

Assumed inflation	2.0%
Number of Periods	30
Nominal Discount Rate	8%
NPV	$1,260.47
Levelized LRMC	$111.96
Year	BC New Resources Cost Curve (Nominal $)
2011	$101.39
2012	$102.45
2013	$103.53
2014	$104.61
2015	$105.71
2016	$106.82
2017	$107.94
2018	$109.08
2019	$110.22
2020	$111.38
2021	$112.55
2022	$113.73
2023	$114.92
2024	$116.13
2025	$117.35
2026	$118.58
2027	$119.83
2028	$121.09
2029	$122.36
2030	$123.64
2031	$124.94
2032	$126.25
2033	$127.58
2034	$128.92
2035	$130.27
2036	$131.64
2037	$133.02
2038	$134.42
2039	$135.83
2040	$137.26

4.3 *POTENTIAL CHANGES TO THE RCR*

In Order G-182-13A the Commission directed in item 2(f.),

> *Provide an evaluation of the feasibility of changing the rate structure and/or the threshold. Potential options to be evaluated include:*
>
> - *Threshold set too high or too low*
> - *Household threshold*
> - *Individual threshold (i.e. AMI based)*
> - *Other*

This Directive is exactly the same as that contained in the original RCR Report Order G-127-13 and that the Company discussed at some length in the 2013 Report. As the results for the 2 year Report Period are consistent with the results for the year covered by the initial RCR Report, and the options for altering the rate have not changed, the Company will not repeat the commentary surrounding the analysis contained in the 2013 Report.

In general, the 2013 Report concluded that the implementation of the current inclining Tier rate structure has confirmed the existence of many of the issues discussed during the Company's 2009 Cost of Service Analysis[10] and Rate Design and original 2011 Residential Inclining Block Rate Application processes, including that a portion of customers have the benefit of a relative bill reduction without having made any effort towards conservation behaviour or through purchase decisions (free ridership), a portion of customers have experienced significant bill increases due to their use of electric heat (either by choice or as a result of having no other economic options), and that the impact on conservation, while certainly present, can only be estimated within a range and is less than forecast.

The Company continues to recognize that there is a segment of customers that due to their individual circumstances, which may be demographic or geographic in nature, will have a very difficult time changing consumption habits. These customers may experience negative bill impacts without an opportunity to take action to prevent that outcome.

With respect to the specific options for changes to the RCR included in the directive, the Company is still of the belief, based on the same reasons included in the 2013 Report, that changing the threshold level simply shifts the RCR impact between customer groups based on consumption, and not necessarily in the manner that would ameliorate the concerns of high impact customers. In addition, the use of individual customer thresholds is not a practical change to make.

[10] Reference to COSA final Argument

4.3.1 The Pricing Principle

The background information on the application of the Pricing Principles has not changed since the 2013 Report. In that Report, the following summary of the issue was as follows,

> *"Pricing Principles" refers to the manner in which rate increases approved by the Commission are applied to the individual components of the RCR.*
>
> *The Pricing Principles that are currently in effect were established as part of Order G-3-12 and are as follows:*
>
> *a. The Customer Charge is exempt from general rate increases, other than rate rebalancing increases;*
>
> *b. The Block 1 rate is subject to general and rebalancing rate increases; and*
>
> *c. The Block 2 rate is increased by an amount sufficient to recover the remaining required revenue (i.e., the residual rate).*
>
> *Historically, rate increases have been applied on an equal percentage basis to all rate components. That is, if a 3% general rate increase was approved by the Commission; each rate component would be increased by 3%. The effect of the Pricing Principle established by G-3-12 is to create a deficiency in the revenue collected by the Customer Charge which is then collected from consumption that attracts the Tier 2 rate. The impact of this is to increase the percentage differential between the block 1 and block 2 rates with each rate increase thereby increasing the impact of the rate on customers with consumption in the second tier.*
>
> *This situation will occur until the rate increase exemption currently in effect for the Customer Charge expires in 2015.*

The impact of the inequitable distribution of rate increases across the rate components can be illustrated by examining the RCR bill impacts that result when the rates in effect at two different points in time are applied to the same consumption over the Report Period. Since the implantation of the RCR rate, due to the Pricing Principles, the block differential has risen from 1.45 to 1.49 as shown below.[11]

[11] Interim rates for 2015 will see the differential exceed 1.50.

Table 4-2: RCR Comparison: 2012 to 2014

Date	July 1, 2012	January 1, 2014
Customer Charge	$29.65 Bi-Monthly	$30.33 Bi-Monthly
Tier 1 Rate	$0.08258/kWh	$0.09093/kWh
Tier 2 Rate	$0.12003/kWh	$0.13543/kWh
Threshold	1,600 kWh Bi-Monthly	1,600 kWh Bi-Monthly
Block Differential	1.45	1.49
Equivalent Flat Rate (Customer Charge / kWh Charge)	$30.52 / $0.09589	$33.60 / $0.10559

When the rates in effect in 2012 and 2014 are individually applied to all consumption over the 2 year Report Period, the bill impacts that result are shown below. The increased impact that occurs with the application of the 2014 rates is due to the larger differential and greater impact of the disproportionately high Tier 2 rate.

Table 4-3: Impact of Block Differential on Bill Impact

Residential Conservation Rate Customer Impact Summary July 1, 2012 - June 30, 2014	
2012 Rates	Current RCR
Percentage of customers with lower annual bills under the RCR	69.0%
Maximum percentage increase by any customer due to the RCR	20.1%
Percentage of customers with increase over 10% due to the RCR	5.4%

Residential Conservation Rate Customer Impact Summary July 1, 2012 - June 30, 2014	
2014 Rates	Current RCR
Percentage of customers with lower annual bills under the RCR	68.4%
Maximum percentage increase by any customer due to the RCR	22.0%
Percentage of customers with increase over 10% due to the RCR	7.3%

Starting in 2016 when the RCR pricing principles expire, FBC plans to apply rate increases to the components of the RCR in the generally accepted manner by which all other rates are adjusted (evenly to all of the rate components), in the absence of any alternate direction.. As such, the increasing disparity between the Tier 1 and Tier 2 rates will cease, as rate changes will be applied in a consistent manner to both rate tiers.

4.4 *THE RESIDENTIAL DEMAND SIDE MANAGEMENT REDUCE YOUR USE PROGRAM*

The Reduce Your Use (RYU) offer was initiated in mid-2012, attracting 112 participants, each of whom had a no-cost ($0) EnerGuide energy assessment completed. This included eleven low-income participants that were issued a pre-paid voucher for the Company's portion of the audit fee ($150). The balance of the cost was provided by the provincial LiveSmartBC program available at that time.

This was a relatively low response rate, considering that two direct mailings were sent to approximately 12,800 eligible customers, as well as the inclusion of information on RYU promotions in the FBC PowerLines newsletter, strategic print ads and referrals by the Trail contact centre. The RYU offer ended December 31, 2013.

By comparison, the two community Energy Diet initiatives launched in 2013, in the Kootenays (May) and Okanagan (September), yielded 1,741 completed EnerGuide audits of FBC customer dwellings of which an estimated 700 had electric heat. The Energy Diet program charged a low-cost fee ($35-$60) and provided direct install of measures such as low-flow showerheads and CFLs.

4.5 *THE COMBINED EFFECT OF INTEGRATING TIME OF USE AND RCR RATES ON THE CONSERVATION ACHIEVED BY THE RCR*

The Company does not have any customers that are on both its (closed) time of use (TOU) rate and RCR concurrently and does not offer this as an option to customers. Therefore, a quantitative analysis of this scenario is not available. Given the small amount of electricity consumption information available today to help customers manage their bills, adding an additional complexity to the default residential rate structure would not be in the best interests of customers. In addition, there is not currently any cost-based rationale for applying a time-based component to the rate.

Once AMI is implemented, customers will have considerably more information available regarding their electricity consumption, enabling them to better understand and manage rates such as the RCR. AMI will also provide the Company with better information to determine whether such a cost-based TOU rate may be justified in the future.

4.6 AN UPDATE OF THE CONSERVATION POTENTIAL REVIEW AND REPORT ON THE POTENTIAL EFFECTS OF INTERACTION BETWEEN RCR RATES AND DEMAND SIDE MANAGEMENT TARGETS

The achievable potential conservation estimated in the Conservation Potential Review (CPR) is primarily founded on the Long Range Marginal Cost, and measure economics and remains largely the same regardless of any incentive or rate pricing mechanisms.

The RCR rate may be expected to cause adversely impacted customers to make behavioural changes and prompt a stronger response to DSM program offerings. However the 2014 RCR survey of high consumption customers indicates that 73% of "high-use" customers are not expecting to undertake any energy-efficiency measures in the next two years. This compares to 68.9% of 2012 Residential End Use Survey (REUS) respondents living in single family dwellings who were not planning any short term DSM measures.The closeness of these two numbers would seem to indicate that high users are no more likely to pursue DSM initiatives than customers in general.

The DSM Plan forecasts are fundamentally based on the CPR potential and the the annual rate at which DSM savings are acquired (ramp rates), which have not been modified as a result of the RCR.

4.7 COMPARISON OF ENERGY USAGE OF INDIRECT CUSTOMERS WITH THE ENERGY USAGE OF DIRECT CUSTOMERS

FBC indirectly provides energy to the customers of the municipal utilities of the City of Penticton, the District of Summerland, the City of Grand Forks, and the City of Nelson (Nelson Hydro). These customers are referred to as "Indirect" as opposed to the "Direct" customers that receive service and bills directly from FBC. In addition to energy, indirect customers have access to FBC DSM services through participation in the Company's PowerSense programs. In order to compare the general energy usage of indirect customers with the energy usage of direct customers, FBC approached the municipal utilities who agreed to provide aggregate consumption information for their customers. FBC appreciates the assistance of the municipalities in compiling this data. The municipal utilities could not provide detailed billing information in the level of detail that FBC has developed for use in this report. The comparison is therefore limited to total and average use information.

The chart below shows total annual consumption, residential customer count and average annual use for each municipal utility and FBC. In general, customer consumption is similar across the utilities, as one would expect from customers that occupy similar geographic locations. There are variations, such as the generally lower average consumption in the City of Grand Forks, which may be explained by the different rural/urban split among customers, or other factors. FBC does not have the data necessary to draw definitive conclusions on the breakdown of household usage, but considers that it is likely that consumption habits are fairly similar across all of these customers.

FBC considers that given the similarity of the indirect customers to direct customers in terms of service area and consumption the indirect customers would likely react in a similar manner to FBC's direct customers. However, given that the municipalities in question are well known as retirement communities, there may be a higher percentage of older residents for which any adverse impacts of a stepped rate may be more difficult to bear.

Figure 4-1: Summary of Direct and Indirect Customer Usage

	City of Nelson			City of Grand Forks			District of Summerland			City of Penticton			FBC		
Year	GWh	Cust	Ave Use	GWh	Cust	Ave Use	GWh	Cust	Ave Use	GWh	Cust	Ave Use	GWh	Cust	Ave Use
2008	102	8,372	12,180	19	1,838	10,400							1,221	95,502	12,790
2009	107	8,435	12,690	19	1,828	10,340							1,293	96,565	13,390
2010	99	8,392	11,800	18	1,840	9,950							1,224	97,883	12,500
2011	101	8,612	11,730	19	1,832	10,360							1,260	98,795	12,750
2012	101	8,757	11,530	19	1,843	10,140	60	5,015	11,960				1,220	99,228	12,290
2013	99	8,749	11,320	18	1,844	9,950	61	5,039	12,010	163	15440	10589	1,402	112,740	12,440
2014 YTD[1]							35	5,054	6,840	162	15524	10437	636	94,929	6,700

1 – Penticton is rolling 12 months ending in October 2014. All other YTD numbers are through June 2014.

*All Wholesale data provided by the Wholesale municipal utilities included in the table

4.8 *A TWO-TIER WHOLESALE RATE FOR WHOLESALE CUSTOMERS*

FBC serves its municipal customers on either the distribution voltage Rate Schedule 40, in the case of Penticton, Summerland and Grand Forks, or the transmission voltage Rate Schedule 41 in the case of Nelson Hydro. Both of these rate schedules feature a single flat rate for energy consumption as well as a peak-demand based Demand Charge. Penticton, Grand Forks, and Nelson Hydro bill their residential customers on a flat energy rate while Summerland has a two-tier rate for residential customers that features a 1,000kWh/month threshold with a 1 cent per kWh premium for energy consumed in the upper tier.

It is difficult to reach conclusions about the potential effect of a two-tier wholesale rate on the consumption of wholesale customers as there are few wholesale municipal customers served under a published tariff rate in the manner that the wholesale customers of FBC are. It is more common that these arrangements are contractual in nature. This makes existing information difficult to come by. Where tiered wholesale rates can be found, it is unclear what impact their implementation has had. Currently, Newfoundland Power purchases approximately 93% of its requirements from Newfoundland and Labrador Hydro under a stepped rate introduced in 2005 that has a Tier 2 rate in excess of the average cost of power embedded in Newfoundland Power rates. Newfoundland Power is in the second tier every month but as of yet has not chosen to implement a stepped rate for its residential customers (and maintains a declining block rate for commercial customers). Wholesale customers of the Bonneville Power Administration (BPA) are subject to a tiered rate, however it is intended to reflect market realities rather than as an overtly conservation promoting rate and as customers are hardly, if ever, in the second tier, the trickle down impact is impossible to ascertain. FBC does purchase power from BC Hydro under

a rate that includes a second tier of pricing, however the Company does not expect to take delivery of power priced at the second tier in the foreseeable future, and had the RCR in place prior to the current BC Hydro Power Purchase Agreement being in place. No conclusions can be drawn from this arrangement at this time.

FBC notes that each of the wholesale municipalities are involved in energy conservation initiatives in some combination that includes FBC PowerSense programs and/or in-house programs which seems to indicate that conservation objectives are an important consideration. Anecdotal conversations with respect to this issue seem to indicate that DSM rather than rate-based conservation is preferred.

The Company does not therefore have information on projected consumption savings or elasticity estimates specific to the potential impacts of tiered wholesale rates but does provide the following observations on the challenges that may occur in attempting to implement rates of this type.

- ***Revenue Neutrality*** - The RCR is designed to be, and remains, a revenue neutral rate as compared to the flat rate it replaced. The impact of the revenue neutrality constraint for the residential class is spread over a large number of customers making the individual impacts relatively small whether positive or negative. Rate classes with only one customer (as with RS41) or three customers (as with RS40) are problematic if the resulting tiered rates are expected to be revenue neutral to the existing flat rates. Any positive variation in load and resulting increases in cost to the municipality could create upward pressure on the rates of the end-use customers, while load decreases could create a declining revenue-to-cost ratio for the wholesale class that could lead to a general increase in the wholesale rates.

- ***Rate Stability*** – During the 2003 review of stepped rates at BC Hydro, the City of New Westminster stated, *"… that it has maintained a policy that its ratepayers will see the same cost of electricity as those of neighbouring municipalities and argues that the imposition of stepped rates on the City would result in discriminatory treatment of its customers."* This potential exists that in order to recover increased costs to the municipality, residential rates would have to be raised (or reflected in taxes) such that they would be higher than the surrounding area. The municipal customers of FBC have the same general policy regarding rate levels that would result in the same concerns. The Commission provided an exemption to New Westminster from stepped rates at the time.

- ***Regulation*** - While the rates under which FBC provides service to its wholesale customers are subject to the approval of the Commission, the rates charged by the municipalities are exempt from regulation under the Utilities Commission Act for services provided within municipal boundaries. Presumably, it follows that a price signal inherent in an inclining block wholesale rate would lead to the implementation of

inclining block rates to the end user in order to reduce load for the municipality. This should not however be a foregone conclusion.

- ***Alternatives for Service –*** Each FBC municipal customer is an "Eligible Customer" as defined by the Access Principles Settlement Agreement that forms Appendix A of Commission Order G-27-99. As such, each of these customers has the right to arrange for service for all or a portion of its load from a third party. This represents a risk to FBC that needs to be considered as a possible outcome should municipal customers be unreceptive to a tiered rate structure.

- ***Acceptability –*** Stepped rates have proven to be contentious within the FBC service area. Given the structure of the municipal wholesale utilities, which ultimately are accountable to an elected municipal council, it is unclear whether stepped rates that would contain a rate differential large enough to actually have a conservation impact would be desirable for any of the municipalities FBC serves.

The caveats above should not be interpreted by the Commission to mean that FBC is opposed to exploring the concept of stepped wholesale rates. The Company is mindful that it is itself exposed to the potential of a second tier of pricing for supply with the Tranche 2 rate in its power purchase agreement with BC Hydro. However, the need for a cautious, consultative approach would be required that should include close coordination with the municipal customers (and their customers). FBC would not expect to file an application for tiered wholesale rates without careful consideration of the costs and benefits.

4.9 *MARKET RESEARCH AND CORRESPONDENCE*

4.9.1 Market Research

Commission letter L-7-14 directed FBC to collect, "additional information from potentially heavily impacted customers including residences that do not have access to other sources of heating fuel {such as natural gas) as well as customers using heat pumps."

In order to collect this information, and provide a more comprehensive profile of this customer segment, the Company engaged a third party market research company, Discovery Research, to conduct a written survey of customers in the top tier of consumption level. The survey was mailed to 3000 residential customers all in the top 5% in terms of energy use. Discovery Research received 887 responses. The survey instrument and summary tables of the responses are attached as Appendix C.

The resulting data garnered from the research contains some interesting information on the nature of this customer segment as compared to customers generally as gathered by the 2012

Residential End-Use Study (2012 REUS)[12]. As expected, these customers exhibit service characteristics that differ from the random representation of customers included in the 2012 REUS. A selection of the differences that can lead to higher consumption can be found in the table below.

Table 4-4: 2014 Survey vs 2012 REUS

Description	2014 "High Use" Survey	2012 REUS
Home built prior to 1985	50%	56%
Average house size	3546 ft^2	2200 ft^2
Two or three heated floors	86%	61%
Secondary Suite	18%	6%
Heated Garage	20%	21%
Heat Pump (Single Family Dwelling)	47%	14.9%
Electric Heat	77%	28%
Natural Gas Heat	16%	61%
No Supplementary Heat	27%	41%
Swimming Pool	30%	8%
Hot Tub	37%	8%
Sauna	9%	4%
No DSM in last 5 years	44%	48.5%
LiveSmart energy audit in the last five years	9%	10.2%
Do not expect to undertake any energy efficiency measures in the next two years	73%	68.9%

The results do not lead to a conclusion that the high use group is particularly inefficient in its energy use, although they may have above-average opportunities to undertake conservation measures given the nature of their residences. There are, however, as the table above shows, some differences that exist in the attributes of the high consumption customers as compared to customers in general. These differences may lead to increased consumption and result in higher adverse bill impacts due to the the RCR.

In Table 4-5 below there is a comparison of the 2014 Survey group to the 2012 REUS data for detached single family dwellings (in which 95% of the 2014 Survey group reside) for income level.

[12] 2012 REUS results in the table are restricted to those customers in single family dwellings. Since 95% of the 2014 survey are in single family dwellings, this provides the best comparison.

Table 4-5: 2014 Survey vs 2012 REUS - Income

Annual Household Income	2014 Survey %	2012 REUS Single Family Detached %
Less than $20,000	4	4.9
$20,000 to $29,999	5	6.8
$30,000 to $39,999	5	8.4
$40,000 to $49,999	6	8.1
$50,000 to $59,999	6	7.7
$60,000 to $79,999	7	13.9
$80,000 to $99,999	8	8.7
$100,000 to $124,999	8	8.2
$125,000 or more	17	7.3
No response / Prefer not to answer	**32**	26.0
Total	**98***	**100**
Households with less than $40K	14	20.1
Households with less than $60K	26	35.9
Households with $100K or more	25	15.5

* Does not add to 100 due to rounding

In Table 4-6 below there is a comparison of the 2014 Survey group to the 2012 REUS data for detached single family dwellings (in which 95% of the 2014 Survey group reside) for age of respondent. The 2012 REUS data is not available for only single family detached homes.

Table 4-6: 2014 Survey vs 2012 REUS - Age

Age Group	2014 Survey	2012 FBC
19 – 24 yrs	0	0.3
25 – 34 yrs	2	5.1
35 – 44 yrs	12	8.6
45 – 54 yrs	24	16.9
55 – 64 yrs	31	25.3
65 yrs and older	31	43.8
Total	**100**	**100.0**
44 yrs or younger	14	14.0
45 yrs or older	86	86.0

While the relatively high bills that are received by the 2014 Survey group may have a more significant impact on those customers that are aged or financially disadvantaged, it does not appear that these demographic groups are over-represented in the high consumption customer segment.

4.9.2 Customer Comments

FBC acknowledges that customers have provided input to this report by way of letter and email, in some cases offering observations and suggestions with respect to the RCR.

As the Company collected survey responses in accordance with the Commission directive to gather more information on high consumption customers, it received additional comments in the form of letters and e-mails. FBC has included these comments verbatim in Appendix D.

In addition, several letters and emails were received by the Company outside of the 2014 survey process in which the customers requested that their comments be included in this report. This correspondence is also included in Appendix D.[13]

[13] This correspondence includes a request from one customer (Wagar) to specifically examine the billing impacts on the account. In this case, the customer paid approximately 11% more under the RCR than would have been billed on the flat rate.

Appendix A
RELEVANT COMMISSION ORDERS

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, BC V6Z 2N3 CANADA
web site: http://www.bcuc.com

BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-3-12

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

An Application by FortisBC Inc.
for Approval of a Residential Inclining Block Rate

BEFORE: D. Morton, Panel Chair/Commissioner
L.A. O'Hara, Commissioner
M.R. Harle, Commissioner

January 13, 2012

O R D E R

WHEREAS:

A. On March 31, 2011, FortisBC Inc. (FortisBC) filed an application for approval of a Residential Inclining Block (RIB) Rate (Application) to the British Columbia Utilities Commission (Commission) pursuant to sections 58 to 61 of the *Utilities Commission Act*;

B. The Application proposes to implement a default mandatory RIB rate for FortisBC's residential customers. The RIB rate is composed of a Customer Charge and two rate blocks separated by a threshold level of consumption of 1,600 kWh per two-month billing period;

C. The Application examines 18 options. The option proposed by FortisBC has the Block 1 and Block 2 rates set at levels such that 95 percent of customers will experience annual bill impacts of less than 10 percent;

D. FortisBC proposes to exempt the Customer Charge from future rate increases, other than those related to rebalancing through 2015, effectively reducing the Customer Charge relative to the other billing determinants. FortisBC also proposes to apply future general revenue requirement rate increases as follows:

   1) Block 1 rate would be increased by an amount equal to the sum of the general revenue requirement increase and any rebalancing adjustments; and

   2) Block 2 rate would be calculated residually to recover the balance of the general revenue requirement and any rebalancing adjustments;

E. FortisBC proposed that the Application be reviewed through a written hearing process, including only one round of Information Requests (IRs) and concluding on June 15, 2011 by way of its Reply Submission. Based on this Regulatory Timetable, FortisBC anticipated the RIB rate structure to become effective January 1, 2012;

F. The Application was reviewed through a written hearing process. The Regulatory Timetable was revised a number of times and ultimately included:

- One round of IRs from Commission staff and Interveners;
- One round of IRs from the Commission Panel;
- A Procedural Conference held in Vancouver on August 3, 2011 to consider, among other matters, whether FortisBC had filed sufficient evidence to enable the evaluation of the Application, and whether the Application should proceed with an oral or written hearing;
- The filing by FortisBC of additional evidence on August 24, 2011 to clarify, among other issues, how 2012 RIB rates are to be calculated, the value of the long-run marginal cost, elasticity and conservation measures, and the customer charge calculated on a cost of service basis;
- An additional round of IRs from Commission staff and Interveners; and
- The filing of evidence by Interveners;

G. The Commission has reviewed the Application and the material submitted through the written hearing process.

NOW THEREFORE the Commission, for the reasons set out in Decision issued concurrently with this Order, determines as follows:

1. FortisBC is directed to implement a RIB rate consisting of four components: a Customer Charge, a threshold and two block rates, set at the following values, based on May 1, 2011 rates:

    a. A Customer Charge of $28.93 per billing period;
    b. A threshold set at 1,600 kWh per billing period;
    c. A Block 1 Rate of 7.828 cents per kWh; and
    d. A Block 2 Rate of 11.272 cents per kWh.

2. FortisBC is to implement this RIB rate as soon as is reasonably practicable, and by no later than July 31, 2012. FortisBC is to file a revised Tariff Sheet for Rate Schedule 01, no later than 30 days prior to the date the RIB rate becomes effective.

3. FortisBC is directed to apply Pricing Principle 1 to future rate increases for the years 2012 to 2015. Specifically:

    a. The Customer Charge is exempt from general rate increases, other than rate rebalancing increases;
    b. The Block 1 rate is subject to general and rebalancing rate increases; and
    c. The Block 2 rate is increased by an amount sufficient to recover the remaining required revenue (*i.e.*, the residual rate).

4. FortisBC is directed to apply the RIB rate on a mandatory basis to all residential customers with the exception of those taking service at a Time-of-Use (TOU) rate at the time this Decision is issued.

5. FortisBC is directed to provide a RIB Rate Evaluation Report (Report) covering the period from the date of implementation to December 31, 2013. This Report should provide the utility, the Commission and Interveners the opportunity to evaluate the effectiveness of the RIB program, in particular with respect to its impact on conservation. The Report is to include, but not be limited to, the following:

    a. The energy consumption reductions achieved;
    b. Whether the consumption reductions persist or are temporary;
    c. How the rate design impacts electric heat customers; and
    d. The resulting operating cost reductions to the utility.

    The Report should also include an in-depth analysis of the full long-run marginal cost of acquiring energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate; the combined effect of integrating TOU and RIB rates on the conservation achieved by the RIB, should that information be available; an update of the Conservation Potential Review and report on the potential effects of interaction between RIB rates and Demand Side Management targets; comparison of energy usage of indirect customers with the energy usage of direct customers; and an analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers. This Report should be submitted to the Commission no later than April 30, 2014.

6. FortisBC is directed to establish a control group in conjunction with the introduction of the RIB rate to develop elasticity data for its own customers. The results of this elasticity study are to be included in the RIB Rate Evaluation Report.

DATED at the City of Vancouver, in the Province of British Columbia, this 13th day of January 2012.

BY ORDER

D. Morton
Panel Chair/Commissioner

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, BC V6Z 2N3 CANADA
web site: http://www.bcuc.com

BRITISH COLUMBIA UTILITIES COMMISSION

BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-127-13

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

FortisBC Inc.
Terms of Reference for Residential Inclining Block Rate Evaluation Report

BEFORE: L.F. Kelsey, Commissioner
C.A. Brown, Commissioner
N.E. MacMurchy, Commissioner
B.A. Magnan, Commissioner
D.M. Morton, Commissioner
R.D. Revel, Commissioner
C. van Wermeskerken, Commissioner

August 22, 2013

O R D E R

WHEREAS:

A. On March 31, 2011, FortisBC Inc. (FortisBC) filed an application for approval of a Residential Inclining Block (RIB) Rate (Application) to the British Columbia Utilities Commission (Commission) pursuant to sections 58 to 61 of the *Utilities Commission Act*;

B. On January 13, 2012, the Commission issued Order G-3-12 which directed FortisBC to:

1. Implement a RIB rate consisting of four components: a customer charge, a threshold and two block rates;
2. Implement this RIB rate as soon as is reasonably practicable, and by no later than July 31, 2012;
3. Apply the following pricing Principle to future rate increases for the years 2012 to 2015:
    a. The Customer Charge is exempt from general rate increases, other than rate rebalancing increases;
    b. The Block 1 rate is subject to general and rebalancing increases; and
    c. The Block 2 rate is increased by an amount sufficient to recover the remaining required revenue (i.e., the residual rate);
4. Apply the RIB rate on a mandatory basis to all residential customers with the exception of those taking service at a Time of Use rate at the time Order G-3-12 was issued.

.../2

5. Provide a RIB Rate Evaluation Report (Report);

6. Establish a control group in conjunction with the introduction of the RIB rate to develop elasticity data for its own customers;

C. The RIB Rate was implemented on July 1, 2012, in accordance with Order G-3-12. FortisBC renamed the RIB rate to the Residential Conservation Rate (RCR) upon implementation;

D. Since the introduction of the RCR by FortisBC, the Commission has received a significant number of complaints regarding the new rate structure. During the period July 1, 2012-June 30, 2013, the Commission received 149 complaints regarding FortisBC's RCR.

E. Based on the complaints received the Commission believes certain action must be taken.

NOW THEREFORE the Commission pursuant to section 83 of the *Utilities Commission Act* orders as follows:

1. FortisBC must file a preliminary Residential Conservation Rate Evaluation Report (Report), covering the period from the date of implementation to July 31, 2013.

2. The Report should provide the utility, the Commission and the interveners the opportunity to evaluate the effectiveness of the Residential Conservation Rate (RCR) program, in particular with respect to its impact on conservation. This Report will assist the Commission to determine if any further action is warranted on this matter. The Report is to include, but not be limited to, the following:

    a. The energy consumption reductions achieved;

    b. Whether the consumption reductions persist or are temporary;

    c. How the rate design impacts electric heat customers including how has the rate impacted customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available;

    d. Evaluate the impact the rate is having on customers that have no access to natural gas;

    e. The resulting cost implications to the utility including the resulting change in revenue earned to the utility (is the rate revenue neutral?);

    f. Provide an evaluation of the feasibility of changing the rate structure and/or the threshold. Potential options to be evaluated include:

        - Threshold set too high or too low
        - Household threshold
        - Individual threshold (i.e. AMI based)
        - Other;

g. Provide an evaluation as to how the rate structure works with the Equal Payment Plan and indicate what action FortisBC is taking to ensure estimated bills are accurate;

h. Overall impact on customers due to the introduction of the RCR:

- Percentage who have seen their bills decrease, by how much?
- Percentage who have seen their bills increase, by how much?
- How many customers have taken advantage of the Residential Demand Site Management Reduce Your Use program, which was introduced in 2012 to coincide with the introduction of the RCR?
- Comparison of the actual impacts of the RCR versus anticipated impacts. Please indicate if any lessons were learned on this matter.

2. Where reasonable, the Report must include:

a. A summary analysis of the full long-run marginal cost to acquire energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate;

b. The combined effect of integrating Time of Use and RCR rates on the conservation achieved by the RCR, should that information be available;

c. An update of the Conservation Potential Review and report on the potential effects of interaction between RCR rates and Demand Site Management targets;

d. Comparison of energy usage of indirect customers with the energy usage of direct customers;

e. An analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers.

3. The Report is to be filed with the Commission by no later than October 31, 2013.

DATED at the City of Vancouver, in the Province of British Columbia, this 23rd day of August 2013.

BY ORDER

D.M. Morton
Commissioner

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, BC V6Z 2N3 CANADA
web site: http://www.bcuc.com

BRITISH COLUMBIA UTILITIES COMMISSION

BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-153-13

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

FortisBC Inc.
Terms of Reference for Residential Inclining Block Rate Evaluation Report

BEFORE: L.F. Kelsey, Commissioner

September 18, 2013

O R D E R

WHEREAS:

A. On March 31, 2011, FortisBC Inc. (FortisBC) filed an application for approval of a Residential Inclining Block (RIB) Rate (Application) to the British Columbia Utilities Commission (Commission) pursuant to sections 58 to 61 of the *Utilities Commission Act*;

B. On January 13, 2012, the Commission issued Order G-3-12, which directed FortisBC, amongst other things, to implement a RIB rate consisting of a customer charge, a threshold and two block rates by no later than July 31, 2012, and to provide the Commission with a RIB Rate Evaluation Report (Report);

C. The RIB Rate was implemented on July 1, 2012, in accordance with Order G-3-12. FortisBC renamed the RIB Rate to the Residential Conservation Rate (RCR) upon implementation;

D. On August 22, 2013, the Commission issued Order G-127-13 directing FortisBC to file a preliminary RCR Evaluation Report (Report) due to a significant number of complaints received by the Commission regarding the RCR;

E. On September 11, 2013, the Commission received a letter from FortisBC requesting a variance to Order G-127-13. FortisBC requested that Directive 1 be modified so the Report covers the period from the date of implementation to June 30, 2013, instead of July 31, 2013, to allow for comparative reporting;

F. The Commission considers the requested change is warranted.

.../2

NOW THEREFORE, the Commission pursuant to section 99 of the *Utilities Commission Act*, orders as follows:

1. FortisBC Inc. must submit to the Commission a preliminary Residential Conservation Rate Evaluation Report as directed by Order G-127-13. The report will include data from the date of implementation to June 30, 2013. For comparability purposes, data from the month of July 2013 is no longer required in the Report. All other directives made by Order G-127-13 remain in effect.

   The Report is to be filed with the Commission by no later than October 31, 2013.

DATED at the City of Vancouver, in the Province of British Columbia, this 18th day of September 2013.

BY ORDER

L. F. Kelsey
Commissioner

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, BC V6Z 2N3 CANADA
web site: http://www.bcuc.com

BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-182-13A

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

FortisBC Inc.
Terms of Reference for Residential Inclining Block Rate Evaluation Report

BEFORE: D.M. Morton, Commissioner
C.A. Brown, Commissioner
N.E. MacMurchy, Commissioner
R.D. Revel, Commissioner
C. van Wermeskerken, Commissioner

November 7, 2013

O R D E R

WHEREAS:

A. On March 31, 2011, FortisBC Inc. (FortisBC) filed an application for approval of a Residential Inclining Block (RIB) Rate (Application) to the British Columbia Utilities Commission (Commission) pursuant to sections 58 to 61 of the *Utilities Commission Act*. The RIB Rate was approved by Commission Order G-3-12 and implemented on July 1, 2012. FortisBC renamed the RIB Rate to the Residential Conservation Rate (RCR) upon implementation;

B. Commission Order G-3-12 directs FortisBC to file an RCR Evaluation Report due on December 31, 2013 (Report) to provide data summarizing the results of the implementation of the RCR;

C. Based on the significant number of RCR complaints received, the Commission issued Order G-127-13 directing FortisBC to file a preliminary RCR Evaluation Report due on October 31, 2013 (Preliminary Report). The Preliminary Report was to include data for the period from implementation of the RCR to July 31, 2013. The reporting requirements of the Preliminary Report are consistent with those in Order G-3-12 and also incorporate an expanded scope to respond to comments and complaints received by the Commission on this new rate structure;

D. By letter dated September 11, 2013, FortisBC requested that the Commission modify the period of study for the Preliminary Report to allow for comparability. The requested amended period of study for the Preliminary Report is from the date of implementation of the RCR to June 30, 2013;

.../2

E. Commission Order G-153-13 amended the period of study of the Preliminary Report as requested. FortisBC was directed to include the required RCR data required by Order G-127-13 from the date of implementation of the RCR to June 30, 2013 for comparability purposes;

F. As the Report ordered by G-3-12 falls in such close proximity with the October 31, 2013 Preliminary Report ordered by G-127-13 the Commission determined that Order G-3-12 should be amended to modify the reporting requirements in Order G-3-12 to align with the expanded scope as set out in Order G-127-13 and modify the due date of the Report;

G. On September 5, 2013, the Commission issued a letter to FortisBC and Registered Interveners requesting comments on the proposed amendment to Order G-3-12 to modify its reporting directive given the close proximity of the Report with the Preliminary Report. The proposal was to modify the period of study of the Report to include data from the date of implementation to June 30, 2014. The revised proposed deadline for submission of the Report to the Commission was November 30, 2014. The revised proposed content of the Report was to include the requirements of both G-3-12 and G-127-13;

H. In a letter dated September 6, 2012, Mr. Andy Shadrack submitted his support for the proposal to modify the period of study and the reporting date of the Report;

I. In letters dated September 20, 2013, the BC Pensioners' and Seniors' Organization *et al.*, the BC Sustainable Energy Association, and FortisBC agreed that Order G-3-12 should be amended as outlined in the Commission's letter dated September 5, 2013;

J. On September 27, 2013, FortisBC submitted its Reply Submission further indicating that all parties to the proceeding were supportive of the amendments suggested by the Commission.

K. The Commission reviewed the submissions and determines that it is appropriate to amend the period of study, reporting deadline and scope of the Report ordered by Order G-3-12.

NOW THEREFORE pursuant to section 99 of the *Utilities Commission Act*, the Commission orders as follows:

1. The filing date for the Residential Conservation Rate Evaluation Report (Report) directed by Commission Order G-3-12 is extended from December 31, 2013 to November 30, 2014.

2. The Report must cover the period from the date of implementation (July 1, 2012) to June 30, 2014 and should provide FortisBC Inc., the Commission and the Interveners the opportunity to evaluate the effectiveness of the Residential Conservation Rate program, in particular with respect to its impact on conservation. The Report must include, but is not limited to the following:

a. The energy consumption reductions achieved;

b. Whether the consumption reductions persist or are temporary;

c. How the rate design impacts electric heat customers including how has the rate impacted customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available;

d. Evaluate the impact the rate is having on customers that have no access to natural gas;

e. The resulting cost implications to the utility including the resulting change in revenue earned to the utility (is the rate revenue neutral?);

f. Provide an evaluation of the feasibility of changing the rate structure and/or the threshold. Potential options to be evaluated include:

- Threshold set too high or too low
- Household threshold
- Individual threshold (i.e. AMI based)
- Other;

g. Provide an evaluation as to how the rate structure works with the Equal Payment Plan and indicate what action FortisBC is taking to ensure estimated bills are accurate; and

h. Overall impact on customers due to the introduction of the RCR:

- Percentage who have seen their bills decrease and by how much?
- Percentage who have seen their bills increase and by how much?
- How many customers have taken advantage of the Residential Demand Side Management Reduce Your Use program, which was introduced in 2012 to coincide with the introduction of the RCR?
- Comparison of the actual impacts of the RCR versus anticipated impacts. Please indicate if any lessons were learned on this matter.

3. The Report must also include an in-depth analysis of:

a. The full long-run marginal cost to acquire energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate;

b. The combined effect of integrating Time of Use and RCR rates on the conservation achieved by the RCR, should that information be available;

c. An update of the Conservation Potential Review and report on the potential effects of interaction between RCR rates and Demand Side Management targets;

d. Comparison of energy usage of indirect customers with the energy usage of direct customers; and

e. An analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers.

4. The Report must be filed with the Commission by no later than November 30, 2014.

DATED at the City of Vancouver, in the Province of British Columbia, this 13TH day of November 2013.

BY ORDER

D.M. Morton
Commissioner

ERICA HAMILTON
COMMISSION SECRETARY
Commission.Secretary@bcuc.com
web site: http://www.bcuc.com

LETTER L-7-14

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, BC CANADA V6Z 2N3
TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

Log No. 44584

VIA EMAIL
electricity.regulatory.affairs@fortisbc.com

January 30, 2014

Mr. Dennis Swanson
Director, Regulatory Affairs
Regulatory Affairs Department
FortisBC Inc.
Suite 100, 1975 Springfield Road
Kelowna, BC V17 YV7

Dear Mr. Swanson:

Re: FortisBC Inc.
Residential Conservation Rate Evaluation Report

The British Columbia Utilities Commission (Commission) is in receipt of FortisBC Inc.'s (FortisBC) Residential Conservation Information Report filed on October 31, 2013 (Report), pursuant to Commission Orders G-127-13 and G-153-13.

Upon review of the Report, the Commission is satisfied that preliminary results of the Residential Conservation Rate (RCR) indicate electricity conservation and general customer impact is consistent with forecasts contained in FortisBC's RCR Application. As such, preliminary evidence demonstrates that the RCR is achieving its intended results. The matter of the RCR was reviewed extensively by the Commission in an open, public proceeding culminating in the issuance of Order G-3-12 on January 13, 2012.

While the RCR is in its very early stages of existence, the Commission recognizes that some customers and impacted customer groups remain concerned about the rate structure. The Commission would like FortisBC to collect additional information from potentially heavily impacted customers including residences that do not have access to other sources of heating fuel (such as natural gas) as well as customers using heat pumps. Specifically, the Commission is interested in data from customer consultations and analysis of individual monthly billing impacts for potentially heavily impacted customers. This information, as well as any proposed rate refinements, should be included in FortisBC's next RCR report to the Commission to be filed on November 30, 2014.

Yours truly,

Erica Hamilton

PW/kbb
cc: Paul Wieringa
Executive Director, Electricity Policy and Regulations
Ministry of Energy and Mines
Paul.Wieringa@gov.bc.ca

Appendix B
EES REPORT

EES Consulting

2014 RCR Report – Elasticity and Savings Estimates

Introduction

The primary goal of the Residential Conservation Rate (RCR) is the promotion of energy conservation through reductions in use driven by the higher block 2 rate. Customers have two types of responses to prices. The first type of response is behavioral and includes actions such as turning off lights or turning down the thermostat. The second type of response is related to appliance choice and other types of measures within the home such as weatherization. At the time of the 2013 Report, the RCR had only been in place for slightly more than a year and it was expected that most of the customer response would be behavioral as there was insufficient time for a large amount of appliance and other structural changes to be made. With another year of data the savings estimates developed in the second year are expected to be higher and more representative of long-term responses.

Elasticity is the standard measure of the customers' response to changes in price. The elasticity measures the percent change in consumption associated with a 1 percent change in price. Elasticity numbers are usually negative as an increase in price leads to reduced consumption. In the original RCR Application proceeding, a range of elasticity values was used due to the uncertainty associated with the new rate structure that had not been applied within the FBC service area before. While BC Hydro implemented its RCR prior to the FBC RCR, there still was not enough time for a full evaluation of the BC Hydro impacts at the time FBC was evaluating its options. For the original FBC RCR Application it was assumed that consumption in the lower block would have a lower elasticity level than consumption in the upper block. This reflects the fact that electricity consumed below the threshold was more likely to be used for necessities than for discretionary use, and that the price change for the lower block was less significant than for the upper block. As the lower block rates would actually go down from the flat rate under the RCR, the lower block elasticity reflected an actual increase in consumption for those customers. This increase would then be offset by the decline in usage for customers in the upper block as they would see a significant price increase. In the original RCR Application, three different scenarios were used for

570 Kirkland Way, Suite 100
Kirkland, Washington 98033

Telephone: 425 889-2700 Facsimile: 425 889-2725

A registered professional engineering corporation with offices in
Kirkland, WA and Portland, OR

elasticity with the following combinations of lower block/upper block elasticities: 0.05/-0.10, -0.10/-0.20 and -0.20/-0.30.

Methodology

To develop the observed elasticity values, regression analysis was used to develop the statistical relationship between consumption and electric prices. This same approach was used in the 2013 Report to calculate elasticity values. For consumption, the average use per customer was used as it excluded load growth due to new customers and better reflected the impact on a typical residential customer. The price used in the regression analysis was the marginal price paid for each kWh. In the case of block 1 usage, the marginal price was the block 1 energy rate. For customers with any usage in block 2, the marginal price was the block 2 rate even though they paid the block 1 rate for a portion of their bill. The marginal rate is the amount paid for the incremental or decremental amount of electricity used. Prior to the introduction of the RCR the flat energy charge was the marginal price. FBC was directed by the Commission to establish a Control Group at the time of RCR implementation to aid in determining the impacts associated with the RCR. This Control Group faced rates that were flat but designed to be class-revenue-neutral to the RCR.

Because price is not the only factor that affects the consumption level, both heating degree days (HDD) and cooling degree days (CDD) were included to reflect weather impacts. The demand-side management (DSM) programs employed by FBC also have an impact on consumption levels that is distinct from the price impact associated with RCR alone.

Data Collection and Analysis

In order to examine the elasticity impacts, as well as the many other issues surrounding RCR implementation raised by the Commission, it was necessary to collect residential billing data and parse it into many different groupings. The data that was collected was used for the regression analysis as well as for other comparisons. The 2013 report included data for July of 2010 through June of 2013. For this report, data for the period of July 2013 through June of 2014 was added. This reflects two years with the RCR in place and the two years prior.

FBC has three residential rate groups. Rate RS01 and RS01A are both served under the RCR; however, RS01A customers have requested monthly bills. While bills are sent out each month to these customers, the meters are only read on a bi-monthly basis, with estimates provided in between meter reads. RS01 customers have the standard bi-monthly billing. The third group is composed of those the customers that were randomly selected to be in a Control Group at the time of the RCR implementation as well as customers that qualify for an exemption from the RCR due to farm status.

These customers are served under Schedule 3 which is a flat rate set at a rate equivalent to the RCR. For the 2013-2014 period billing data was collected from 79,862 customers in the RS01 group, 15,067 customers in the RS01A group and 381 customers in the RS03 Control Group.

While FBC does not collect data on the heat source for all of its customers, that data was collected from the Control Group to allow for better comparison data. In the 2009 REUS FBC completed a survey of roughly 900 customers that included classification by heating source. Data from this survey, along with the associated consumption data for the Control Group, were used extensively within the RCR Application. The Survey Group was used in this evaluation to determine the separate impacts on those customers with and without electric heat. Billing data for the four-year period was collected from this group, however, only those customers that had information for all four years were included. The resulting number of customers in this group was 677. Note that these customers included customers from both the RS01 and RS01A groups. None of these customers were in the Control Group. A new REUS survey was recently completed, however the sample from the 2009 study was used to maintain consistency with the application and the evaluation completed last year.

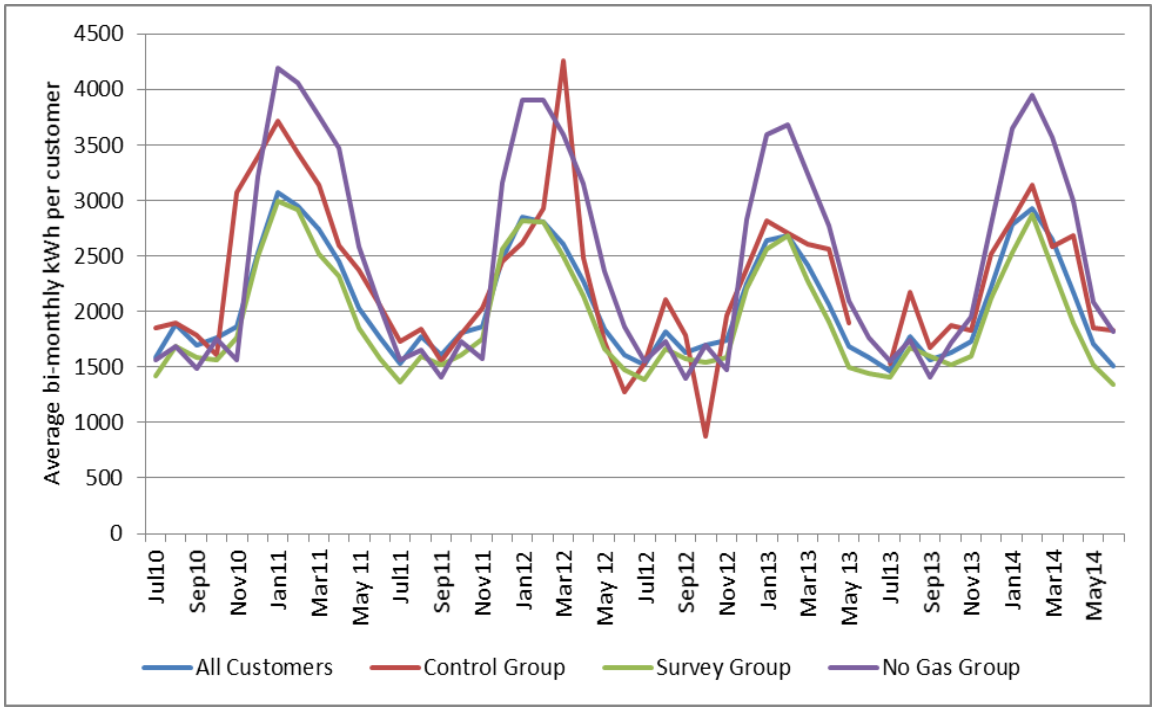
The Commission also requested that FBC look at the impacts of the RCR on customers that do not have access to natural gas. FBC was able to collect data from the portions of its service area that does not have natural gas available, including roughly 18,000 customers. Again, customers in this group included those from both the RS01 and RS01A groups. While the Control Group is separate and distinct from all other customers, both the Survey Group and no gas availability group were also included in the total RCR group.

In all cases, the analysis of bills and average consumption levels refer to a two-month billing period. While data is collected for every month, each month's average reflects two months of kWh sales. Similarly, the threshold for the block 1/block 2 split is set at 1600 kWh for a 2-month billing period. All of the Control Group customers were billed on a bi-monthly basis and therefore no adjustments were needed for that group's data. For all other groups there were a combination of the customers in the RS01 class that were billed bi-monthly and customers in the RS01A class that were billed monthly. An adjustment was made so all usage reflected a bi-monthly period. A further adjustment was made to standardize the number of days in the billing cycle. Along with kWh use, the number of days included in each billing period was collected with the data.

The following shows the monthly average usage (adjusted for number of days) for the four main customer groups included in the analysis. The time period shown is July 2010 through June 2014. The bi-monthly usage follows a typical seasonal shape with much higher average kWh use per bill in the winter months. The winter usage for the

group with no gas availability is higher than for all customers, which is the expected result as they would be more likely to have electric heat. The Control Group does not appear to have higher usage than customers billed under the RCR.

Chart A-1
Bi-Monthly Average Usage by Group



In addition to the main groupings, there were numerous splits of data used to provide more specific comparisons. For the Control Group and the Survey Group, customers were also split between whether or not they had electric space heating. There was a portion of the Control Group that was also in the no gas availability group (200 customers). Billings were subsequently split into several size categories. Bills were first split between block 1 (up to 1600 kWh) and block 2 (over 1600 kWh). Then each of those groups was split again. Block 1 bills were split into a group of 20-800 kWh and 800-1600 kWh. Block 2 bills were split into a 1600-3200 kWh group and an over 3200 kWh group. Note that bills with less than 120 kWh per year or over 200,000 kWh in the 2-year period were excluded from the analysis because they typically represented customers with abnormal bills due to service termination or other unusual issues.

It must also be noted that for the regression analysis the average use data was based on the billings within a month, and not the totals for one customer for the year. For example, one customer might have some bills in the block 1 category and some bills in the block 2 category. The number of bills in the various usage categories therefore differed among the various months. And the bills in block 2 included both block 1 and

block 2 usage for the billing cycle, however, the marginal price seen in that case would be the block 2 rate. Other places in this report do provide calculations of total kWh billed at the block 1 rate vs the amount billed at the block 2 rate, or the number of customers facing block 2 anytime during the year.

Regression Analysis Assumptions and Methodology

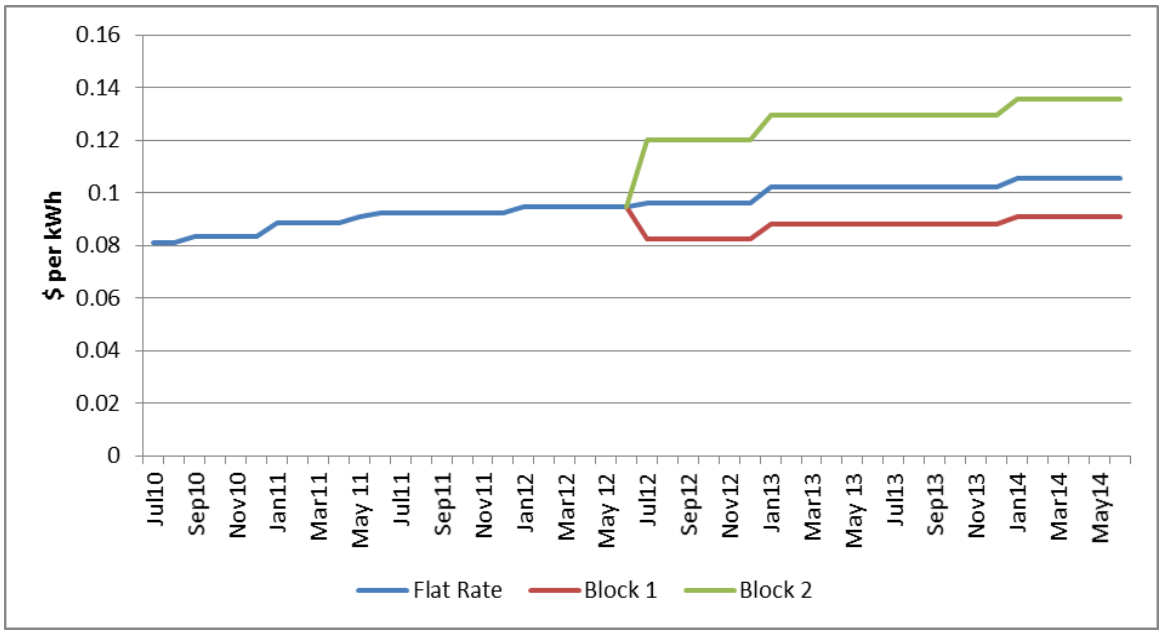
To determine the elasticity associated with the introduction of the RCR, a regression analysis was conducted. The regression compared the average use per customer by month for the four -year period against the marginal price of electricity, along with other relevant variables. The same variables were used as in the 2013 report as they reflected the best fitting equation found for the data. It is common practice to use an ln-ln transformation to derive elasticity values. What this means is that the natural log (ln) of both the average use and the marginal price were used, with the resulting price coefficient being the elasticity value.

The y-variable used for the average usage per customer included the average for the block 1, block 2 and Control Groups. Because each of these groups faced different prices, they had to be separated out for the regression analysis. In all cases the usage was adjusted for the standard number of days in a billing period.

The primary x-variable for the regression was the marginal price that corresponded with each group. All three groups faced the same flat energy price prior to July of 2012. Once the RCR was implemented the block 1 group faced the block 1 rate, the block 2 group faced the block 2 rate, and the Control Group faced the flat RS03 rate. The marginal rates were adjusted from nominal to real values using the monthly CPI for British Columbia. They were further adjusted to reflect a lag of two months as the usage in a particular billing cycle would include kWh from the two months prior. The lagged price therefore reflects the price in place at the time the kWh were consumed.

Actual rates in place for each month can be found in the following Chart A-2.

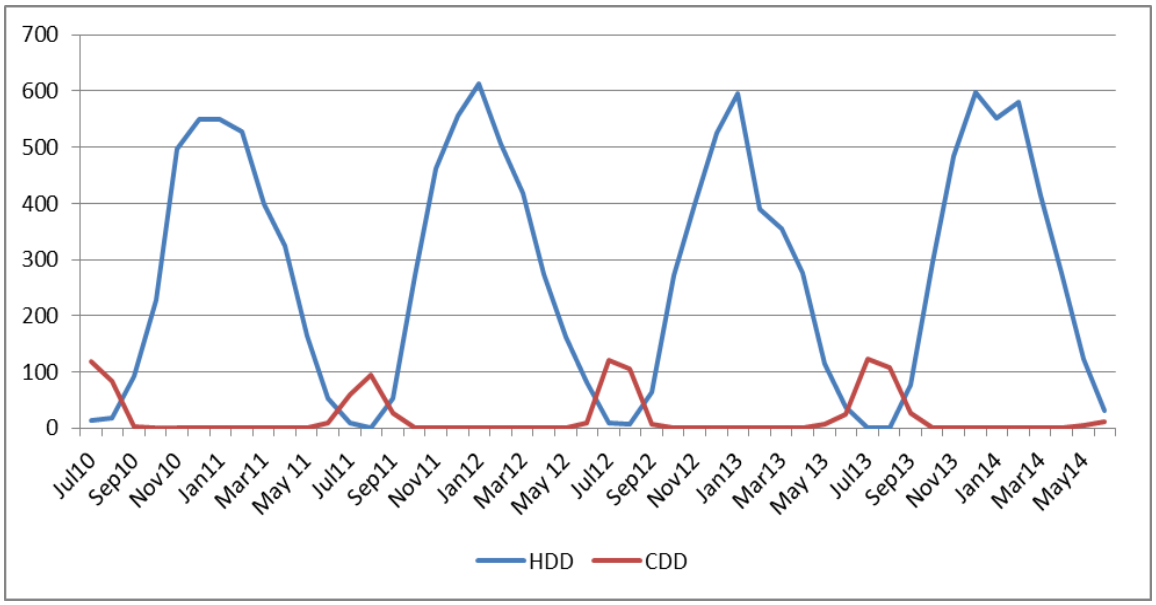
Chart A-2
Monthly Rates for Flat Rate and RCR Rates



Other x-variables included in the regression analysis were the heating degree days (HDD), cooling degree days (CDD) and spending by FBC for DSM programs.

HDD and CDD are generally used to reflect weather conditions as they are a better measure of heating and cooling use than the average temperature alone. The HDD and CDD data was based on the Climate Canada data for Penticton. Because the FBC service area is relatively homogeneous in terms of weather, the Penticton Station is used as the standard location and no further regionalization is needed. The following chart shows the HDD and CDD for the four year period.

Chart A-3
Monthly HDD and CDD for Penticton, BC



While each of the three years has a peak month HDD of roughly 600, the graph does not really show the overall annual differences very well. The total HDD for the four years are 3418 in 2010-2011, 3409 in 2011-2012, 3125 in 2012-2013 and 3432 in 2013-2014. Year 3 is 8% lower than the three other years.

Because the billings in each month reflected kWh consumption that actually occurred in past months, the HDD and CDD used for the regression analysis were weighted averages, as discussed in the 2013 report.

DSM savings were also incorporated into the analysis to separate out savings due to DSM program spending and the RCR impacts. To separate out the programmatic DSM from the price response, the expected percent savings were added back in to the average use per customer amounts used in the regression analysis, as was done for the 2013 report.

Regression Analysis Results and Elasticity Estimates

The first regression completed was based on the bills with less than 1600 kWh per two months and completely within block 1. Average usage was adjusted for a standard number of days and represented usage before any of the programmatic DSM savings. This was compared to the CPI-adjusted marginal rate for those customers within block 1, lagged by two months. An ln-ln transformation was used for both the average use and the marginal price. The weighted HDD and CDD variables were also included. The following Table A-1 shows the key parameters of the regression.

Table A-1 Results of Regression 1 Block 1 Usage vs. Real Marginal Rate for Block 1 with In-In Transformation		
R Square	0.3409	
Adjusted R Square	0.1162	
	Coefficient	*t statistic*
Intercept	6.59	17.94
Real Marginal Rate Block 1 Lag2	-0.067	-0.44
Weighted HDD	0.00013	2.36
Weighted CDD	0.00061	1.73

The R Square value provides a measure of the overall fit of the regression. The closer the R Square value is to 100% - the better the fit. In this first regression the R square is below 50% and is not considered a very good fit. The second key indicator to examine is the t statistic for each of the variables. A t-statistic of 2 or more generally indicates that the variable is statistically significant. In this case the intercept, HDD and CDD all have a sufficient t statistic. The marginal price of electricity has a low t statistic and would not be considered statistically significant. There is therefore no evidence of a response to the RCR for months where the bill is completely within block 1. These results are not unexpected as the lower consumption level is likely for uses that are more necessary and less elastic. These results are similar to those found in the 2013 report.

The original RCR Application assumed elasticity values for block 1 ranging from -0.05 to -0.20, although these assumptions were not based on any FBC-specific findings. While not a statistically significant value, the regression does yield an elasticity of -0.067, which is on the lower end of the range. However, the lack of statistical significance would indicate an elasticity of 0. The elasticity is lower than the -0.078 found in the 2013 study. Based on these results an estimate of a long-term elasticity range of 0 to -0.10 is a reasonable assumption, which is lower than that in the original Application.
The second regression was based on the bills where consumption was greater than 1600 kWh per two months and had some usage within block 2, facing a higher rate. Average usage was adjusted for a standard number of days and represented usage before any of the programmatic DSM savings. This was compared to the CPI-adjusted marginal rate for those customers within block 2, lagged by two months. An ln-ln transformation was used for both the average use and the marginal price. The weighted HDD and CDD variables were also included. The following shows the key parameters of the regression.

Table A-2 Results of Regression 2 Block 2 Usage vs. Real Marginal Rate for Block 2 with In-In Transformation		
R Square	0.9544	
Adjusted R Square	0.9110	
	Coefficient	*t statistic*
Intercept	7.42	88.98
Real Marginal Rate Block 2 Lag2	-0.1565	-4.43
Weighted HDD	0.0009	18.03
Weighted CDD	0.0022	6.56

In this block 2 regression, the R Square was over 90%, indicating a good fit. All of the variables yielded a t-statistic over 2, indicating that they were statistically significant. The coefficient for the marginal rate resulted in an estimated elasticity of -0.16 for the period in question. This is higher than the -0.086 found in the 2013 report, which was considered a short-term elasticity as it likely only reflected behavioral changes as there was not sufficient time for much appliance change among customers.

These results compare to the original block 2 assumption of -0.10 to -0.30, which were provided in the original RCR Application. The current results are within the range of what was originally assumed, but closer to the low end than the high end. While the short-term elasticity was measured at -0.086, the results suggest a long-term elasticity in the range of -0.16 to -0.20.

The third regression represents the Control Group that continues to pay a flat rate for electricity. It was based on the bills for all of the customers in the Control Group. Average usage was adjusted for a standard number of days and represented usage before any of the programmatic DSM savings. This was compared to the CPI-adjusted marginal rate under RS03, which does not incorporate the RCR differential, lagged by two months. An ln-ln transformation was used for both the average use and the marginal price. The weighted HDD and CDD variables were also included. The following shows the key parameters of the regression.

Table A-3 Results of Regression 3 Control Group Usage vs. Real Marginal Rate for Flat with In-In Transformation		
R Square	0.7918	
Adjusted R Square	0.6268	
	Coefficient	*t statistic*
Intercept	6.26	6.18
Real Marginal Rate Lag2	-0.429	-1.01
Weighted HDD	0.0015	5.94
Weighted CDD	0.0020	1.27

The results for the Control Group have a relatively high R Square result, however, the marginal rate does not show up as a statistically significant variable. The resulting elasticity is -.43 which is much higher than that found for the block 2 rates. However, because of the low significance of the t-statistic, there is no statistical evidence that elasticity is greater than 0 and the result is not a reasonable measure of the actual elasticity response. One issue that may have led to this result is the fact that there was little change in the inflation-adjusted rates for the Control Group and therefore little or no incentive for customers to change their usage. It is often difficult to measure elasticity when rates are relatively stable. The other factor that may have impacted the results is that the Control Group may have been influenced by the RCR rates for other customers through advertising and information programs, and may not have understood that they were not impacted by those rates.

To examine the impacts on FBC customers that used electric heat and for those that did not have access to natural gas, regressions were also completed for those groups. The results were relatively strong, which differs from the 2013 report. For the electric heat customers, the regression looked at the Survey Group block 2 average consumption for those customers with electric heat as their primary source. The R square for the regression was about 97% and the t statistic on price was about 3.1. The resulting elasticity was -0.19. This is higher than for the all customer group, which is expected. For the customers without access to natural gas, the regression looked at the block 2 average consumption for all of those customers. The R square for the regression was about 90% and the t statistic on price was only about 1.2. The resulting elasticity was -0.10, however since the t-statistic was on the low side this result has a somewhat lower level of confidence. These results confirm the elasticity found for the block 2 rates, however, there is some indication that customers without access to natural gas have a lower response to the price as they have fewer options for heat and water heat alternatives.

Resulting RCR Savings

In the original RCR Application, FBC provided a range of elastic and related savings associated with the proposed rate. Based on the rate structure that was adopted, the total savings for the class was estimated as follows:

Table A-4
Original Estimate of RCR Savings

	Low Case	Medium Case	High Case
Block 1 Elasticity	-.05	.10	.20
Block 2 Elasticity	-.10	.20	.30
Residential % Savings	1.9%	3.7%	5.5%
GWh Savings	19.7	38.4	57.0

The residential savings percentages estimated in the Application are the combined impacts associated with block 1 and 2. To derive the corresponding gigawatt (GWh) savings amounts, these percentages were applied to the actual 2011-2012 GWh consumption for the residential class. This year was used as it would reflect the consumption prior to the implementation of the RCR. Resulting savings were estimated to be in the range of 19.7 to 57 GWh for the first year of implementation.
Based on the preliminary elasticity estimates found in the regression analysis, updated savings found as a result of the RCR can also be determined. Because the elasticity values were based on the kWh for all bills that had any usage in block 2, they must be applied to that same metric to determine the GWh savings. The percent increase in rates was based on the difference between the current block 2 rate and the current RS03 flat rate. Table A-5 provides the results based on the measured elasticity of -0.16 and the new upper end value of -0.20.

Table A-5
Updated Estimated of RCR Savings

	Measured Amount	Upper End
Block 2 Elasticity	-0.16	-0.20
% Price Differential	28%	28%
Resulting % Savings on Block 2	4.4%	5.7%
2011-2012 GWh in block 2	818.3	818.3
Estimated GWh Savings	36.2	46.3

These results show a range of savings from 36 to 46 GWh. The measured savings is within the range of the original estimate, but is on the low side. With the updated estimates, the values fall within the original range of savings but the range is smaller than originally thought. This is an expected result as the impact of calculating elasticity values is to provide a greater level of certainty, which results in a narrower range.

When compared to the overall system rather than just the residential block 2 GWh, the estimated savings are in the range of 2.6% to 3.3% of total system energy. For comparison purposes, the system-wide savings expected from FBC's DSM programs are 14 GWh (1.0%) for 2014 and 22 GWh (1.6%) for 2015.

Comparison of Average Usage Data

The data collected for use in the regression analysis is also useful in making comparisons between the various groups. As discussed, the usage data was broken down between multiple groups and by the level of consumption in each billing period.

The key comparison to consider in looking at usage reductions due to the RCR rate alone is the Control Group vs the group with all customers. The following chart shows a visual comparison of average usage per customer for the various customer groups and across the four years.

Chart A-4
Comparison of Average Annual Usage by Group

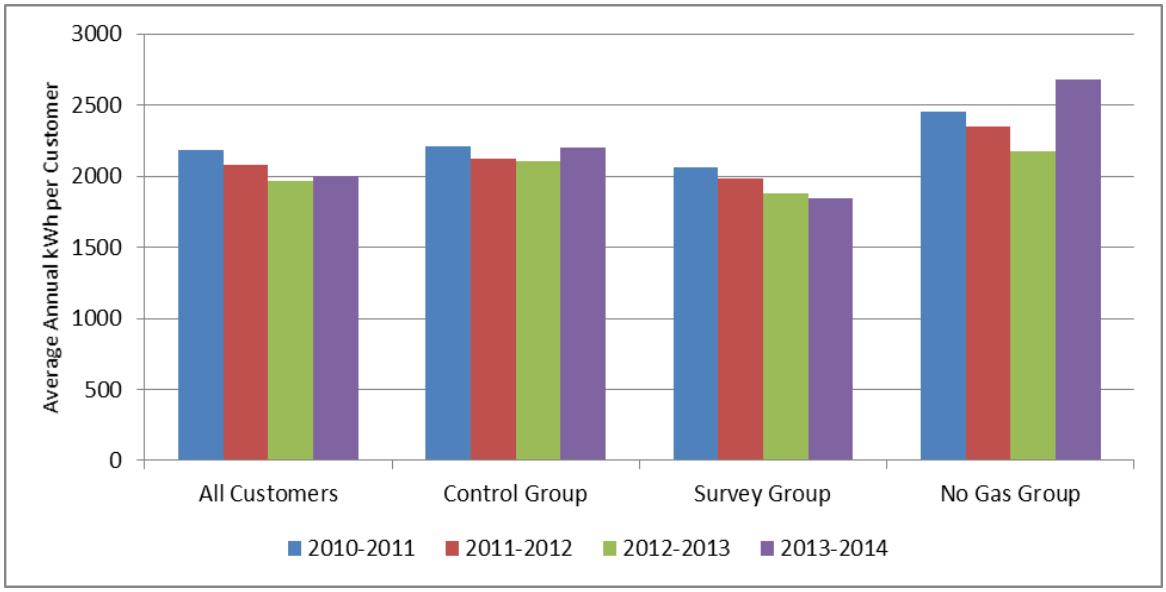


Table A-6 below also compares the average annual usage for each of the four years in tabular form with percent differences. As the table shows, the usage for the all customer group is 6.6% below the Control Group for the 2012-2013 period and 9.2% below the Control Group in the 2013-2014 period. While on the surface this would appear as if this level of savings was achieved in response to the RCR rates, the table also shows that the all customer group was less than the Control Group by nearly 1% in the first year and nearly 2% in the second year so some of the difference existed prior to the introduction of the RCR rate.
In addition, it can be seen that while the all customer groups show a decline in kWh usage each year during the first three years, this is due in part to lower HDD in the 2012-2013 period. Usage increased again in 2013-2014 for most groups as the HDD increased, however, the all customer group usage did not increase nearly as much as the Control Group. This would support the finding that usage declined due to the RCR rate once weather was accounted for.

While the comparisons in this table are useful, a better accounting of the price response can be found in the regression analysis previously discussed, which can account for these non-price factors.

Table A-6 Comparison of Average Use by Category				
	2010-2011	**2011-2012**	**2012-2013**	**2013-2014**
Average Annual Use (bi-Monthly kWh Usage)				
Control Group	2,207	2,119	2,108	2,204
All Customers	2,186	2,081	1,970	2,002
Survey Group	2,058	1,982	1,874	1,847
Percent Difference				
All Customers vs Control Group	-0.9%	-1.8%	-6.6%	-9.2%
Survey Group vs Control Group	-6.7%	-6.4%	-11.1%	-16.2%
Survey Group vs All Customers Group	-5.9%	-4.7%	-4.8%	-7.7%
Year-to-Year Percent Difference				
Control Group		-4.0%	-0.5%	4.5%
All Customers		-4.8%	-5.4%	1.6%
Survey Group		-3.7%	-5.4%	-1.4%

Also included in Table A-6 is a comparison to the Survey Group. The Survey Group was included in the analysis primarily because it provides a breakdown of electric vs non-electric heat customers that is not available for the all customer group. While the Survey Group faced the same RCR rates as the all customer group, the average usage was significantly lower. For this reason we would not consider the Survey Group to still be representative of all customers, however, it still is useful in looking at the impacts on different types of heating customers.

Table A-7 below shows the distribution of bills for the year in each usage category for each of the three customer groups. This reflects the number of bills in each category as opposed to the kWh that fall within the category. In all cases roughly half of all bills for the year are in block 1 and the other half are in block 2. Of course these numbers differ when looked at on a seasonal basis.

For all three groups, the numbers of bills in block 1 increases over the four years, while the number of bills in block 2 declines. This decline is more pronounced between years 1 and 2 than it is in year 3 when the RCR was adopted and therefore indicates that weather was a significant factor. In all three years, the Control Group has a higher percentage of bills in the block 2 category, but that percentage of bills declines from 51% to 48% despite the fact that they do not face RCR billing. The Survey Group has a similar split between block 1 and block 2 as seen in the all-customer group. However, they have fewer bills in the tail end categories of 20-800 kWh and over 3200 kWh.

The table also shows the percentage of kWh consumption that occurs for all of the bills that have some usage in the block 2 category. Note this does not reflect the percent of kWh billed at the block 2 rate. For kWh, the totals in this category are in the 75-80%

range. As with the number of bills, the percent of kWh in the block 2 category declined over the first three years, however the percent increased again in the past year due to higher HDD for the year. It is likely that some of this is related to HDD and programmatic DSM savings, and not all of the shift in kWh usage can be attributed to the RCR rate.

Table A-7
Distribution of Bills and kWh by Usage Category

	Percent of Bills				Percent of kWh			
	2010-11	**2011-12**	**2012-13**	**2013-14**	**2010-11**	**2011-12**	**2012-13**	**2013-14**
All Customers								
20 to 800 kWh	19%	21%	22%	22%	4%	5%	5%	5%
800 to 1600 kWh	30%	31%	31%	31%	16%	17%	19%	18%
Subtotal block 1	**49%**	**52%**	**53%**	**53%**	**20%**	**22%**	**24%**	**23%**
1600-3200 kWh	32%	31%	31%	31%	33%	33%	35%	33%
Over 3200 kWh	19%	17%	16%	15%	47%	45%	41%	44%
Subtotal block 2	**51%**	**48%**	**47%**	**47%**	**80%**	**78%**	**76%**	**77%**
Control Customers								
20 to 800 kWh	20%	21%	20%	21%	4%	5%	4%	4%
800 to 1600 kWh	28%	28%	30%	31%	15%	15%	17%	16%
Subtotal block 1	**48%**	**49%**	**51%**	**52%**	**19%**	**20%**	**22%**	**21%**
1600-3200 kWh	32%	32%	34%	31%	32%	34%	35%	30%
Over 3200 kWh	21%	19%	15%	17%	49%	46%	43%	49%
Subtotal block 2	**52%**	**51%**	**49%**	**48%**	**81%**	**80%**	**78%**	**79%**
Survey Customers								
20 to 800 kWh	16%	17%	18%	18%	4%	5%	5%	5%
800 to 1600 kWh	35%	35%	36%	37%	20%	21%	22%	23%
Subtotal block 1	**51%**	**52%**	**53%**	**55%**	**24%**	**25%**	**27%**	**28%**
1600-3200 kWh	33%	32%	33%	32%	34%	35%	37%	37%
Over 3200 kWh	17%	16%	14%	13%	41%	40%	36%	34%
Subtotal block 2	**49%**	**48%**	**47%**	**45%**	**76%**	**75%**	**73%**	**72%**

Electric vs. Non-Electric Customers

In Commission Order G-182-13A, FBC was directed to determine how the RCR impacts customers with electric heat compared to those without electric heat. The following two charts show the Control Group with and without electric heat and the Survey Group with and without electric heat. As expected the electric heating customers have a higher average usage per customer and they also see more variability from year to year. What stands out in the charts is that with the flat rates for the Control Group, customers with electric heat increased usage in year four along with higher HDD. For the Survey Group, with RCR rates, usage declines in year four.

One thing to note about the Survey Group is that the heat source reflects data collected in 2009 and customers could have changed their heat source since then.

Chart A-5
Comparison of Control Group Average Annual Usage With and Without Electric Heat

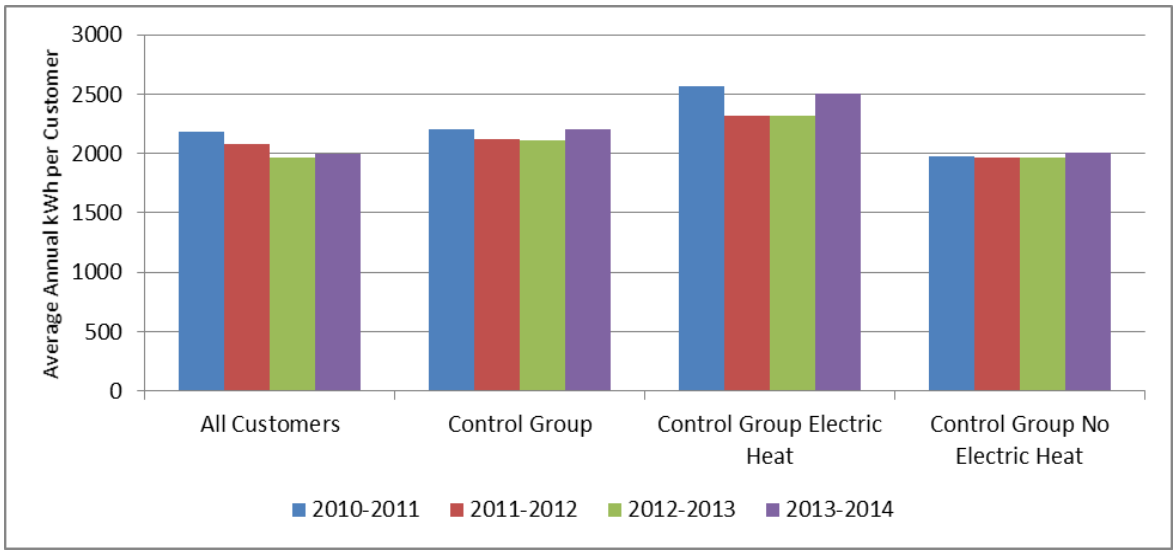
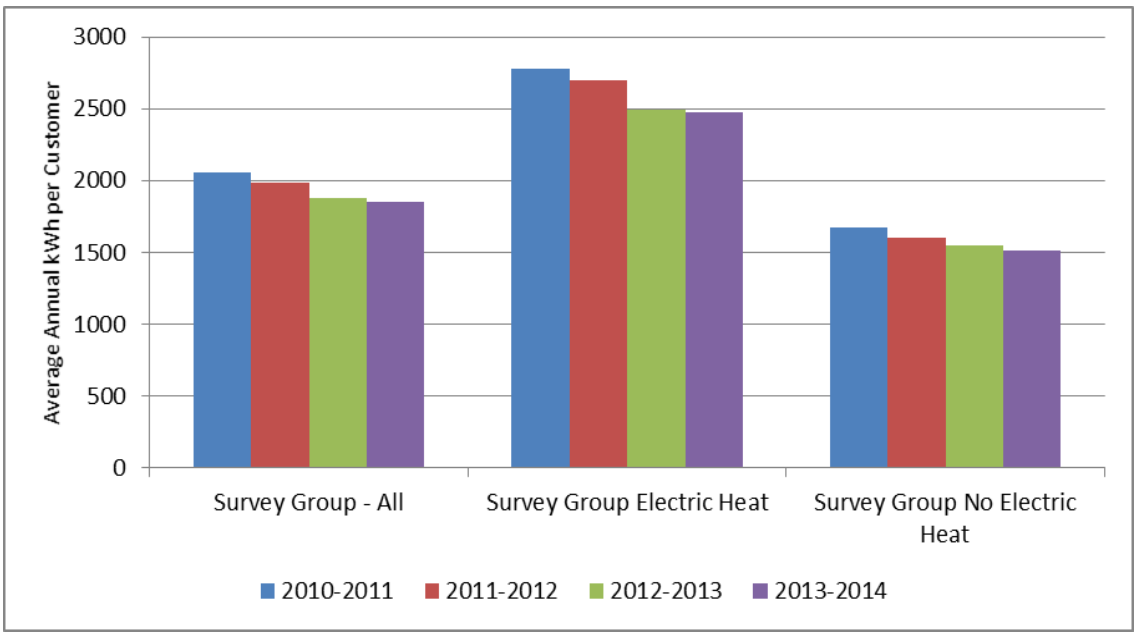


Chart A-6
Comparison of Survey Group Average Annual Usage With and Without Electric Heat



The comparison for electric heat vs non-electric heat is further shown in Tables A-8 and A-9 below. For the Control Group, the average use ranges from 18% to 25%

higher with electric heat than without, and the amount varies along with the HDD for the year. The year over year change also reflects changes in HDD. Average usage was much flatter for the non-electric heat group, as would be expected since it would be less sensitive to HDD.

Table A-8
Comparison of Control Group With and Without Electric Heat

	2010-2011	2011-2012	2012-2013	2013-2014
Average Annual Use (Bi-Monthly kWh Consumption)				
Control Group Electric Heat	2,562	2,322	2,314	2,507
Control Group No Electric Heat	1,972	1,966	1,968	2,003
Percent Difference				
Electric Heat vs Non-Electric Heat	29.9%	18.1%	17.6%	25.2%
Year-to-Year Percent Difference				
Control Group Electric Heat		-9.4%	-0.3%	8.3%
Control Group No Electric Heat		-0.3%	0.1%	1.8%

When looking at the Survey Group, the usage for electric heat customers is in the range of 60-70% higher than for non-electric heat customers. In this case the two groups are more extreme than the Control Group. The electric heat customers have higher usage in the Survey Group than in the Control Group for the first three years, however in year 4 the electric heat customers in both groups had comparable usage. As the Survey Group is a much larger sample, it is likely that it includes more customers with extreme energy use, causing more variability in this group than in the Control Group. Because of these differences it is important to look at the results in both groups rather than just looking at one or the other.

Table A-9
Comparison of Survey Group With and Without Electric Heat

	2010-2011	2011-2012	2012-2013	2013-2014
Average Annual Use				
Control Group Electric Heat	2,774	2,700	2,497	2,471
Control Group No Electric Heat	1,675	1,602	1,553	1,515
Percent Difference				
Electric Heat vs Non-Electric Heat	65.6%	68.5%	60.8%	63.2%
Year-to-Year Percent Difference				
Control Group Electric Heat		-2.7%	-7.5%	-1.0%
Control Group No Electric Heat		-4.3%	-3.1%	-2.5%

The Survey Group analysis indicates that both the customers with and without electric heat have reduced consumption over the four years. This differs from the Control Group where the usage remains relatively flat. This difference is likely due to the fact that the Survey Group faces the RCR while the Control Group does not. As expected, the electric heat group shows a larger reduction than the non-electric heat customers as they are more likely to have more usage in block 2.

The distribution of bills within the various usage categories also differs between electric and non-electric heat customers. While in total the number of bills is split roughly 50/50 between block 1 and block 2, that split is closer to 40/60 for electric heat customers and 60/40 for non-electric heat customers. In both cases the percentages in block 1 are increasing while the percentages in block 2 are decreasing. In terms of kWh usage in the block 2 category, the numbers are roughly 85-90% for electric heat customers and 70-75% for non-electric heat customers.

Table A-10
Distribution of Bills by Usage Category for Control Group

	Percent of Bills				Percent of kWh			
	2010-2011	**2011-2012**	**2012-2013**	**2013-2014**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Control Customers with Electric Heat								
20 to 800 kWh	21%	24%	20%	20%	3%	4%	4%	3%
800 to 1600 kWh	19%	20%	22%	25%	8%	9%	11%	11%
Subtotal Block 1	**40%**	**44%**	**42%**	**45%**	**11%**	**13%**	**15%**	**14%**
1600-3200 kWh	31%	32%	37%	33%	28%	30%	35%	29%
Over 3200 kWh	29%	24%	21%	22%	61%	57%	50%	56%
Subtotal Block 2	**60%**	**56%**	**58%**	**55%**	**89%**	**87%**	**85%**	**86%**
Control Customers without Electric Heat								
20 to 800 kWh	19%	18%	21%	22%	5%	5%	5%	5%
800 to 1600 kWh	35%	35%	36%	35%	21%	20%	22%	21%
Subtotal Block 1	**54%**	**53%**	**57%**	**57%**	**26%**	**25%**	**27%**	**26%**
1600-3200 kWh	32%	32%	32%	29%	35%	36%	35%	31%
Over 3200 kWh	15%	15%	11%	13%	39%	39%	38%	43%
Subtotal Block 2	**46%**	**47%**	**43%**	**43%**	**74%**	**75%**	**73%**	**74%**

The Survey Group sees a similar split between block 1 and block 2 of about 40/60 for electric heat customers and 60/40 for non-electric heat customers. Again, the percent of bills in block 1 has been increasing over time. In terms of kWh split, the block 2 category is also 85-90% for electric heat customers but is only 60-65% for non-electric customers, which is lower than for the Control Group.

Table A-11 Distribution of Bills by Usage Category for Survey Group								
	Percent of Bills				Percent of kWh			
	2010-2011	2011-2012	2012-2013	2013-2014	2010-2011	2011-2012	2012-2013	2013-2014
Survey Customers with Electric Heat								
20 to 800 kWh	14%	16%	16%	16%	3%	3%	3%	3%
800 to 1600 kWh	23%	22%	24%	25%	10%	10%	11%	12%
Subtotal Block 1	**37%**	**38%**	**40%**	**41%**	**13%**	**13%**	**14%**	**15%**
1600-3200 kWh	31%	32%	32%	32%	25%	26%	28%	28%
Over 3200 kWh	32%	30%	28%	27%	63%	61%	57%	56%
Subtotal Block 2	**63%**	**62%**	**60%**	**59%**	**87%**	**87%**	**86%**	**85%**
Survey Customers without Electric Heat								
20 to 800 kWh	17%	18%	19%	19%	6%	6%	7%	7%
800 to 1600 kWh	41%	42%	42%	43%	29%	31%	31%	33%
Subtotal Block 1	**58%**	**60%**	**60%**	**62%**	**35%**	**37%**	**38%**	**40%**
1600-3200 kWh	33%	32%	33%	32%	43%	42%	44%	45%
Over 3200 kWh	9%	8%	7%	6%	22%	21%	18%	15%
Subtotal Block 2	**42%**	**40%**	**40%**	**38%**	**65%**	**63%**	**62%**	**60%**

While there are some differences between the Control Group and Survey Group, the findings generally confirm that the electric heat customers have a much greater percentage of total bills and usage that fall under the block 2 category. Therefore it can be concluded that the impact of the RCR on electric heat customers is also much greater. This was also seen in the regression analysis that showed a higher elasticity of -.17 for this group.

No Gas Availability Customers

While there is likely considerable overlap between the customers with no gas availability and customers with electric heat, the Commission requested information regarding the impacts on both groups. While customers without gas access generally have access to propane, the costs are higher than for natural gas. It is also expected that this group represents a more rural environment where wood may be used as a primary or secondary source combined with electric heat.

The following chart shows the average usage for the no gas group in relation to that of the customers with electric heat in the both the Control Group and Survey Group.

Chart A-7
Comparison of No Gas Average Annual Usage With the Average of Electric Heat Customers

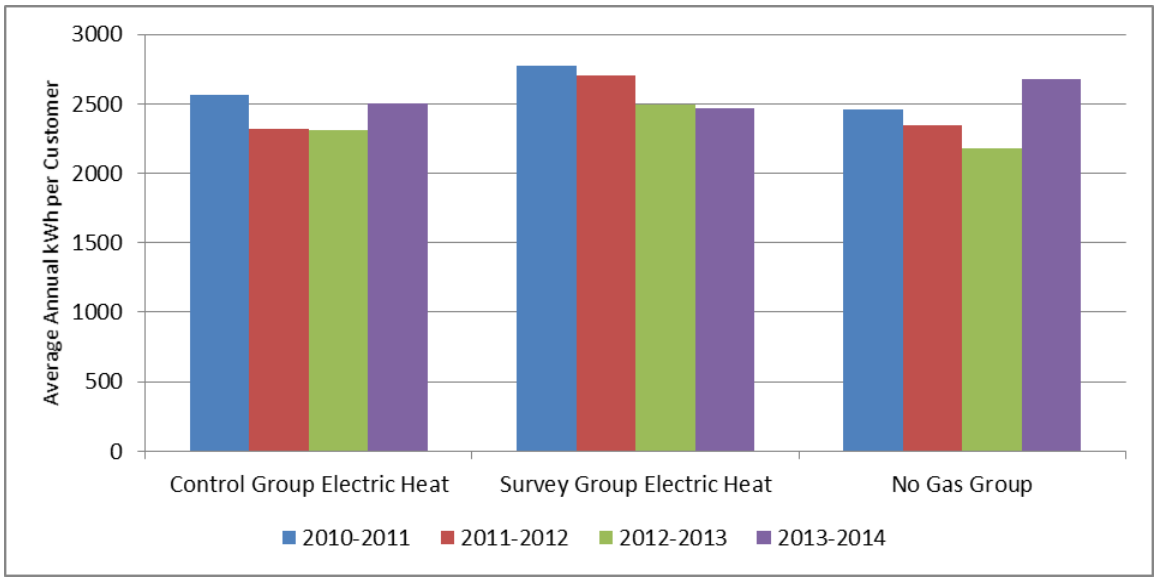


Table A-12 below compares the average use per customer for the no gas group with all customers and with the electric heat customers found from the Survey Group.

The chart also shows that while the 7.1% drop in consumption in year 3 is similar to the electric heat customers, the no gas customers actually use much more in the most recent year when compared to the identified electric heat customers. For some reason the no gas group has not responded as greatly to the RCR rates, as indicated by the charts and the regression showing an elasticity level of -0.10, which is lower than for the all customer group. This is likely due to the lack of cost-effective alternatives to electric heat.

Table A-12 Comparison of No Gas Group With All Customers and Electric Heat Customers				
	2010-2011	**2011-2012**	**2012-2013**	**2013-2014**
Average Annual Use				
All Customers	2,186	2,081	1,970	2,002
No Gas Availability	2,457	2,348	2,179	2,639
With Gas Availability	2,113	2,015	1,918	1,861
Percent Difference				
No Gas vs All Customers	12.4%	12.8%	10.6%	31.8%
With Gas vs All Customers	-3.4%	-3.2%	-2.6%	-7.1%
No Gas vs With Gas	16.3%	16.5%	13.6%	41.8%
Year-to-Year Percent Difference				
All Customers		-4.8%	-5.4%	1.6%
No Gas Availability		-4.4%	-7.2%	21.1%
With Gas Availability		-4.6%	-4.8%	-3.0%

When looking at the percentage of bills and kWh in the block 2 category, the no gas group had percentages that were very similar to that of the electric heat customers, with the number of block 2 bills at about 60% and the % of bills in the block 2 group of 85-90%. These results are shown in Table A-13 below.

Table A-13 Distribution of Bills by Usage Category for Survey Group								
	Percent of Bills				**Percent of kWh**			
	2010-2011	**2011-2012**	**2012-2013**	**2013-2014**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
No Gas Availability								
20 to 800 kWh	20%	21%	21%	22%	3%	3%	3%	3%
800 to 1600 kWh	20%	21%	22%	22%	8%	9%	10%	9%
Subtotal Block 1	**40%**	**41%**	**43%**	**43%**	**11%**	**12%**	**14%**	**12%**
1600-3200 kWh	31%	32%	32%	30%	25%	26%	28%	25%
Over 3200 kWh	29%	27%	25%	28%	64%	62%	58%	63%
Subtotal Block 2	**60%**	**59%**	**57%**	**57%**	**89%**	**88%**	**86%**	**88%**
With Gas Availability								
20 to 800 kWh	19%	22%	22%	22%	5%	5%	6%	6%
800 to 1600 kWh	33%	33%	34%	34%	19%	20%	21%	21%
Subtotal Block 1	**52%**	**55%**	**56%**	**56%**	**23%**	**25%**	**27%**	**26%**
1600-3200 kWh	33%	31%	31%	31%	36%	35%	37%	35%
Over 3200 kWh	16%	15%	13%	13%	41%	40%	37%	39%
Subtotal Block 2	**48%**	**45%**	**44%**	**44%**	**77%**	**75%**	**73%**	**74%**

Summary and Conclusions

This is the second annual report analyzing the impacts of the RCR rate. While the 2013 Report included data for July of 2010 through June of 2013, the period of July 2013 through June of 2014 was added for this report. This reflects two years with the RCR in place and the two years prior.

To determine the impact of the RCR rates on consumption for various groups, FBC looked at average annual usage levels and the percent of bills and kWh that occur for customers that are in the block 2 category. Regression analysis was also conducted to determine the price elasticity under the RCR rates after other factors such as HDD and programmatic DSM were accounted for.

While on the surface the usage for customers with the RCR rate was 6.6% lower than for the Control Group that still has a flat rate in the first year and 9.2% lower in the second year, that difference takes into account multiple factors. The regression analysis leads to the conclusion that savings for the residential class are on the order of 4.4% to 5.7%.

The elasticity measured for the kWh in bills that face the block 2 rate is estimated at -0.16. This is lower than the range expected in the original RCR Application, but higher than the short-term elasticity estimated for the 2013 Report. For customers with all of their usage in block 1, and those in the Control Group with the continued flat rate, the elasticity estimates were not statistically significant and it cannot be shown that there was any impact as a result of the RCR introduction. This is the same conclusion that was reached last year. The assumptions used in the RCR Application were not based on any FBC-specific measurements and therefore the actual findings for FBC customers under the RCR are a better indication of elasticity impacts. For that reason the range of elasticity impacts is now expected to be between -0.16 to -0.20 for the long-term. It is expected that the elasticity may continue to increase over time as customers have more opportunity for switching from electric to natural gas heat.

These elasticity impacts yield savings in the range of 36 to 46 GWh. These savings are within the range included in the RCR Application, although on the lower end. These savings compare to annual savings of 14 to 22 GWh for programmatic DSM savings for 2014-2015. The net impact on system-wide energy consumption is in the range of 2.6% to 3.3%.

For electric space heat customers and those with no gas availability, the higher block 2 rate impacts a greater portion of their bills and kWh usage. This was confirmed by the elasticity estimate of -0.19 found for electric heat customers. The results for the customers without access to natural gas were not statistically significant, although the resulting elasticity value was only -0.10. It is possible that these customers have a

lesser price response because they do not have the ability to switch to a more cost-effective heat source.

Appendix C
MARKET RESEARCH SURVEY AND TABULAR RESULTS

SURVEY ID NUMBER:

Use this number to complete the online version of the survey and double chances of winning. See next page for online link.

Dear Customer,

As you may be aware, in 2012 the British Columbia Utilities Commission (BCUC) directed FortisBC to implement the Residential Conservation Rate (RCR). Under this rate, bimonthly use above 1,600 kWh is charged at a higher rate to encourage conservation.

Our records show that your home uses more electricity than average. This may be due to factors such as the size of your home, the level of wall or ceiling insulation, or the types of windows installed. Likewise, if you use baseboard heaters or a heat pump then your electricity use will likely be higher than homes using natural gas.

We're asking customers like you to complete the attached survey. The survey results will form part of a report that FortisBC will submit to the BCUC in late 2014. The BCUC will use the report to help determine if adjustments to the RCR are appropriate. The information collected will also inform future energy conservation activities. So it's very important that we hear from you.

Return your completed survey by November 13, 2014 and you will have a chance to win one of the following prizes:

One grand prize of a:
$1,000 prepaid VISA gift card.

5 secondary prizes of a:
$200 prepaid VISA gift card.

Complete the survey online and double your chances of winning!
Full survey award rules are on the last page of the survey.

The survey should be completed by the person most responsible for the maintenance and repair of your home.

If you have any questions, please contact Walter Wright at 604-592-7653 or walter.wright@fortisbc.com.

Yours truly,

Mark Warren
Director, Customer Service Operations & Technology, FortisBC

Privacy

The survey will tell us how you use energy in your home. To meet the goals of this survey, FortisBC will also analyze how much electricity your home has used over the past two years.*

To protect your privacy, Discovery Research, the market research company that is conducting this survey on behalf of FortisBC, will not have access to your account information. As well, FortisBC will not see your individual responses. The information collected will be treated confidentially and in accordance with the provisions of the *Personal Information Protection* Act (British Columbia). The information collected will not be used for any marketing or sales purpose.

** By participating in this survey, I agree that FortisBC may use the consumption information for my home for the past two years.*

HOW TO COMPLETE THIS SURVEY

This survey should be completed by the person most responsible for the maintenance and repair of your home. Also please ensure that the survey responses refer to the residence located at the address shown on the cover page.

1. You can complete the enclosed survey and return it in the postage paid envelope provided; or
2. You can complete the survey online at: **www.discoveryresearch.ca/fortis** by entering the **SURVEY ID** located front page of this survey. Please make sure you type this exact link in the *address line* of your web browser and not the search line of google or some other search engine.

Some questions require you to place an "X" in the appropriate box, for example:

Do you rent or own this residence? Rent ☒ Own ☐

Some questions require you to fill in a number, for example: " *23* " years

Some questions allow you to check several answers. These questions will have the instruction "check all that apply."

When you have completed the survey, please put the questionnaire in the enclosed envelope. No postage is needed. **Surveys are due by November 13, 2014**.

If you have mislaid the return envelope, please mail the questionnaire to:

Discovery Research
423 Upper Crestview Drive
Coldstream, BC, V1B 2X7

Dear Participant:

Throughout this questionnaire, when we ask about your home or residence, we are referring to area covered by your FortisBC electricity bill**.** The survey should be completed by the person most responsible for the maintenance and repair of your home.

A. About This Residence

A1. Do you own or rent this residence?

- ☐ 1 Own/co-op
- ☐ 2 Rent

A2. Is this residence a…

- ☐ 1 Single family dwelling (detached)
- ☐ 2 Duplex
- ☐ 3 Row/townhouse (3 or more units attached each with separate entrance)
- ☐ 4 Apartment / Condominium
- ☐ 5 Mobile home
- ☐ 6 Other (please specify)_____

A3. When was this residence built?

- ☐ 1 Before 1950
- ☐ 2 1950-1975
- ☐ 3 1976-1985
- ☐ 4 1986-1995
- ☐ 5 1996-2005
- ☐ 6 2006 or later
- ☐ 7 Don't know

A4. How many weeks per year is this residence occupied?

_____ weeks ☐ 52 Always occupied

A5. What is the total floor area of this residence, including the basement and unfinished areas but excluding the garage or carport?

_____ Square feet OR _____ Square meters

A6. How many floors of heated living space does this residence have? (include basement if heated)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+

A7. How many rooms in this residence are heated? (Exclude bathrooms, closets and hallways)

Number of rooms that are always heated: _____

Number of rooms that are sometimes heated: _____

Number of rooms that are rarely or never heated: _____

A8. Does the electric bill for this residence cover any of the following?

	Yes	No	Don't know	If '*Yes*', is it heated? Yes	No	Don't know
Secondary suite(s)	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Car garage	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Workshop (separate from garage)	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Other buildings (e.g., sheds, farm buildings)	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Solarium	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Aquarium(s)	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Personal greenhouse	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3
Pumps (e.g., wells, irrigation, etc.)	☐ 1	☐ 2	☐ 3			

A9. Please indicate which areas of this residence have insulation and if the insulation is below average, average or above average.

Location	Have insulation?			*If 'Yes',* what quality of insulation do you have?			
	Yes	No	Don't Know	**Below average** (R6 or 1.75"fiberglass or less)	**Average** (R12 or 3.5"fiberglass or less)	**Above average** (R20 or 6"fiberglass or more)	**Don't know**
In the attic	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3	☐ 4
In your walls	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3	☐ 4
In your basement / crawl space	☐ 1	☐ 2	☐ 3	☐ 1	☐ 2	☐ 3	☐ 4

A10. Please estimate what percentage of your windows are:

	% of Total Windows
Single pane	_____ %
Double pane	_____ %
Triple pane	_____ %
Other – Specify _____	_____ %
	Total 100%

B. Space Heating and Space Cooling

B1. What is the main fuel used to heat this residence? The main fuel is the one that provides most of the heat in the home during a typical year. (Check one fuel only.)

Electricity ☐ 1 Bottled propane ☐ 4 Other ☐ 7 _____

Natural gas ☐ 2 Oil ☐ 5

Wood ☐ 3 Don't know ☐ 6

B2. Please indicate any OTHER fuel(s) used to heat this residence (check all that apply) and which OTHER fuel is used the most (check one only). Note: both air source and ground source (geothermal) heat pumps require electricity to operate.

	All OTHER Fuels (check all that apply)	Most commonly used OTHER Fuel (check one only)
Electricity	☐ 1	☐ 1
Natural gas	☐ 2	☐ 2
Bottled propane	☐ 3	☐ 3
Oil	☐ 4	☐ 4
Wood	☐ 5	☐ 5
Other	☐ 6	☐ 6
Don't know	☐ 7	☐ 7

B3. There are several methods that can be used to heat a home. Please check the main method used to heat this residence, then the second most used method, and then all other methods used to heat this residence.

	Main method *(check one only)*	Second most used method *(check one only)*	All other methods *(check all that apply)*
Central forced air furnace	☐ 1	☐ 1	☐ 1
Multi-fuel forced air furnace	☐ 2	☐ 2	☐ 2
Wired-in electric heater (baseboards)	☐ 3	☐ 3	☐ 3
Wired-in electric wall heater (fan forced)	☐ 4	☐ 4	☐ 4
Heat pump – air source	☐ 5	☐ 5	☐ 5
Heat pump – ground source (geothermal)	☐ 6	☐ 6	☐ 6
Hot water baseboards	☐ 7	☐ 7	☐ 7
Hot water radiant in-floor / under floor heat	☐ 8	☐ 8	☐ 8
Electric radiant heat (floors, walls, and/or ceilings)	☐ 9	☐ 9	☐ 9
Gas wall heater	☐ 10	☐ 10	☐ 10
Portable electric heaters	☐ 11	☐ 11	☐ 11
Gas fireplace	☐ 12	☐ 12	☐ 12
Gas heater stove	☐ 13	☐ 13	☐ 13
Wood stove	☐ 14	☐ 14	☐ 14
Wood burning fireplace	☐ 15	☐ 15	☐ 15
Electric fireplace	☐ 16	☐ 16	☐ 16
Other (Specify) _____	☐ 17	☐ 17	☐ 17

B4. Which of the following does this residence have?

☐ 1 Gas boiler
☐ 2 Gas furnace
☐ 3 Neither → **GO TO QUESTION B6**

B5. How old is your furnace or boiler?

_____ years ☐ 88 Don't know

B6. Please indicate below the number of each appliance in this residence and the months of the year the appliance is regularly used. If an appliance is in use year-round, write in Jan – Dec for the months in use.

	Number in Use: 0	1	2	3+	Used in a typical year From (month)	To (month)
Central air conditioner	☐ 0	☐ 1	☐ 2	☐ 3	_____	_____
Portable air conditioner	☐ 0	☐ 1	☐ 2	☐ 3	_____	_____
Room window air conditioner	☐ 0	☐ 1	☐ 2	☐ 3	_____	_____

B7. Do you use programmable thermostat(s) in this residence?

☐ 1 Yes ☐ 2 No ☐ 3 Don't Know

C. Domestic Water Heating

C1. How many water heaters are there in this residence? If you live in a residence where hot water is centrally provided to all units (from outside your unit), please check "none".

1 ☐ 1
2 ☐ 2
3 ☐ 3
None ☐ 4 → **GO TO QUESTION D1**

C2. What type of fuel does your water heater(s) use? Homes with more than one water heater usually have one water heater that provides more hot water than the others. For classification purposes, consider this unit your main water heater.

	Heater 1 (Main Unit)	Heater 2	Heater 3
Electricity	☐ 1	☐ 1	☐ 1
Natural gas	☐ 2	☐ 2	☐ 2
Piped propane	☐ 3	☐ 3	☐ 3
Bottled propane	☐ 4	☐ 4	☐ 4
Solar	☐ 5	☐ 5	☐ 5
Oil	☐ 6	☐ 6	☐ 6
Geothermal	☐ 7	☐ 7	☐ 7
Other	☐ 8	☐ 8	☐ 8

Water Heater Fuels: Hint

Most hot water heaters use either natural gas or electricity. If your hot water heater has a flue/vent then it uses gas or oil. If there is no vent then it uses electricity. Please consider the fuels used in your house when completing this question

D. Swimming Pools & Hot Tubs

D1. Do you have a swimming pool at this residence that is for your exclusive use?

Yes, indoor ☐ 1
Yes, outdoor ☐ 2
} → **CONTINUE**
No ☐ 3 → **GO TO QUESTION D5**

D2. Which fuel do you use to heat the water in your pool and do you use solar energy to help heat the water?

	Main pool heater fuel	Supplemented with solar heating
Solar	☐ 1	
Natural gas	☐ 2	☐ 7
Electricity	☐ 3	☐ 8
Propane	☐ 4	☐ 9
Other	☐ 5	☐ 10

Pool not heated ☐ 6 → **GO TO QUESTION E5**

Solar Heating

There are two main types of solar heating. Photovoltaic panels which use light to power an electric appliance and thermal solar which uses the sun's heat to warm tubes filled with water or diluted antifreeze.

D3. How many months per year is your pool heated? _____ months per-year

D4. During the months when you heat your pool, do you cover it when not in use? Yes ☐ 1 No ☐ 2

D5. Do you have a hot tub at this residence for your exclusive use?

Yes, indoor ☐ 1
Yes, outdoor ☐ 2
} **CONTINUE**
No ☐ 3 → **GO TO QUESTION D9**

D6. What fuel is used to heat the hot tub?

Natural gas ☐ 1
Propane ☐ 2
Solar ☐ 3
Electricity ☐ 4
Other ☐ 5

D7. How many months per year is your hot tub heated? _____ months

D8. During the months when you heat your hot tub, do you cover it when not in use? Yes ☐1 No ☐2

D9. Does this residence have a sauna that is for your exclusive use?

Yes ☐1 → **CONTINUE**

No ☐2 → **GO TO SECTION F**

D10. What fuel is used to heat the sauna?

Electricity ☐1 Propane ☐3 Don't know ☐5

Natural gas ☐2 Other ☐4

E. RENOVATIONS & ENERGY USE

E1. Please indicate renovations or actions you have undertaken at this residence <u>within the past five years,</u> whether you received a government or utility rebate to complete them, and the renovations you plan to undertake within the <u>next two years</u>.

	Did this – past 5 years		Plan to do this – next 2 years
	With rebate	Without rebate	
Improve insulation in walls, attic, basement, or crawlspace	☐1	☐13	☐1
Install energy efficient window(s)	☐2	☐14	☐2
Install insulated outside door(s) or storm doors	☐3	☐15	☐3
Install low flow showerhead(s)	☐4	☐16	☐4
Install programmable thermostat(s)	☐5	☐17	☐5
Install pipe wrap	☐6	☐18	☐6
Install weather stripping or caulking	☐7	☐19	☐7
Install hot water heater blanket	☐8	☐20	☐8
Install drain pipe waste heat recovery system	☐9	☐21	☐9
Install on-demand (tankless or hybrid) water heater	☐10	☐22	☐10
Install high efficiency hot water tank	☐11	☐23	☐11
EcoENERGY or LiveSmart BC certified energy audit completed	☐12	☐24	☐12
Install a sauna		☐25	☐13
Install heated swimming pool		☐26	☐14
Install hot tub		☐27	☐15
None of the above	☐28		☐16

F. About Your Household

The final questions are for classification purposes only and are completely confidential, as are all your answers.

F1. Which region do you reside in?

- ☐ 1 Central Okanagan (Kelowna) including Big White
- ☐ 2 South Okanagan, including Similkameen
- ☐ 3 West Kootenay/Boundary
- ☐ 4 Other _____

F2. Into which of the following age categories do you fit?

18 years or under	☐ 1	35-44 years	☐ 4
19-24 years	☐ 2	45-54 years	☐ 5
25-34 years	☐ 3	55-64 years	☐ 6
		65 years and older	☐ 7

F3. How many people, including yourself, are currently living at this residence (please include any boarders or renters covered under your FortisBC electric account)

Number in household: _____

F4. What was your total household income before taxes in 2013?

Less than $20,000	☐ 1	$60,000 to $79,999	☐ 6
$20,000 to $29,999	☐ 2	$80,000 to $99,999	☐ 7
$30,000 to $39,999	☐ 3	$100,000 to $124,999	☐ 8
$40,000 to $49,999	☐ 4	$125,000 or more	☐ 9
$50,000 to $59,999	☐ 5	Prefer not to answer	☐ 10

FortisBC and Discovery Research would like to thank you for your help and assistance.
If you have any questions please contact Walter Wright at 604-592-7653 FortisBC.

Contest Rules

1. All entries must be received by Discovery Research by November 13, 2014. Limit of one entry per eligible entrant. Contestant names will be determined by a random draw on November 20, 2014 from all entries received. To win, the selected contestant must answer a time limited mathematical skill-testing question, without mechanical or other assistance.
2. The selected contestant will be notified by telephone by Discovery Research. Discovery Research will attempt to reach the selected contestant no more than 3 times. If Discovery Research is unable to contact him or her within 5 days of the draw date, Discovery Research may draw the name of another contestant to be eligible for the prize.
3. Contestants who complete and return the survey form by mail will have their name entered once in the draw. Contestants who complete the survey form online will have their name entered into the draw twice.
4. Contestants must be residents of British Columbia.
5. Chances of winning are based on the number of eligible entries received via mail and online.
6. Employees or agents of FortisBC and their immediate families are not eligible to win.
7. There will be one $1,000 grand prize and five $200 secondary prices awarded; each prize will be prepaid VISA gift card.
8. FortisBC and Discovery Research assume no responsibility for lost or misdirected entry forms.
9. By entering, contestants agree to abide by the contest rules and that the decision of the judge shall be final.

DISCOVERY RESEARCH
Tel: (250) 503-2181 Fax: (250) 503-2189
www.discoveryresearch.ca

2014 RCR Survey
Detailed Tables

- *Total*
- *Natural Gas*
- *Own or Rent*
- *Number in Household*
- *Region*

Prepared for: **FortisBC**
Prepared by: **Discovery Research**
Date: **November 2014**

Banner Legend:

Question ***Banner*** ***Grand Total:*** *Response percentages for all people answering Question*

		Gender		Marital Status				
		Male	Female	Single/ never married	Married	Living with a partner	Divorced/ separated/ widowed	Grand Total
Which newspapers have you read or looked into in the past week?	Neither Province or Sun	27%	**34%**	33%	28%	25%	34%	30%
	Province Only	22%	**21%**	22%	23%	17%	18%	21%
	Sun Only	22%	**24%**	17%	25%	17%	26%	23%
	Both Province and Sun	30%	**21%**	29%	24%	42%	22%	26%
Total	Base	250	250	119	**264**	**24**	82	500

Column Percentage:
Columns add up to 100%
Example: Out of all Females:
34% read neither Province or Sun
21% read Province only
24% read Sun only
<u>21%</u> read both Province and Sun
100% of Females

Base:
Number of people answering both Question & Banner

Note:
If Base <100, interpret column percentages with caution.
If Base <50, interpret column percentages with extreme caution.

SECTION A. ABOUT THIS RESIDENCE

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Do you own or rent this residence?	Own\co-op	**96%**	96%	97%	100%		97%	97%	95%	96%	97%	96%
	Rent	**4%**	4%	3%		100%	3%	3%	5%	4%	3%	4%
Total	Base	**875**	**274**	**601**	**843**	**32**	**422**	**286**	**149**	**401**	**193**	**244**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Is this residence a...	Single family dwelling (detached)	**95%**	96%	95%	95%	94%	96%	96%	89%	97%	95%	93%
	Duplex	**1%**	1%	0%	1%				3%	1%		0%
	Row\townhouse (3+ units attached, separate entrance)	**0%**	1%	0%	0%		0%	0%	1%	0%		1%
	Apartment \ Condominium	**0%**	1%		0%		1%			1%	1%	
	Mobile home	**1%**	0%	1%	1%	6%	2%		1%		1%	3%
	Other (please specify)	**3%**	1%	4%	3%		1%	4%	5%	2%	4%	3%
Total	Base	**872**	**274**	**598**	**840**	**32**	**421**	**284**	**149**	**400**	**193**	**242**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
When was this residence built?	Before 1950	**6%**	5%	7%	5%	25%	6%	6%	4%	3%	7%	12%
	1950-1975	**20%**	15%	22%	20%	16%	21%	18%	19%	19%	20%	21%
	1976-1985	**21%**	18%	23%	21%	25%	23%	20%	20%	19%	22%	25%
	1986-1995	**14%**	10%	16%	14%	3%	16%	14%	9%	13%	19%	9%
	1996-2005	**18%**	21%	17%	18%	9%	17%	18%	21%	20%	19%	16%
	2006 or later	**19%**	31%	14%	19%	16%	15%	23%	25%	26%	12%	14%
	Don't know	**2%**	1%	2%	1%	6%	2%	1%	2%	1%	2%	3%
Total	Base	**874**	**273**	**601**	**842**	**32**	**422**	**285**	**149**	**400**	**193**	**244**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How many weeks per year is this residence occupied? (Weeks)	16	0%		0%	0%		0%				1%	
	20	0%	0%		0%		0%			0%		
	25	0%		0%	0%		0%					0%
	30	0%	1%	0%	0%		0%	0%		1%		
	36	0%	0%	0%	0%		0%			0%	1%	
	38	0%		0%	0%						1%	
	40	1%		1%	1%		1%			1%	1%	0%
	42	0%		0%	0%		0%					
	43	0%		0%	0%		0%					0%
	44	0%	0%	0%	0%		0%	0%		0%	1%	
	45	0%	0%	0%	0%		0%			0%	1%	
	46	0%	0%	1%	0%		1%			1%	1%	0%
	47	0%		0%	0%		0%				1%	
	48	1%	1%	1%	1%		2%	0%		1%	1%	0%
	49	0%	0%	1%	0%		1%	0%		1%		1%
	50	1%	1%	1%	1%		1%	1%	1%	1%	2%	1%
	51	0%	0%		0%		0%			0%		
	52	94%	95%	94%	94%	100%	91%	98%	99%	94%	93%	96%
Total	Base	872	273	599	840	32	422	285	148	399	192	244

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What is the total floor area of this residence, including the basement and unfinished areas but excluding the garage or carport? (Square Feet)	<1000 sq.ft	2%	1%	2%	2%	4%	3%	0%	1%	1%	3%	3%
	1001-2000 sq.ft	14%	7%	17%	14%	15%	17%	12%	10%	7%	17%	24%
	2001-3000 sq.ft	31%	17%	37%	31%	41%	33%	34%	20%	22%	39%	39%
	3001-4000 sq.ft	24%	23%	25%	24%	22%	24%	23%	26%	25%	22%	24%
	4001-5000 sq.ft	15%	26%	10%	15%	15%	12%	15%	25%	22%	10%	8%
	5001+ sq.ft	14%	25%	9%	14%	4%	11%	16%	17%	23%	9%	3%
Total	Mean	3546	4293	3202	3562	3127	3270	3649	4137	4171	3209	2778
	Base	857	270	587	829	27	414	283	143	397	185	238

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How many floors of heated living space does this residence have? (include basement if heated)	1	**11%**	6%	14%	11%	19%	15%	8%	5%	7%	20%	12%
	2	**53%**	44%	57%	53%	42%	55%	51%	51%	47%	61%	56%
	3	**33%**	47%	27%	33%	32%	27%	38%	40%	43%	18%	28%
	4	**2%**	3%	2%	2%	3%	2%	2%	3%	2%	2%	2%
	5+	**1%**	0%	1%	1%	3%	1%	1%		2%		1%
Total	Base	**873**	**274**	**599**	**841**	**31**	**422**	**285**	**148**	**400**	**193**	**243**

How many rooms in this residence are heated? (Exclude bathrooms, closets and hallways)

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Number of rooms that are always heated:	Mean	**8.3**	9.6	7.7	8.3	6.7	7.6	8.5	9.9	9.2	7.5	7.5
	Base	**859**	271	588	826	32	414	282	145	396	186	240
Number of rooms that are sometimes heated:	Mean	**1.4**	1.3	1.4	1.4	1.7	1.4	1.4	1.5	1.4	1.2	1.4
	Base	**859**	271	588	826	32	414	282	145	396	186	240
Number of rooms that are rarely or never heated:	Mean	**.8**	.8	.8	.8	1.0	.8	.9	.7	.8	.9	.6
	Base	**859**	271	588	826	32	414	282	145	396	186	240

Does the electic bill for this residence cover any of the following?

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Secondary suite(s)	Yes	**19%**	21%	18%	19%	14%	10%	21%	40%	20%	19%	17%
	No	**81%**	79%	81%	80%	86%	90%	79%	60%	79%	81%	83%
	Don't know	**0%**		0%	0%		0%	0%		0%	1%	
Total	Base	**787**	**251**	**536**	**758**	**28**	**365**	**268**	**138**	**367**	**175**	**214**
Car garage	Yes	**44%**	54%	40%	44%	46%	41%	46%	53%	50%	39%	38%
	No	**56%**	46%	60%	56%	54%	59%	54%	46%	50%	61%	62%
	Don't know	**0%**	0%		0%				1%	0%		
Total	Base	**805**	**261**	**544**	**776**	**28**	**387**	**265**	**137**	**379**	**178**	**216**
Workshop (separate from garage)	Yes	**30%**	25%	32%	29%	41%	31%	26%	34%	23%	31%	38%
	No	**70%**	74%	68%	71%	59%	69%	74%	65%	77%	69%	61%
	Don't know	**0%**	0%	0%	0%		0%		1%	0%		0%
Total	Base	**785**	**254**	**531**	**755**	**29**	**370**	**270**	**129**	**364**	**169**	**221**
Other buildings (e.g., sheds, farm buildings)	Yes	**25%**	20%	28%	25%	26%	26%	24%	27%	18%	29%	34%
	No	**74%**	80%	72%	74%	74%	74%	76%	72%	81%	71%	66%
	Don't know	**0%**	0%	0%	0%		0%		1%	1%		
Total	Base	**776**	**248**	**528**	**748**	**27**	**366**	**263**	**130**	**358**	**170**	**218**
Solarium	Yes	**4%**	3%	4%	3%	12%	6%	2%	2%	2%	4%	6%
	No	**96%**	97%	96%	97%	88%	94%	98%	98%	98%	96%	94%
	Don't know	**0%**		0%	0%		0%			0%		
Total	Base	**730**	**237**	**493**	**704**	**25**	**342**	**252**	**120**	**345**	**157**	**198**
Aquarium(s)	Yes	**8%**	5%	9%	8%	8%	7%	9%	7%	6%	4%	12%
	No	**92%**	95%	91%	92%	92%	93%	91%	93%	93%	96%	88%
	Don't know	**0%**		0%	0%		0%			0%		
Total	Base	**733**	**238**	**495**	**706**	**26**	**340**	**256**	**121**	**349**	**156**	**199**
Personal greenhouse	Yes	**6%**	6%	6%	6%	12%	7%	4%	6%	4%	6%	10%
	No	**94%**	94%	94%	94%	88%	92%	96%	94%	96%	94%	90%
	Don't know	**0%**		0%	0%		1%			0%		0%
Total	Base	**741**	**241**	**500**	**715**	**25**	**349**	**254**	**122**	**345**	**159**	**208**
Pumps (e.g., wells, irrigation, etc.)	Yes	**47%**	39%	51%	48%	44%	51%	44%	42%	45%	53%	47%
	No	**52%**	59%	48%	52%	56%	48%	55%	57%	54%	46%	52%
	Don't know	**1%**	1%	1%	1%		1%	1%	1%	1%	1%	0%
Total	Base	**801**	**249**	**552**	**775**	**25**	**386**	**267**	**131**	**365**	**180**	**224**

If 'Yes' [electric bill covers this], is it heated?

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Secondary suite(s)	Yes	**98%**	98%	98%	98%	100%	91%	100%	100%	99%	100%	94%
	No	**2%**	2%	2%	2%		9%			1%		6%
Total	Base	**141**	**47**	**94**	**138**	**3**	**35**	**53**	**50**	**71**	**31**	**33**
Car garage	Yes	**46%**	42%	49%	47%	18%	44%	55%	34%	49%	41%	41%
	No	**54%**	58%	51%	53%	82%	56%	45%	66%	51%	59%	59%
Total	Base	**322**	**125**	**197**	**311**	**11**	**138**	**117**	**65**	**172**	**61**	**74**
Workshop (separate from garage)	Yes	**63%**	58%	65%	63%	60%	65%	63%	57%	65%	53%	65%
	No	**37%**	42%	35%	37%	40%	35%	37%	43%	35%	47%	35%
Total	Base	**204**	**57**	**147**	**194**	**10**	**102**	**62**	**37**	**75**	**45**	**74**
Other buildings (e.g., sheds, farm buildings)	Yes	**46%**	48%	46%	47%	40%	47%	45%	47%	44%	43%	52%
	No	**53%**	50%	54%	53%	60%	52%	55%	53%	56%	55%	48%
	Don't know	**1%**	2%		1%		1%				3%	
Total	Base	**177**	**44**	**133**	**172**	**5**	**81**	**60**	**32**	**62**	**40**	**67**
Solarium	Yes	**67%**	75%	65%	70%		69%	75%		60%	75%	56%
	No	**33%**	25%	35%	30%	100%	31%	25%	100%	40%	25%	44%
Total	Base	**21**	**4**	**17**	**20**	**1**	**16**	**4**	**1**	**5**	**4**	**9**
Aquarium(s)	Yes	**88%**	82%	89%	87%	100%	83%	86%	100%	90%	50%	90%
	No	**13%**	18%	11%	13%		17%	14%		10%	50%	10%
Total	Base	**48**	**11**	**37**	**47**	**1**	**18**	**22**	**7**	**21**	**4**	**20**
Personal greenhouse	Yes	**59%**	57%	60%	59%	50%	65%	56%	50%	50%	56%	65%
	No	**41%**	43%	40%	41%	50%	35%	44%	50%	50%	44%	35%
Total	Base	**39**	**14**	**25**	**37**	**2**	**23**	**9**	**6**	**12**	**9**	**17**

Base: resoondents that have these items/rooms covered on electric bill

Please indicate which areas of this residence have insulation.

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
In the attic	Yes	**94%**	94%	93%	94%	84%	94%	94%	95%	93%	96%	94%
	No	**2%**	0%	3%	2%	3%	3%	2%	2%	2%	2%	3%
	Don't know	**4%**	5%	3%	3%	13%	4%	4%	3%	5%	2%	3%
Total	Base	**849**	**271**	**578**	**807**	**31**	**407**	**280**	**145**	**392**	**186**	**237**
In your walls	Yes	**93%**	95%	92%	93%	87%	94%	93%	92%	95%	95%	90%
	No	**2%**	1%	3%	2%	3%	3%	3%	2%	2%	2%	4%
	Don't know	**5%**	4%	5%	4%	10%	4%	5%	5%	4%	3%	6%
Total	Base	**851**	**271**	**580**	**810**	**30**	**411**	**277**	**146**	**394**	**184**	**240**
In your basement / crawl space	Yes	**79%**	86%	76%	80%	53%	77%	81%	82%	84%	79%	72%
	No	**16%**	9%	19%	16%	37%	18%	14%	15%	11%	16%	22%
	Don't know	**5%**	5%	5%	5%	10%	6%	4%	3%	5%	5%	5%
Total	Base	**813**	**257**	**556**	**772**	**30**	**387**	**267**	**142**	**378**	**175**	**228**

If 'Yes' [have insulation], what quality of insulation do you have?

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
In the attic	Below average (R6 or 1.75inch fiberglass or less)	**4%**	4%	4%	3%	21%	4%	4%	2%	2%	5%	4%
	Average (R12 or 3.5inch fiberglass or less)	**22%**	16%	24%	21%	29%	21%	21%	22%	19%	25%	24%
	Above average (R20 or 6inch fiberglass or more)	**58%**	62%	57%	59%	42%	58%	59%	61%	59%	56%	61%
	Don't know	**16%**	19%	15%	17%	8%	17%	17%	15%	20%	14%	12%
Total	Base	**803**	**252**	**551**	**768**	**24**	**388**	**263**	**135**	**367**	**180**	**223**
In your walls	Below average (R6 or 1.75inch fiberglass or less)	**3%**	2%	4%	3%	16%	3%	3%	2%	2%	3%	4%
	Average (R12 or 3.5inch fiberglass or less)	**36%**	32%	38%	36%	40%	38%	30%	42%	32%	45%	40%
	Above average (R20 or 6inch fiberglass or more)	**42%**	46%	40%	43%	32%	41%	45%	42%	44%	35%	43%
	Don't know	**18%**	20%	18%	19%	12%	17%	22%	14%	22%	17%	14%
Total	Base	**790**	**248**	**542**	**753**	**25**	**384**	**259**	**131**	**368**	**175**	**217**
In your basement / crawl space	Below average (R6 or 1.75inch fiberglass or less)	**5%**	4%	6%	5%	12%	5%	4%	8%	5%	3%	7%
	Average (R12 or 3.5inch fiberglass or less)	**34%**	27%	37%	34%	35%	34%	32%	35%	30%	43%	36%
	Above average (R20 or 6inch fiberglass or more)	**40%**	46%	37%	40%	35%	40%	40%	42%	41%	33%	42%
	Don't know	**21%**	23%	20%	21%	18%	21%	24%	15%	24%	21%	14%
Total	Base	**658**	**218**	**440**	**629**	**17**	**302**	**225**	**118**	**326**	**143**	**168**

Base: respondents that have this insulation

Please estimate the percentage of your windows that are:

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Single pane	Mean	**8%**	6%	10%	7%	32%	8%	10%	8%	6%	10%	11%
	Base	**868**	271	597	826	31	419	287	145	399	194	238
Double pane	Mean	**85%**	86%	85%	87%	60%	88%	83%	84%	85%	85%	86%
	Base	**868**	271	597	826	31	419	287	145	399	194	238
Triple pane	Mean	**4%**	6%	3%	4%	3%	3%	5%	4%	6%	3%	2%
	Base	**868**	271	597	826	31	419	287	145	399	194	238
Other - Specify	Mean	**2%**	1%	2%	2%	0%	1%	2%	3%	2%	3%	0%
	Base	**868**	271	597	826	31	419	287	145	399	194	238

SECTION B. SPACE HEATING AND SPACE COOLING

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What is the main fuel used to heat this residence? The main fuel is the one that provides most of the heat in the home during a typical year.	Electricity	**72%**	36%	88%	72%	72%	79%	66%	63%	60%	85%	78%
	Natural gas	**16%**	53%		16%	16%	10%	23%	22%	29%	6%	6%
	Wood	**5%**	3%	6%	5%	6%	6%	3%	5%	2%	6%	10%
	Geothermal, ground source heat pump	**5%**	7%	4%	5%		3%	5%	7%	9%	1%	2%
	Bottled propane	**1%**	0%	2%	1%	6%	1%	1%	2%	1%	2%	2%
	Other	**1%**	1%	1%	1%		1%	1%		0%	1%	1%
	Oil	**0%**		0%	0%		0%					0%
Total	Base	**886**	**276**	**610**	**842**	**32**	**428**	**291**	**149**	**405**	**198**	**246**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Please indicate the OTHER fuel(s) used to heat this residence?	Electricity	**44%**	51%	40%	44%	41%	42%	44%	51%	46%	37%	46%
	Wood	**29%**	16%	35%	29%	19%	31%	27%	26%	21%	33%	36%
	No other fuels	**27%**	19%	30%	26%	25%	28%	29%	18%	25%	32%	25%
	Natural gas	**13%**	42%		13%	16%	9%	14%	21%	20%	8%	8%
	Bottled propane	**7%**	1%	10%	7%	6%	8%	6%	7%	7%	8%	5%
	Other	**1%**	0%	1%	1%		1%	1%	2%	1%	1%	1%
	Don't know	**1%**	1%	0%	0%	3%	0%	1%	1%	1%		
	Oil	**0%**		0%	0%		0%	0%		0%		0%
Total	Responses	**1076**	**364**	**712**	**1029**	**35**	**511**	**355**	**189**	**496**	**233**	**299**
	Base	**887**	**277**	**610**	**843**	**32**	**429**	**291**	**149**	**406**	**198**	**246**

Column percentages may exceed 100% because multiple responses given

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Most commonly used OTHER Fuel	Electricity	**37%**	41%	35%	37%	38%	35%	36%	42%	39%	33%	37%
	No other fuels	**26%**	19%	29%	25%	25%	28%	27%	17%	24%	31%	24%
	Wood	**22%**	8%	29%	22%	13%	23%	21%	20%	15%	26%	28%
	Natural gas	**10%**	31%	0%	10%	16%	7%	10%	15%	16%	4%	6%
	Bottled propane	**5%**	0%	7%	5%	6%	5%	4%	4%	5%	6%	4%
	Other	**1%**		1%	1%		1%	1%	1%	0%	1%	1%
	Don't know	**1%**	1%	0%	0%	3%	0%	1%	1%	1%		
	Oil	**0%**		0%	0%		0%	0%		0%		0%
Total	Base	**887**	**277**	**610**	**843**	**32**	**429**	**291**	**149**	**406**	**198**	**246**

There are several methods that can be used to heat a home.
Please check the main method used to heat this residence.

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Main method	Central forced air furnace	**41%**	55%	35%	40%	50%	38%	44%	46%	46%	41%	36%
	Wired-in electric heater (baseboards)	**17%**	5%	22%	17%	25%	18%	18%	10%	13%	13%	23%
	Heat pump – air source	**16%**	14%	17%	17%	3%	18%	14%	15%	16%	24%	9%
	Heat pump – ground source (geothermal)	**10%**	12%	8%	10%		7%	11%	13%	14%	7%	5%
	Hot water radiant in-floor \ under floor heat	**5%**	4%	5%	5%	3%	6%	3%	5%	4%	3%	8%
	Wood stove	**3%**	3%	4%	3%	6%	4%	2%	5%	1%	5%	6%
	Multi-fuel forced air furnace	**2%**	2%	1%	2%		2%	1%	2%	2%	2%	2%
	Hot water baseboards	**1%**	1%	2%	2%		2%	0%	1%	1%	1%	2%
	Wired-in electric wall heater (fan forced)	**1%**	0%	2%	1%		1%	3%		0%	2%	3%
	Other (Specify)	**1%**	1%	1%	1%		1%	2%	1%	1%		2%
	Electric radiant heat (floors, walls, ceilings)	**1%**		1%	1%		1%	1%		1%	1%	0%
	Portable electric heaters	**1%**	0%	1%	0%	9%	1%	0%			1%	2%
	Gas fireplace	**1%**	1%	0%	1%		0%	1%	1%	0%	1%	0%
	Wood burning fireplace	**1%**	1%	0%	1%		1%	1%		0%	1%	0%
	Gas wall heater	**0%**	0%		0%			0%				0%
	Electric fireplace	**0%**		0%		3%		0%		0%		
Total	Base	**886**	**276**	**610**	**842**	**32**	**428**	**291**	**149**	**405**	**198**	**246**

There are several methods that can be used to heat a home.
Please check the second most used method used to heat this residence.

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Second most used method	Wired-in electric heater (baseboards)	**14%**	14%	14%	14%	24%	13%	15%	14%	12%	13%	17%
	Gas fireplace	**13%**	31%	4%	14%	5%	11%	18%	13%	20%	9%	8%
	Wood stove	**12%**	3%	17%	12%		14%	11%	10%	8%	13%	18%
	Central forced air furnace	**11%**	11%	11%	11%	10%	13%	7%	14%	11%	13%	10%
	Wood burning fireplace	**11%**	4%	14%	10%	14%	13%	10%	7%	9%	15%	9%
	Portable electric heaters	**9%**	7%	10%	9%	19%	8%	9%	10%	6%	8%	14%
	Heat pump – air source	**7%**	6%	7%	6%	10%	8%	6%	4%	6%	10%	5%
	Electric radiant heat (floors, walls, ceilings)	**6%**	8%	5%	6%	14%	5%	7%	5%	9%	3%	3%
	Hot water radiant in-floor \ under floor heat	**6%**	8%	4%	6%	5%	3%	8%	6%	9%	3%	3%
	Wired-in electric wall heater (fan forced)	**5%**	3%	6%	5%		6%	2%	6%	2%	6%	8%
	Other (Specify)	**3%**	1%	3%	3%		2%	3%	5%	3%	1%	3%
	Electric fireplace	**2%**	1%	3%	2%		3%	1%	2%	2%	5%	1%
	Heat pump – ground source (geothermal)	**1%**	1%	1%	1%		1%	0%	2%	1%		1%
	Multi-fuel forced air furnace	**1%**	1%	0%	1%		0%	0%	2%	1%	1%	
	Hot water baseboards	**0%**		1%	0%			1%	1%			1%
	Gas wall heater	**0%**	1%		0%		0%	0%		1%		
	Gas heater stove	**0%**	1%		0%		0%	0%		0%	1%	
Total	Base	**661**	**226**	**435**	**634**	**21**	**301**	**222**	**125**	**314**	**136**	**185**

There are several methods that can be used to heat a home.
Please indicate all OTHER methods used to heat this residence.

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
All OTHER methods	Gas fireplace	**25%**	40%	16%	25%	23%	24%	24%	30%	33%	22%	12%
	Portable electric heaters	**24%**	21%	26%	24%	23%	21%	29%	22%	23%	27%	24%
	Wood burning fireplace	**20%**	19%	21%	20%	31%	24%	21%	14%	21%	21%	18%
	Wired-in electric heater (baseboards)	**15%**	18%	14%	16%	8%	13%	21%	14%	17%	16%	12%
	Electric fireplace	**14%**	8%	18%	15%	8%	16%	11%	18%	13%	18%	12%
	Electric radiant heat (floors, walls, ceilings)	**14%**	15%	13%	14%		14%	11%	18%	18%	12%	7%
	Wood stove	**11%**	4%	16%	11%	15%	9%	13%	11%	8%	6%	22%
	Wired-in electric wall heater (fan forced)	**7%**	6%	7%	7%	8%	6%	9%	4%	7%	3%	8%
	Hot water radiant in-floor \ under floor heat	**6%**	9%	4%	6%		4%	7%	10%	7%	7%	2%
	Central forced air furnace	**4%**	4%	4%	4%		5%	2%	7%	5%	3%	5%
	Heat pump – air source	**4%**	8%	1%	4%	8%	3%	5%	4%	5%	1%	1%
	Other (Specify)	**2%**	2%	2%	2%		4%	1%	1%	2%	1%	2%
	Heat pump – ground source (geothermal)	**1%**	3%		1%		1%	2%		2%	1%	
	Gas heater stove	**1%**	3%		1%		1%	1%	3%	1%		2%
	Gas wall heater	**1%**	1%	0%	1%		1%	1%		1%	1%	
Total	Responses	**503**	**210**	**293**	**483**	**16**	**201**	**182**	**113**	**276**	**95**	**107**
	Base	**336**	**131**	**205**	**320**	**13**	**139**	**117**	**73**	**171**	**67**	**83**

Column percentages may exceed 100% because multiple responses given

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Which of the following does this residence have?	Gas boiler	**3%**	8%	0%	3%	4%	3%	2%	6%	5%	2%	1%
	Gas furnace	**20%**	56%	3%	19%	29%	13%	26%	27%	33%	8%	10%
	Neither	**77%**	35%	97%	78%	68%	84%	72%	67%	62%	90%	89%
Total	Base	**852**	**271**	**581**	**813**	**28**	**409**	**283**	**144**	**385**	**193**	**239**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How old is your furnace or boiler? (Years)	Mean	**8.8**	8.7	9.6	8.8	10.0	8.9	8.8	8.3	7.9	9.5	12.9
	Base	**173**	159	14	165	5	62	69	41	135	15	21

Base: those with a gas furnace or gas boiler

Please indicate below the number of each appliance in this residence.

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Central air conditioner	None	**47%**	24%	57%	46%	65%	50%	46%	39%	32%	41%	74%
	1	**40%**	53%	34%	40%	29%	40%	34%	50%	46%	49%	21%
	2	**7%**	14%	4%	8%	3%	5%	11%	7%	12%	6%	2%
	3+	**6%**	10%	5%	7%	3%	5%	9%	5%	10%	5%	2%
Total	Base	**882**	**275**	**607**	**839**	**31**	**425**	**290**	**149**	**405**	**197**	**245**
Portable air conditioner	None	**91%**	92%	90%	91%	81%	92%	91%	86%	92%	93%	86%
	1	**6%**	5%	7%	6%	10%	5%	6%	9%	4%	4%	10%
	2	**2%**	2%	2%	2%	3%	2%	2%	3%	3%	2%	3%
	3+	**1%**	1%	1%	1%	6%	0%	1%	3%	1%	1%	1%
Total	Base	**882**	**275**	**607**	**839**	**31**	**425**	**290**	**149**	**405**	**197**	**245**
Room window air conditioner	None	**86%**	90%	84%	87%	71%	91%	83%	76%	88%	88%	83%
	1	**8%**	6%	9%	8%	19%	6%	10%	11%	6%	4%	13%
	2	**4%**	3%	4%	4%	3%	2%	4%	8%	4%	5%	3%
	3+	**2%**	0%	3%	2%	6%	0%	2%	5%	1%	3%	2%
Total	Base	**882**	**275**	**607**	**839**	**31**	**425**	**290**	**149**	**405**	**197**	**245**

What months of the year is this appliance regularly used?

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Central air conditioner (From)	Jan	**5%**	3%	6%	5%		5%	5%	4%	4%	7%	3%
	Feb	**0%**		0%	0%		0%				1%	
	Mar	**0%**	1%		0%			1%	1%	1%		
	Apr	**4%**	7%	2%	4%		3%	5%	4%	6%	2%	
	May	**20%**	25%	15%	20%	8%	12%	26%	26%	21%	16%	22%
	June	**36%**	37%	35%	35%	62%	33%	35%	46%	34%	33%	45%
	July	**34%**	27%	39%	34%	31%	45%	27%	17%	33%	38%	30%
	Aug	**1%**		2%	1%		1%	1%	1%	1%	2%	
	Oct	**0%**	0%	0%	0%		0%	1%			1%	
Total	Base	**475**	**209**	**266**	**451**	**13**	**217**	**156**	**92**	**272**	**122**	**67**
Central air conditioner (To)	Jan	**0%**	0%		0%			1%				
	Apr	**0%**		0%	0%		0%				1%	
	July	**0%**		1%	0%		0%	1%			2%	
	Aug	**31%**	26%	34%	31%	15%	34%	28%	28%	32%	30%	25%
	Sept	**57%**	62%	54%	57%	69%	54%	61%	59%	57%	53%	64%
	Oct	**6%**	9%	5%	6%	15%	6%	4%	9%	6%	7%	7%
	Dec	**5%**	3%	6%	5%		5%	5%	4%	4%	7%	3%
Total	Base	**474**	**209**	**265**	**450**	**13**	**216**	**156**	**92**	**272**	**121**	**67**
Portable air conditioner (From)	Jan	**1%**		2%	1%			4%		4%		
	Apr	**3%**	10%		3%			8%		7%		
	May	**10%**	10%	10%	11%		3%	21%	11%	7%	23%	9%
	June	**24%**	20%	25%	25%	17%	31%	17%	21%	14%	38%	29%
	July	**58%**	60%	58%	56%	83%	60%	46%	68%	64%	38%	56%
	Aug	**4%**		5%	4%		6%	4%		4%		6%
Total	Base	**79**	**20**	**59**	**73**	**6**	**35**	**24**	**19**	**28**	**13**	**34**
Portable air conditioner (To)	Aug	**56%**	55%	56%	58%	33%	60%	46%	63%	68%	31%	53%
	Sept	**38%**	40%	37%	36%	67%	37%	42%	32%	25%	54%	44%
	Oct	**4%**		5%	4%		3%	4%	5%		15%	3%
	Nov	**1%**	5%		1%			4%		4%		
	Dec	**1%**		2%	1%			4%		4%		
Total	Base	**79**	**20**	**59**	**73**	**6**	**35**	**24**	**19**	**28**	**13**	**34**

Base: respondents with this appliance

What months of the year is this appliance regularly used?

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Room window air conditioner (From)	Jan	**2%**		2%	2%			2%	3%	2%	5%	
	May	**14%**	4%	16%	14%	13%	6%	17%	15%	15%	27%	7%
	June	**36%**	38%	36%	37%	25%	39%	35%	36%	30%	41%	37%
	July	**46%**	58%	42%	45%	63%	53%	42%	45%	47%	27%	56%
	Aug	**3%**		3%	3%		3%	4%		6%		
Total	Base	**118**	**26**	**92**	**110**	**8**	**36**	**48**	**33**	**47**	**22**	**41**
Room window air conditioner (To)	Aug	**49%**	50%	49%	51%	25%	63%	43%	45%	60%	36%	46%
	Sept	**46%**	50%	44%	44%	63%	37%	49%	48%	33%	55%	51%
	Oct	**3%**		4%	3%	13%		6%	3%	4%	5%	2%
	Dec	**2%**		2%	2%			2%	3%	2%	5%	
Total	Base	**116**	**26**	**90**	**108**	**8**	**35**	**47**	**33**	**45**	**22**	**41**

Base: respondents with this appliance

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Do you use programmable thermostat(s) in this residence?	Yes	**64%**	78%	57%	65%	41%	60%	67%	70%	73%	59%	54%
	No	**35%**	22%	41%	35%	56%	39%	32%	29%	25%	41%	45%
	Don't know	**1%**		1%	1%	3%	1%	1%	1%	1%		1%
Total	Base	**884**	**276**	**608**	**840**	**32**	**426**	**291**	**149**	**405**	**198**	**244**

SECTION C: DOMESTIC WATER HEATING

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How many water heaters are there in this residence?	1	**72%**	60%	77%	72%	84%	76%	68%	71%	64%	76%	83%
	2	**22%**	33%	18%	23%	13%	20%	26%	21%	29%	18%	13%
	3	**3%**	4%	2%	3%	3%	2%	3%	5%	4%	3%	1%
	None	**3%**	3%	3%	3%		2%	2%	3%	3%	3%	2%
Total	Base	**872**	**271**	**601**	**832**	**32**	**422**	**287**	**146**	**398**	**195**	**242**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What type of fuel does your water heater(s) use? (Heater 1)	Electricity	**82%**	50%	97%	82%	77%	87%	77%	78%	70%	91%	94%
	Natural gas	**15%**	48%		15%	19%	10%	19%	19%	25%	7%	5%
	Piped propane	**0%**		1%	0%		1%		1%	1%	1%	0%
	Bottled propane	**0%**		1%	0%	3%		1%	1%	1%	1%	0%
	Solar	**0%**		1%	0%		0%	0%		1%	1%	
	Geothermal	**2%**	2%	2%	2%		1%	3%	1%	3%	1%	
Total	Base	**844**	**263**	**581**	**806**	**31**	**411**	**278**	**140**	**386**	**188**	**235**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What type of fuel does your water heater(s) use? (Heater 2)	Electricity	**69%**	52%	85%	70%	50%	71%	75%	56%	62%	81%	80%
	Natural gas	**18%**	39%		18%	50%	15%	17%	32%	23%	14%	10%
	Bottled propane	**2%**		3%	2%		1%	1%		3%		
	Solar	**2%**		3%	2%		2%	1%		1%	3%	3%
	Oil	**1%**	1%		1%							
	Geothermal	**9%**	8%	10%	8%		10%	6%	12%	12%	3%	7%
Total	Base	**196**	**92**	**104**	**190**	**4**	**87**	**71**	**34**	**119**	**36**	**30**

		Total	Natural Gas		Own or rent?	Number in Household			Region		
			Gas	Non-gas	Own	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What type of fuel does your water heater(s) use? (Heater 3)	Electricity	**74%**	55%	100%	72%	86%	50%	83%	64%	100%	100%
	Natural gas	**16%**	27%		17%	14%	17%	17%	21%		
	Bottled propane	**5%**	9%		6%		17%		7%		
	Geothermal	**5%**	9%		6%		17%		7%		
Total	Base	**19**	**11**	**8**	**18**	**7**	**6**	**6**	**14**	**4**	**1**

SECTION D: SWIMMING POOLS AND HOT TUBS

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Do you have a swimming pool at this residence that is for your exclusive use?	Yes, indoor	**2%**	3%	1%	2%		1%	3%	1%	2%	3%	1%
	Yes, outdoor	**29%**	53%	18%	30%	16%	24%	34%	35%	44%	26%	10%
	No	**69%**	44%	81%	68%	84%	75%	63%	63%	54%	72%	90%
Total	Base	**865**	**270**	**595**	**826**	**31**	**416**	**285**	**147**	**396**	**193**	**240**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Which fuel do you use to heat the water in your pool and do you use solar energy to help heat the water? (Main fuel)	Solar	**7%**	3%	12%	7%		11%	6%	4%	3%	15%	20%
	Natural gas	**36%**	64%		37%	20%	33%	47%	26%	44%	15%	24%
	Electricity	**23%**	16%	32%	23%	20%	21%	16%	39%	23%	24%	24%
	Propane	**3%**	2%	5%	3%		5%	3%	2%	4%	4%	
	Other	**4%**	4%	4%	4%		3%	5%	6%	6%		
	Pool not heated	**26%**	11%	46%	25%	60%	28%	24%	24%	20%	44%	32%
Total	Base	**264**	**150**	**114**	**259**	**5**	**104**	**103**	**54**	**179**	**55**	**25**

Base: those with pool

		Total	Natural Gas		Own or rent?	Number in Household			Region		
			Gas	Non-gas	Own	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Which fuel do you use to heat the water in your pool and do you use solar energy to help heat the water? (Supplemented)	Natural gas supplemented with solar	**43%**	65%		43%	33%	57%	29%	50%		33%
	Electricity supplemented with solar	**47%**	25%	90%	47%	67%	29%	57%	36%	100%	67%
	Other supplemented with solar	**10%**	10%	10%	10%		14%	14%	14%		
Total	Base	**30**	**20**	**10**	**30**	**9**	**14**	**7**	**22**	**4**	**3**

Base: those with pool with supplementary solar heating

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How many months per year is your pool heated?	Mean Months	**4.0**	3.8	4.5	4.0	4.3	3.7	4.3	4.0	3.9	3.9	4.6
	Base	**198**	129	69	195	3	75	79	42	151	28	16

Base: those with heated pool

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
During the months when you heat your pool, do you cover it when not in use?	Yes	**77%**	80%	72%	77%	100%	69%	80%	86%	75%	86%	81%
	No	**23%**	20%	28%	23%		31%	20%	14%	25%	14%	19%
Total	Base	**204**	**132**	**72**	**201**	**3**	**77**	**82**	**43**	**157**	**28**	**16**

Base: those with heated pool

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Do you have a hot tub at this residence for your exclusive use?	Yes, indoor	**2%**	3%	2%	2%		2%	1%	5%	3%	1%	1%
	Yes, outdoor	**35%**	48%	29%	35%	23%	31%	41%	35%	46%	28%	23%
	No	**63%**	50%	69%	62%	77%	67%	57%	60%	51%	72%	76%
Total	Base	**857**	**269**	**588**	**818**	**31**	**415**	**282**	**144**	**393**	**191**	**238**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What fuel is used to heat the hot tub?	Natural gas	**4%**	10%		4%		4%	4%	4%	7%		
	Propane	**0%**		1%			1%			1%		
	Electricity	**95%**	89%	99%	95%	100%	94%	95%	96%	92%	98%	100%
	Other	**1%**	1%	1%	1%		1%	1%		1%	2%	
Total	Base	**319**	**133**	**186**	**308**	**8**	**137**	**121**	**56**	**193**	**55**	**59**

Base: those with hot tub

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How many months per year is your hot tub heated?	Mean Months	**9.8**	10.4	9.4	9.8	11.8	9.4	10.3	9.6	9.7	9.3	10.5
	Base	**316**	132	184	305	8	137	120	56	191	55	58

Base: those with hot tub

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
During the months when you heat your hot tub, do you cover it when not in use?	Yes	**98%**	98%	98%	98%	100%	99%	97%	98%	98%	94%	100%
	No	**2%**	2%	2%	2%		1%	3%	2%	2%	6%	
Total	Base	**313**	**132**	**181**	**303**	**7**	**136**	**119**	**55**	**189**	**54**	**58**

Base: those with hot tub

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Does this residence have a sauna that is for your exclusive use?	Yes	**9%**	12%	8%	10%	10%	10%	11%	6%	12%	8%	6%
	No	**91%**	88%	92%	90%	90%	90%	89%	94%	88%	92%	94%
Total	Base	**849**	**268**	**581**	**810**	**31**	**407**	**282**	**144**	**394**	**185**	**237**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What fuel is used to heat the sauna?	Electrcity	**95%**	94%	96%	95%	100%	98%	93%	89%	96%	100%	93%
	Natural gas	**3%**	6%		3%			7%		4%		
	Other	**3%**		4%	3%		3%		11%			7%
Total	Base	**80**	**33**	**47**	**77**	**3**	**40**	**30**	**9**	**49**	**14**	**14**

Base: those with sauna

SECTION E. RENOVATIONS AND ENERGY USE
Did this in the past 5 years

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Please indicate renovations or actions you have undertaken at this residence within the past 5 years with or without a government or utility rebate	None of the above	**44%**	49%	42%	44%	48%	47%	42%	46%	48%	38%	43%
	Install weather stripping or caulking no rebate	**25%**	19%	27%	25%	19%	22%	28%	26%	21%	31%	25%
	Install low flow showerhead(s) no rebate	**21%**	16%	24%	22%	5%	20%	24%	22%	19%	27%	20%
	Install programmable thermostat(s) no rebate	**21%**	23%	20%	21%	19%	18%	24%	22%	21%	19%	22%
	Install energy efficient window(s) no rebate	**19%**	18%	20%	19%	14%	21%	18%	17%	20%	16%	21%
	Improve insulation walls, attic, etc. no rebate	**17%**	18%	16%	17%	10%	16%	16%	16%	15%	16%	21%
	Install high efficiency hot water tank no rebate	**15%**	11%	17%	15%	5%	16%	13%	17%	16%	16%	13%
	Install insulated outside\storm door(s) no rebate	**13%**	10%	14%	13%	14%	14%	13%	11%	11%	14%	14%
	Install pipe wrap no rebate	**11%**	9%	11%	11%	10%	9%	12%	11%	8%	14%	13%
	EcoENERGY LiveSmart BC certified energy audit w\ rebate	**6%**	6%	6%	6%		5%	7%	6%	6%	8%	6%
	Install hot water heater blanket no rebate	**6%**	4%	6%	6%	10%	3%	9%	7%	4%	5%	8%
	Install hot tub no rebate	**5%**	4%	5%	4%	19%	5%	6%	1%	5%	3%	5%
	Install energy efficient window(s) w\ rebate	**4%**	3%	4%	4%		3%	5%	5%	3%	6%	3%
	Improve insulation walls,attic,etc. w\ rebate	**3%**	3%	3%	3%		3%	3%	3%	3%	4%	2%
	Install programmable thermostat(s) with rebate	**3%**	2%	3%	3%		3%	3%	3%	3%	5%	1%
	Install a sauna no rebate	**3%**	3%	2%	3%	5%	2%	3%	3%	3%	2%	2%
	EcoENERGY LiveSmart BC certified energy audit no rebate	**3%**	4%	2%	2%		2%	3%	4%	3%	4%	1%
	Install on-demand water heater no rebate	**2%**	4%	1%	2%		2%	2%	3%	3%	1%	2%
	Install low flow showerhead(s) with rebate	**2%**	1%	2%	2%		1%	2%	2%	2%	3%	1%
	Install heated swimming pool no rebate	**2%**	3%	1%	2%	10%	2%	2%	2%	3%	1%	1%
	Install weather stripping or caulking with rebate	**2%**	0%	2%	2%		2%	1%	2%	2%	2%	1%
	Install drain pipe waste heat recovery sys. no rebate	**2%**	3%	1%	2%		2%	1%	2%	2%	3%	1%
	Install high efficiency hot water tank with rebate	**1%**	1%	1%	1%		1%	1%	1%	1%	2%	1%
	Install insulated outside\storm door(s) w\ rebate	**1%**	1%	1%	1%		0%	2%	2%	1%	1%	1%
	Install pipe wrap with rebate	**1%**	1%	1%	1%		1%	0%	2%	1%	1%	1%
	Install hot water heater blanket with rebate	**0%**	1%	0%	0%		1%		1%	0%	1%	1%
	Install on-demand water heater with rebate	**0%**	1%		0%			0%	1%	1%		
Total	Responses	**1566**	**466**	**1100**	**1517**	**39**	**697**	**569**	**275**	**735**	**370**	**394**
	Base	**681**	**213**	**468**	**654**	**21**	**316**	**236**	**116**	**325**	**152**	**175**

Column percentages may exceed 100% because multiple responses given

Plan to do this in the next 2 years

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Please indicate renovations or actions PLAN to undertake in the next 5 years	None of the above	**73%**	75%	72%	73%	76%	77%	70%	68%	74%	73%	73%
	Improve insulation walls, attic, etc.	**9%**	8%	10%	9%	19%	7%	11%	13%	7%	11%	10%
	Install energy efficient window(s)	**9%**	8%	10%	9%	5%	7%	11%	13%	9%	8%	9%
	Install insulated outside\storm door(s)	**6%**	4%	7%	6%	5%	5%	7%	7%	4%	8%	8%
	Install weather stripping or caulking	**6%**	7%	6%	6%	5%	5%	7%	4%	6%	7%	6%
	Install hot water heater blanket	**5%**	3%	6%	6%	5%	4%	4%	10%	5%	6%	5%
	EcoENERGY LiveSmart BC certified energy audit	**4%**	5%	4%	4%	5%	4%	4%	5%	4%	5%	4%
	Install high efficiency hot water tank	**4%**	3%	5%	4%	5%	3%	5%	8%	5%	3%	5%
	Install on-demand water heater	**4%**	3%	4%	4%	10%	3%	4%	6%	4%	5%	3%
	Install programmable thermostat(s)	**3%**	3%	3%	3%	5%	3%	4%	3%	2%	3%	3%
	Install pipe wrap	**3%**	3%	3%	3%	10%	2%	3%	5%	3%	2%	2%
	Install low flow showerhead(s)	**2%**	1%	2%	2%		2%	2%	3%	2%	2%	2%
	Install drain pipe waste heat recovery sys.	**1%**	2%	1%	1%	10%	1%	1%	3%	2%	1%	2%
	Install hot tub	**1%**	1%	2%	1%	5%	1%	2%	3%	2%	2%	
	Install heated swimming pool	**0%**	0%	0%	0%			0%	2%	0%	1%	
	Install a sauna	**0%**		0%	0%			0%			1%	
Total	Responses	**906**	**273**	**633**	**866**	**34**	**387**	**322**	**178**	**418**	**207**	**231**
	Base	**681**	**213**	**468**	**654**	**21**	**316**	**236**	**116**	**325**	**152**	**175**

Column percentages may exceed 100% because multiple responses given

SECTION F. ABOUT YOUR HOUSEHOLD

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Which region do you reside in?	Central Okanagan (Kelowna) incl. Big White	**46%**	72%	34%	46%	50%	36%	55%	56%	100%		
	South Okanagan, including Similkameen	**22%**	12%	27%	22%	16%	26%	19%	19%		100%	
	West Kootenay/Boundary	**28%**	13%	34%	28%	28%	33%	23%	21%			100%
	Other	**4%**	3%	4%	4%	6%	5%	3%	3%			
Total	Base	**885**	**276**	**609**	**841**	**32**	**428**	**291**	**149**	**406**	**198**	**246**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
Into which of the following age categories do you fit?	18 years or under	**0%**		0%	0%		0%					0%
	19-24 years	**0%**	0%	0%	0%		0%	0%			1%	0%
	25-34 years	**2%**	1%	2%	1%	6%	1%	2%	2%	1%	1%	2%
	35-44 years	**12%**	16%	10%	12%	16%	1%	19%	30%	15%	10%	9%
	45-54 years	**24%**	31%	21%	24%	31%	13%	34%	37%	30%	17%	21%
	55-64 years	**31%**	31%	30%	30%	31%	35%	30%	19%	30%	32%	32%
	65 years and older	**31%**	19%	36%	31%	13%	49%	14%	11%	23%	38%	34%
	Prefer not to answer	**1%**	1%	1%	1%	3%	1%	0%	1%	1%	1%	1%
Total	Base	**885**	**275**	**610**	**841**	**32**	**429**	**291**	**149**	**405**	**198**	**246**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
How many people, including yourself, are currently living at this residence?	1	**6%**	3%	7%	6%	10%	12%			4%	8%	8%
	2	**43%**	33%	48%	44%	34%	88%			35%	49%	51%
	3	**16%**	18%	16%	16%	24%		48%		17%	16%	17%
	4	**17%**	24%	14%	18%	7%		52%		23%	12%	11%
	5	**8%**	11%	7%	8%	10%			47%	9%	8%	8%
	6+	**9%**	12%	8%	9%	14%			53%	12%	7%	6%
Total	Base	**869**	**272**	**597**	**828**	**29**	**429**	**291**	**149**	**397**	**196**	**240**

		Total	Natural Gas		Own or rent?		Number in Household			Region		
			Gas	Non-gas	Own	Rent	1-2	3-4	5+	Central OK	South OK	W. Kootenay
What was your total household income before taxes in 2013?	Less than $20,000	4%	2%	5%	4%	19%	4%	4%	5%	3%	3%	7%
	$20,000 to $29,999	5%	3%	6%	5%	22%	8%	3%	3%	2%	8%	7%
	$30,000 to $39,999	5%	3%	7%	6%	3%	7%	4%	5%	4%	5%	8%
	$40,000 to $49,999	6%	3%	7%	6%	3%	7%	5%	6%	2%	7%	14%
	$50,000 to $59,999	6%	3%	7%	6%	3%	6%	5%	7%	5%	8%	7%
	$60,000 to $79,999	7%	7%	7%	7%	3%	7%	6%	11%	7%	9%	5%
	$80,000 to $99,999	8%	6%	10%	8%	9%	9%	7%	9%	8%	10%	10%
	$100,000 to $124,999	8%	9%	8%	8%	9%	9%	8%	9%	8%	9%	8%
	$125,000 or more	17%	32%	11%	18%	3%	13%	25%	17%	27%	10%	8%
	Prefer not to answer	32%	32%	32%	31%	25%	30%	34%	30%	35%	31%	26%
Total	Base	**874**	**271**	**603**	**830**	**32**	**423**	**288**	**148**	**399**	**197**	**242**

DISCOVERY RESEARCH
Tel: (250) 503-2181 Fax: (250) 503-2189
www.discoveryresearch.ca

2014 RCR Survey
Detailed Tables

- *Total*
- *Age*
- *Income*

Prepared for: **FortisBC**
Prepared by: **Discovery Research**
Date: **November 2014**

Banner Legend:

Question ***Banner*** ***Grand Total:*** *Response percentages for all people answering Question*

		Gender		Marital Status				
		Male	Female	Single/ never married	Married	Living with a partner	Divorced/ separated/ widowed	Grand Total
Which newspapers have you read or looked into in the past week?	Neither Province or Sun	27%	**34%**	33%	28%	25%	34%	30%
	Province Only	22%	**21%**	22%	23%	17%	18%	21%
	Sun Only	22%	**24%**	17%	25%	17%	26%	23%
	Both Province and Sun	30%	**21%**	29%	24%	42%	22%	26%
Total	Base	250	250	119	**264**	**24**	82	500

Column Percentage:
Columns add up to 100%
Example: Out of all Females:
34% read neither Province or Sun
21% read Province only
24% read Sun only
<u>21%</u> read both Province and Sun
100% of Females

Base:
Number of people answering both Question & Banner

Note:
If Base <100, interpret column percentages with caution.
If Base <50, interpret column percentages with extreme caution.

SECTION A. ABOUT THIS RESIDENCE

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Do you own or rent this residence?	Own\co-op	**96%**	94%	96%	98%	89%	98%	97%	98%
	Rent	**4%**	6%	4%	2%	11%	2%	3%	2%
Total	Base	**875**	**124**	**477**	**265**	**131**	**102**	**136**	**224**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Is this residence a...	Single family dwelling (detached)	**95%**	94%	94%	97%	88%	90%	96%	98%
	Duplex	**1%**	1%	1%	0%	2%	1%	1%	
	Row\townhouse (3+ units attached, separate entrance)	**0%**		0%	0%		3%		
	Apartment \ Condominium	**0%**	1%	0%	0%	1%		1%	0%
	Mobile home	**1%**	2%	1%	0%	4%	2%		
	Other (please specify)	**3%**	2%	3%	2%	5%	4%	2%	2%
Total	Base	**872**	**124**	**475**	**264**	**130**	**102**	**136**	**224**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
When was this residence built?	Before 1950	**6%**	2%	6%	7%	11%	9%	5%	3%
	1950-1975	**20%**	12%	21%	22%	34%	25%	24%	14%
	1976-1985	**21%**	18%	19%	26%	24%	25%	27%	17%
	1986-1995	**14%**	10%	13%	17%	11%	16%	13%	13%
	1996-2005	**18%**	16%	20%	16%	11%	17%	14%	22%
	2006 or later	**19%**	37%	20%	10%	6%	8%	15%	31%
	Don't know	**2%**	4%	1%	2%	4%	2%	1%	
Total	Base	**874**	**124**	**477**	**264**	**131**	**102**	**136**	**224**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How many weeks per year is this residence occupied? (Weeks)	16	0%		0%					
	20	0%		0%				1%	
	25	0%			0%			1%	
	30	0%		0%	1%				0%
	36	0%			1%				
	38	0%			0%				
	40	1%		0%	2%				1%
	42	0%			0%	1%			
	43	0%		0%		1%			
	44	0%		0%	0%			1%	
	45	0%		0%	0%				0%
	46	0%		0%	1%			1%	1%
	47	0%			0%			1%	
	48	1%	1%	0%	2%	1%		1%	2%
	49	0%		0%	1%		1%	1%	0%
	50	1%	1%	1%	2%	2%	2%		1%
	51	0%			0%			1%	
	52	94%	98%	97%	89%	95%	97%	93%	93%
Total	Base	872	123	475	265	131	101	134	224

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What is the total floor area of this residence, including the basement and unfinished areas but excluding the garage or carport? (Square Feet)	<1000 sq.ft	2%	1%	2%	2%	6%	3%	1%	0%
	1001-2000 sq.ft	14%	17%	14%	13%	28%	25%	13%	7%
	2001-3000 sq.ft	31%	26%	30%	33%	37%	35%	37%	25%
	3001-4000 sq.ft	24%	26%	22%	26%	18%	22%	32%	23%
	4001-5000 sq.ft	15%	17%	16%	12%	9%	9%	10%	18%
	5001+ sq.ft	14%	13%	15%	13%	3%	5%	7%	26%
Total	Mean	3546	3687	3585	3414	2722	3004	3221	4195
	Base	857	121	470	257	125	99	135	221

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How many floors of heated living space does this residence have? (include basement if heated)	1	**11%**	9%	12%	12%	20%	16%	11%	6%
	2	**53%**	42%	51%	61%	62%	57%	62%	47%
	3	**33%**	45%	35%	25%	15%	27%	25%	45%
	4	**2%**	2%	2%	2%	2%		2%	1%
	5+	**1%**	2%	1%	0%	2%			1%
Total	Base	**873**	**123**	**476**	**265**	**130**	**102**	**136**	**223**

How many rooms in this residence are heated? (Exclude bathrooms, closets and hallways)

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Number of rooms that are always heated:	Mean	**8.3**	8.7	8.5	7.7	6.5	7.2	8.1	9.5
	Base	**859**	122	467	261	129	101	133	220
Number of rooms that are sometimes heated:	Mean	**1.4**	1.5	1.3	1.5	1.6	1.3	1.4	1.3
	Base	**859**	122	467	261	129	101	133	220
Number of rooms that are rarely or never heated:	Mean	**.8**	.7	.8	.9	.9	.8	.8	.7
	Base	**859**	122	467	261	129	101	133	220

Does the electic bill for this residence cover any of the following?

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Secondary suite(s)	Yes	**19%**	22%	20%	17%	26%	24%	21%	15%
	No	**81%**	78%	80%	82%	73%	76%	79%	85%
	Don't know	**0%**			1%	1%			0%
Total	Base	**787**	**117**	**434**	**227**	**113**	**86**	**126**	**208**
Car garage	Yes	**44%**	53%	43%	40%	26%	47%	39%	48%
	No	**56%**	47%	56%	60%	74%	53%	61%	51%
	Don't know	**0%**		0%					0%
Total	Base	**805**	**118**	**440**	**238**	**111**	**88**	**128**	**216**
Workshop (separate from garage)	Yes	**30%**	19%	31%	33%	37%	38%	24%	21%
	No	**70%**	81%	69%	66%	63%	62%	76%	79%
	Don't know	**0%**		0%	0%				0%
Total	Base	**785**	**116**	**436**	**224**	**115**	**86**	**123**	**205**
Other buildings (e.g., sheds, farm buildings)	Yes	**25%**	21%	26%	28%	33%	31%	24%	22%
	No	**74%**	78%	74%	71%	67%	69%	76%	78%
	Don't know	**0%**	1%		0%				0%
Total	Base	**776**	**118**	**426**	**223**	**111**	**84**	**119**	**207**
Solarium	Yes	**4%**	1%	3%	6%	5%	10%	4%	1%
	No	**96%**	99%	97%	93%	95%	90%	96%	98%
	Don't know	**0%**			0%				1%
Total	Base	**730**	**112**	**402**	**207**	**100**	**79**	**114**	**197**
Aquarium(s)	Yes	**8%**	9%	8%	5%	10%	13%	4%	7%
	No	**92%**	91%	92%	94%	90%	87%	96%	93%
	Don't know	**0%**			0%				1%
Total	Base	**733**	**112**	**408**	**204**	**103**	**79**	**114**	**197**
Personal greenhouse	Yes	**6%**	1%	6%	9%	10%	6%	5%	3%
	No	**94%**	99%	94%	90%	90%	94%	95%	97%
	Don't know	**0%**			1%				1%
Total	Base	**741**	**112**	**409**	**211**	**105**	**80**	**114**	**199**
Pumps (e.g., wells, irrigation, etc.)	Yes	**47%**	45%	48%	49%	45%	40%	45%	49%
	No	**52%**	53%	52%	51%	55%	59%	55%	50%
	Don't know	**1%**	3%	0%	1%		1%		1%
Total	Base	**801**	**116**	**439**	**237**	**114**	**86**	**125**	**213**

If 'Yes' [electric bill covers this], is it heated?

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Secondary suite(s)	Yes	**98%**	100%	99%	95%	92%	95%	100%	100%
	No	**2%**		1%	5%	8%	5%		
Total	Base	**141**	**21**	**82**	**37**	**26**	**20**	**25**	**28**
Car garage	Yes	**46%**	43%	51%	38%	54%	24%	40%	55%
	No	**54%**	57%	49%	62%	46%	76%	60%	45%
Total	Base	**322**	**56**	**174**	**86**	**24**	**33**	**43**	**97**
Workshop (separate from garage)	Yes	**63%**	65%	64%	60%	53%	71%	50%	73%
	No	**37%**	35%	36%	40%	47%	29%	50%	27%
Total	Base	**204**	**20**	**118**	**65**	**32**	**28**	**28**	**37**
Other buildings (e.g., sheds, farm buildings)	Yes	**46%**	52%	45%	47%	59%	38%	31%	53%
	No	**53%**	43%	55%	53%	38%	63%	69%	47%
	Don't know	**1%**	4%			3%			
Total	Base	**177**	**23**	**103**	**51**	**32**	**24**	**26**	**38**
Solarium	Yes	**67%**		67%	73%	100%	43%	75%	100%
	No	**33%**	100%	33%	27%		57%	25%	
Total	Base	**21**	**1**	**9**	**11**	**2**	**7**	**4**	**2**
Aquarium(s)	Yes	**88%**	100%	87%	75%	100%	57%	100%	85%
	No	**13%**		13%	25%		43%		15%
Total	Base	**48**	**10**	**30**	**8**	**6**	**7**	**5**	**13**
Personal greenhouse	Yes	**59%**		55%	71%	100%	25%	50%	100%
	No	**41%**	100%	45%	29%		75%	50%	
Total	Base	**39**	**1**	**20**	**17**	**8**	**4**	**6**	**4**

Base: respondents that have these items/rooms covered on electric bill

Please indicate which areas of this residence have insulation.

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
In the attic	Yes	**94%**	92%	94%	94%	90%	96%	94%	95%
	No	**2%**	2%	2%	3%	6%	2%	4%	1%
	Don't know	**4%**	6%	3%	4%	4%	2%	2%	4%
Total	Base	**849**	**122**	**464**	**254**	**121**	**99**	**133**	**218**
In your walls	Yes	**93%**	89%	94%	92%	88%	88%	92%	94%
	No	**2%**	2%	2%	4%	7%	4%	3%	1%
	Don't know	**5%**	8%	4%	5%	6%	8%	5%	5%
Total	Base	**851**	**122**	**463**	**257**	**122**	**99**	**133**	**218**
In your basement / crawl space	Yes	**79%**	83%	80%	74%	66%	74%	79%	85%
	No	**16%**	12%	16%	20%	28%	22%	15%	12%
	Don't know	**5%**	6%	4%	6%	6%	4%	6%	3%
Total	Base	**813**	**120**	**441**	**243**	**116**	**93**	**125**	**211**

If 'Yes' [have insulation], what quality of insulation do you have?

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
In the attic	Below average (R6 or 1.75inch fiberglass or less)	**4%**	3%	5%	2%	9%	3%	4%	4%
	Average (R12 or 3.5inch fiberglass or less)	**22%**	18%	20%	26%	25%	31%	26%	15%
	Above average (R20 or 6inch fiberglass or more)	**58%**	56%	61%	55%	42%	58%	57%	63%
	Don't know	**16%**	24%	14%	16%	24%	8%	13%	18%
Total	Base	**803**	**114**	**437**	**243**	**115**	**98**	**123**	**205**
In your walls	Below average (R6 or 1.75inch fiberglass or less)	**3%**	3%	3%	3%	6%	4%	1%	2%
	Average (R12 or 3.5inch fiberglass or less)	**36%**	25%	37%	40%	42%	54%	48%	25%
	Above average (R20 or 6inch fiberglass or more)	**42%**	47%	43%	37%	26%	31%	37%	52%
	Don't know	**18%**	25%	16%	19%	26%	10%	14%	21%
Total	Base	**790**	**108**	**438**	**235**	**115**	**90**	**120**	**205**
In your basement / crawl space	Below average (R6 or 1.75inch fiberglass or less)	**5%**	6%	5%	5%	11%	7%	6%	4%
	Average (R12 or 3.5inch fiberglass or less)	**34%**	24%	36%	34%	27%	49%	45%	25%
	Above average (R20 or 6inch fiberglass or more)	**40%**	46%	41%	36%	26%	32%	34%	50%
	Don't know	**21%**	25%	17%	25%	36%	13%	15%	20%
Total	Base	**658**	**101**	**362**	**187**	**89**	**72**	**98**	**181**

Base: respondents that have this insulation

Please estimate the percentage of your windows that are:

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Single pane	Mean	**8%**	12%	8%	8%	20%	9%	12%	4%
	Base	**868**	122	473	264	126	102	133	222
Double pane	Mean	**85%**	79%	86%	87%	75%	89%	83%	88%
	Base	**868**	122	473	264	126	102	133	222
Triple pane	Mean	**4%**	6%	4%	3%	2%	2%	1%	6%
	Base	**868**	122	473	264	126	102	133	222
Other - Specify	Mean	**2%**	3%	2%	1%	2%	0%	3%	2%
	Base	**868**	122	473	264	126	102	133	222

SECTION B. SPACE HEATING AND SPACE COOLING

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What is the main fuel used to heat this residence? The main fuel is the one that provides most of the heat in the home during a typical year.	Electricity	**72%**	60%	70%	81%	83%	86%	74%	58%
	Natural gas	**16%**	20%	20%	8%	5%	8%	17%	29%
	Wood	**5%**	6%	5%	4%	8%	3%	7%	3%
	Geothermal, ground source heat pump	**5%**	10%	4%	4%		3%	1%	10%
	Bottled propane	**1%**	2%	1%	1%	2%		1%	1%
	Other	**1%**		1%	1%	1%	1%	1%	
	Oil	**0%**		0%		1%			
Total	Base	**886**	**124**	**482**	**271**	**132**	**104**	**136**	**224**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Please indicate the OTHER fuel(s) used to heat this residence?	Electricity	**44%**	47%	43%	44%	52%	44%	46%	40%
	Wood	**29%**	16%	31%	31%	27%	35%	32%	25%
	No other fuels	**27%**	29%	25%	29%	26%	24%	28%	24%
	Natural gas	**13%**	16%	15%	8%	10%	8%	8%	20%
	Bottled propane	**7%**	7%	6%	8%	5%	5%	7%	11%
	Other	**1%**		2%	0%	1%	4%	1%	0%
	Don't know	**1%**	2%	1%		1%		1%	1%
	Oil	**0%**		0%	0%				1%
Total	Responses	**1076**	**145**	**594**	**326**	**158**	**124**	**167**	**274**
	Base	**887**	**124**	**482**	**272**	**132**	**104**	**136**	**224**

Column percentages may exceed 100% because multiple responses given

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Most commonly used OTHER Fuel	Electricity	**37%**	44%	36%	35%	44%	41%	35%	32%
	No other fuels	**26%**	28%	24%	28%	23%	22%	27%	24%
	Wood	**22%**	10%	23%	25%	20%	26%	25%	19%
	Natural gas	**10%**	10%	11%	6%	8%	4%	8%	16%
	Bottled propane	**5%**	5%	4%	6%	3%	5%	4%	7%
	Other	**1%**		1%	0%	1%	2%	1%	0%
	Don't know	**1%**	2%	1%		1%		1%	1%
	Oil	**0%**		0%	0%				1%
Total	Base	**887**	**124**	**482**	**272**	**132**	**104**	**136**	**224**

There are several methods that can be used to heat a home. Please check the main method used to heat this residence.

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Main method	Central forced air furnace	**41%**	35%	41%	43%	33%	39%	44%	49%
	Wired-in electric heater (baseboards)	**17%**	15%	17%	17%	30%	25%	18%	5%
	Heat pump – air source	**16%**	15%	18%	14%	8%	14%	18%	18%
	Heat pump – ground source (geothermal)	**10%**	20%	9%	6%	2%	7%	5%	19%
	Hot water radiant in-floor \ under floor heat	**5%**	5%	4%	5%	5%	6%	1%	1%
	Wood stove	**3%**	4%	4%	3%	5%	1%	7%	1%
	Multi-fuel forced air furnace	**2%**	2%	2%	1%	1%	1%	1%	2%
	Hot water baseboards	**1%**	1%	1%	3%	3%	1%	1%	2%
	Wired-in electric wall heater (fan forced)	**1%**		1%	3%	3%	3%	1%	0%
	Other (Specify)	**1%**	1%	1%	3%	2%		1%	1%
	Electric radiant heat (floors, walls, ceilings)	**1%**		1%	1%	1%	1%		0%
	Portable electric heaters	**1%**		1%	1%	4%			
	Gas fireplace	**1%**	1%	0%	1%	2%		1%	0%
	Wood burning fireplace	**1%**	1%	0%	1%	1%	1%	1%	
	Gas wall heater	**0%**	1%				1%		
	Electric fireplace	**0%**		0%		1%			
Total	Base	**886**	**124**	**481**	**272**	**131**	**104**	**136**	**224**

There are several methods that can be used to heat a home.
Please check the second most used method used to heat this residence.

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Second most used method	Wired-in electric heater (baseboards)	**14%**	10%	14%	16%	25%	14%	18%	10%
	Gas fireplace	**13%**	20%	13%	11%	7%	4%	8%	25%
	Wood stove	**12%**	11%	11%	15%	15%	15%	12%	9%
	Central forced air furnace	**11%**	17%	11%	7%	5%	11%	13%	11%
	Wood burning fireplace	**11%**	6%	10%	12%	10%	10%	12%	9%
	Portable electric heaters	**9%**	10%	8%	9%	13%	13%	12%	4%
	Heat pump – air source	**7%**	4%	5%	12%	3%	10%	7%	7%
	Hot water radiant in-floor \ under floor heat	**6%**	6%	7%	3%	3%	3%	4%	10%
	Electric radiant heat (floors, walls, ceilings)	**6%**	9%	7%	3%	1%	6%	2%	6%
	Wired-in electric wall heater (fan forced)	**5%**	2%	5%	6%	7%	10%	4%	2%
	Other (Specify)	**3%**	2%	4%	1%	4%	3%	2%	3%
	Electric fireplace	**2%**	1%	3%	2%	3%		6%	2%
	Heat pump – ground source (geothermal)	**1%**	1%	1%	1%		1%		1%
	Multi-fuel forced air furnace	**1%**		1%			1%		1%
	Hot water baseboards	**0%**		1%	1%	2%			
	Gas wall heater	**0%**	1%		1%				1%
	Gas heater stove	**0%**		0%	1%				
Total	Base	**661**	**94**	**383**	**178**	**91**	**72**	**100**	**181**

There are several methods that can be used to heat a home.
Please indicate all OTHER methods used to heat this residence.

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
All OTHER methods	Portable electric heaters	**24%**	35%	23%	22%	38%	27%	15%	23%
	Gas fireplace	**25%**	24%	27%	21%	11%	11%	13%	35%
	Wood burning fireplace	**20%**	10%	20%	26%	24%	27%	25%	17%
	Wired-in electric heater (baseboards)	**15%**	10%	17%	16%	14%	27%	6%	18%
	Electric fireplace	**14%**	24%	14%	10%	14%	11%	23%	16%
	Electric radiant heat (floors, walls, ceilings)	**14%**	24%	10%	16%	8%	5%	21%	13%
	Wood stove	**11%**	4%	12%	13%	16%	14%	6%	8%
	Wired-in electric wall heater (fan forced)	**7%**	8%	6%	5%	3%	8%	8%	6%
	Hot water radiant in-floor \ under floor heat	**6%**	10%	5%	7%	3%	3%	4%	10%
	Central forced air furnace	**4%**	4%	4%	4%	11%	5%	10%	
	Heat pump – air source	**4%**	4%	4%	3%		3%	6%	4%
	Other (Specify)	**2%**		3%	2%	3%	3%	4%	1%
	Gas heater stove	**1%**		1%	2%			4%	1%
	Heat pump – ground source (geothermal)	**1%**		1%	2%		3%		1%
	Gas wall heater	**1%**	2%		1%				1%
Total	Responses	**503**	**79**	**281**	**139**	**53**	**54**	**75**	**154**
	Base	**336**	**49**	**191**	**92**	**37**	**37**	**52**	**99**

Column percentages may exceed 100% because multiple responses given

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Which of the following does this residence have?	Gas boiler	**3%**	5%	3%	2%	3%	2%	2%	6%
	Gas furnace	**20%**	25%	24%	10%	9%	9%	18%	33%
	Neither	**77%**	70%	73%	88%	88%	89%	80%	61%
Total	Base	**852**	**121**	**462**	**261**	**120**	**98**	**131**	**220**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How old is your furnace or boiler? (Years)	Mean	**8.8**	8.4	8.6	9.8	9.8	7.5	9.5	8.6
	Base	**173**	30	112	30	10	11	23	79

Base: those with a gas furnace or gas boiler

Please indicate below the number of each appliance in this residence.

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Central air conditioner	None	**47%**	37%	47%	50%	76%	62%	43%	29%
	1	**40%**	45%	39%	37%	18%	32%	43%	49%
	2	**7%**	6%	8%	8%	2%	2%	7%	11%
	3+	**6%**	12%	6%	4%	4%	5%	7%	11%
Total	Base	**882**	**124**	**479**	**270**	**127**	**104**	**136**	**224**
Portable air conditioner	None	**91%**	91%	89%	93%	82%	82%	92%	96%
	1	**6%**	6%	7%	4%	10%	13%	4%	3%
	2	**2%**	1%	3%	1%	6%	4%	2%	1%
	3+	**1%**	2%	0%	2%	2%	1%	1%	
Total	Base	**882**	**124**	**479**	**270**	**127**	**104**	**136**	**224**
Room window air conditioner	None	**86%**	84%	85%	89%	74%	81%	82%	94%
	1	**8%**	10%	8%	7%	14%	11%	13%	3%
	2	**4%**	4%	5%	2%	6%	7%	2%	3%
	3+	**2%**	2%	2%	2%	6%	2%	3%	
Total	Base	**882**	**124**	**479**	**270**	**127**	**104**	**136**	**224**

What months of the year is this appliance regularly used?

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Central air conditioner (From)	Jan	**5%**	4%	4%	7%		7%	3%	2%
	Feb	**0%**			1%		2%		
	Mar	**0%**	1%	0%					1%
	Apr	**4%**	8%	2%	5%	3%		1%	8%
	May	**20%**	32%	20%	14%	28%	18%	17%	22%
	June	**36%**	38%	38%	31%	38%	31%	40%	35%
	July	**34%**	16%	35%	41%	31%	40%	38%	30%
	Aug	**1%**	1%	1%	1%		2%		1%
	Oct	**0%**		0%	1%			1%	1%
Total	Base	**475**	**76**	**256**	**139**	**32**	**45**	**72**	**153**
Central air conditioner (To)	Jan	**0%**			1%				1%
	Apr	**0%**		0%				1%	
	July	**0%**			1%		2%		
	Aug	**31%**	20%	33%	32%	19%	32%	42%	25%
	Sept	**57%**	66%	58%	51%	69%	55%	50%	64%
	Oct	**6%**	11%	4%	8%	13%	5%	4%	8%
	Dec	**5%**	4%	4%	7%		7%	3%	2%
Total	Base	**474**	**76**	**256**	**138**	**32**	**44**	**72**	**153**
Portable air conditioner (From)	Jan	**1%**		2%					
	Apr	**3%**	8%	2%					13%
	May	**10%**	17%	13%		9%		20%	13%
	June	**24%**	25%	19%	35%	32%	32%	20%	25%
	July	**58%**	50%	60%	60%	55%	58%	60%	50%
	Aug	**4%**		4%	5%	5%	11%		
Total	Base	**79**	**12**	**47**	**20**	**22**	**19**	**10**	**8**
Portable air conditioner (To)	Aug	**56%**	50%	55%	60%	45%	63%	60%	63%
	Sept	**38%**	42%	36%	40%	45%	37%	30%	38%
	Oct	**4%**	8%	4%		9%		10%	
	Nov	**1%**		2%					
	Dec	**1%**		2%					
Total	Base	**79**	**12**	**47**	**20**	**22**	**19**	**10**	**8**

Base: respondents with this appliance

What months of the year is this appliance regularly used?

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Room window air conditioner (From)	Jan	**2%**		3%			6%		
	May	**14%**	21%	13%	10%	13%	17%	8%	15%
	June	**36%**	47%	37%	28%	37%	44%	42%	38%
	July	**46%**	32%	44%	59%	47%	28%	50%	38%
	Aug	**3%**		3%	3%	3%	6%		8%
Total	Base	**118**	**19**	**70**	**29**	**30**	**18**	**24**	**13**
Room window air conditioner (To)	Aug	**49%**	21%	49%	69%	50%	41%	42%	58%
	Sept	**46%**	74%	44%	31%	40%	53%	54%	42%
	Oct	**3%**	5%	4%		10%		4%	
	Dec	**2%**		3%			6%		
Total	Base	**116**	**19**	**68**	**29**	**30**	**17**	**24**	**12**

Base: respondents with this appliance

What months of the year is this appliance regularly used?

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Room window air conditioner (From)	Jan	**2%**		3%			6%		
	May	**14%**	21%	13%	10%	13%	17%	8%	15%
	June	**36%**	47%	37%	28%	37%	44%	42%	38%
	July	**46%**	32%	44%	59%	47%	28%	50%	38%
	Aug	**3%**		3%	3%	3%	6%		8%
Total	Base	**118**	**19**	**70**	**29**	**30**	**18**	**24**	**13**
Room window air conditioner (To)	Aug	**49%**	21%	49%	69%	50%	41%	42%	58%
	Sept	**46%**	74%	44%	31%	40%	53%	54%	42%
	Oct	**3%**	5%	4%		10%		4%	
	Dec	**2%**		3%			6%		
Total	Base	**116**	**19**	**68**	**29**	**30**	**17**	**24**	**12**

Base: respondents with this appliance

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Do you use programmable thermostat(s) in this residence?	Yes	**64%**	70%	65%	58%	46%	54%	63%	75%
	No	**35%**	28%	35%	40%	51%	44%	38%	25%
	Don't know	**1%**	2%	0%	1%	3%	2%		
Total	Base	**884**	**124**	**480**	**271**	**130**	**103**	**136**	**224**

SECTION C: DOMESTIC WATER HEATING

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How many water heaters are there in this residence?	1	**72%**	77%	71%	71%	74%	83%	74%	61%
	2	**22%**	17%	25%	22%	21%	13%	22%	31%
	3	**3%**	3%	3%	3%	1%		1%	5%
	None	**3%**	2%	2%	5%	4%	4%	2%	3%
Total	Base	**872**	**123**	**475**	**265**	**129**	**100**	**135**	**222**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What type of fuel does your water heater(s) use? (Heater 1)	Electricity	**82%**	71%	82%	88%	91%	92%	90%	68%
	Natural gas	**15%**	22%	16%	9%	8%	7%	8%	28%
	Piped propane	**0%**	1%	0%	0%	1%	1%		
	Bottled propane	**0%**	2%	0%	0%			1%	1%
	Solar	**0%**		1%				1%	1%
	Geothermal	**2%**	5%	1%	2%				3%
Total	Base	**844**	**120**	**463**	**252**	**122**	**96**	**132**	**214**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What type of fuel does your water heater(s) use? (Heater 2)	Electricity	**69%**	55%	72%	71%	83%	77%	78%	64%
	Natural gas	**18%**	27%	18%	16%	13%	8%	15%	17%
	Bottled propane	**2%**	5%	2%					3%
	Solar	**2%**		2%	2%		8%	4%	1%
	Oil	**1%**							
	Geothermal	**9%**	14%	6%	12%	4%	8%	4%	14%
Total	Base	**196**	**22**	**115**	**58**	**23**	**13**	**27**	**70**

		Total	Age			Household income	
			18-44	45-65	65+	$60-99k	$100k+
What type of fuel does your water heater(s) use? (Heater 3)	Electricity	**74%**	25%	90%	80%	100%	78%
	Natural gas	**16%**	25%	10%	20%		11%
	Bottled propane	**5%**	25%				11%
	Geothermal	**5%**	25%				
Total	Base	**19**	**4**	**10**	**5**	**2**	**9**

SECTION D: SWIMMING POOLS AND HOT TUBS

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Do you have a swimming pool at this residence that is for your exclusive use?	Yes, indoor	**2%**	1%	2%	1%	2%		2%	4%
	Yes, outdoor	**29%**	36%	31%	24%	9%	17%	27%	45%
	No	**69%**	63%	67%	75%	90%	83%	70%	52%
Total	Base	**865**	**123**	**471**	**262**	**127**	**98**	**135**	**220**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Which fuel do you use to heat the water in your pool and do you use solar energy to help heat the water? (Main fuel)	Solar	**7%**	4%	7%	9%	17%	12%	10%	5%
	Natural gas	**36%**	36%	37%	35%	8%	24%	30%	47%
	Electricity	**23%**	20%	23%	27%	33%	18%	20%	22%
	Propane	**3%**	4%	4%	2%				5%
	Other	**4%**	9%	3%	3%				5%
	Pool not heated	**26%**	27%	26%	24%	42%	47%	40%	16%
Total	Base	**264**	**45**	**151**	**66**	**12**	**17**	**40**	**104**

Base: those with pool

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Which fuel do you use to heat the water in your pool and do you use solar energy to help heat the water? (Supplemented)	Natural gas supplemented with solar	**43%**	38%	62%	22%		50%	33%	57%
	Electricity supplemented with solar	**47%**	38%	31%	78%	100%	50%	67%	36%
	Other supplemented with solar	**10%**	25%	8%					7%
Total	Base	**30**	**8**	**13**	**9**	**2**	**2**	**3**	**14**

Base: those with pool with supplementary solar heating

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How many months per year is your pool heated?	Mean Months	**4.0**	4.0	4.1	3.8	3.9	3.1	4.2	4.2
	Base	**198**	34	116	47	7	7	26	91

Base: those with heated pool

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
During the months when you heat your pool, do you cover it when not in use?	Yes	**77%**	82%	79%	69%	100%	75%	78%	80%
	No	**23%**	18%	21%	31%		25%	22%	20%
Total	Base	**204**	**34**	**121**	**48**	**7**	**8**	**27**	**95**

Base: those with heated pool

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Do you have a hot tub at this residence for your exclusive use?	Yes, indoor	**2%**	2%	2%	3%	2%	2%	2%	3%
	Yes, outdoor	**35%**	44%	41%	19%	7%	21%	32%	51%
	No	**63%**	55%	57%	78%	91%	77%	66%	46%
Total	Base	**857**	**119**	**468**	**262**	**126**	**97**	**131**	**221**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What fuel is used to heat the hot tub?	Natural gas	**4%**	4%	4%	3%			2%	9%
	Propane	**0%**			2%				
	Electricity	**95%**	96%	95%	93%	100%	96%	98%	91%
	Other	**1%**		0%	2%		4%		
Total	Base	**319**	**56**	**202**	**59**	**12**	**23**	**44**	**117**

Base: those with hot tub

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How many months per year is your hot tub heated?	Mean Months	**9.8**	9.9	10.2	8.3	9.9	9.1	10.1	10.1
	Base	**316**	54	201	59	12	23	43	117

Base: those with hot tub

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
During the months when you heat your hot tub, do you cover it when not in use?	Yes	**98%**	100%	98%	96%	100%	100%	100%	97%
	No	**2%**		2%	4%				3%
Total	Base	**313**	**55**	**199**	**57**	**11**	**22**	**43**	**116**

Base: those with hot tub

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Does this residence have a sauna that is for your exclusive use?	Yes	**9%**	12%	8%	10%	6%	7%	7%	14%
	No	**91%**	88%	92%	90%	94%	93%	93%	86%
Total	Base	**849**	**121**	**465**	**255**	**123**	**96**	**130**	**220**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What fuel is used to heat the sauna?	Electrcity	**95%**	80%	97%	100%	100%	86%	100%	97%
	Natural gas	**3%**	13%						3%
	Other	**3%**	7%	3%			14%		
Total	Base	**80**	**15**	**38**	**26**	**7**	**7**	**9**	**31**

Base: those with sauna

SECTION E. RENOVATIONS AND ENERGY USE
Did this in the past 5 years

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Please indicate renovations or actions you have undertaken at this residence within the past 5 years with or without a government or utility rebate	None of the above	**44%**	49%	43%	45%	46%	38%	38%	48%
	Install weather stripping or caulking no rebate	**25%**	25%	26%	23%	31%	24%	35%	21%
	Install low flow showerhead(s) no rebate	**21%**	22%	22%	20%	20%	27%	32%	18%
	Install programmable thermostat(s) no rebate	**21%**	24%	23%	16%	20%	20%	19%	23%
	Install energy efficient window(s) no rebate	**19%**	19%	19%	19%	18%	22%	20%	18%
	Improve insulation walls, attic, etc. no rebate	**17%**	19%	17%	15%	14%	20%	19%	18%
	Install high efficiency hot water tank no rebate	**15%**	12%	16%	14%	15%	18%	16%	13%
	Install insulated outside\storm door(s) no rebate	**13%**	12%	13%	13%	19%	14%	12%	12%
	Install pipe wrap no rebate	**11%**	7%	13%	8%	15%	11%	11%	10%
	EcoENERGY LiveSmart BC certified energy audit w\ rebate	**6%**	6%	7%	5%	1%	7%	6%	8%
	Install hot water heater blanket no rebate	**6%**	6%	6%	5%	14%	7%	5%	3%
	Install hot tub no rebate	**5%**	3%	6%	2%	6%	1%	3%	7%
	Install energy efficient window(s) w\ rebate	**4%**	7%	4%	2%	4%	4%	2%	6%
	Improve insulation walls,attic,etc. w\ rebate	**3%**	4%	2%	4%	3%	5%	1%	4%
	Install programmable thermostat(s) with rebate	**3%**	3%	2%	4%		4%	6%	2%
	Install a sauna no rebate	**3%**	4%	2%	3%	6%		1%	5%
	EcoENERGY LiveSmart BC certified energy audit no rebate	**3%**	1%	2%	4%	4%		3%	2%
	Install on-demand water heater no rebate	**2%**	4%	3%	1%	3%		1%	3%
	Install low flow showerhead(s) with rebate	**2%**	2%	2%	2%		5%	3%	1%
	Install heated swimming pool no rebate	**2%**	3%	2%	1%	1%		3%	2%
	Install weather stripping or caulking with rebate	**2%**	2%	1%	3%	4%		3%	2%
	Install drain pipe waste heat recovery sys. no rebate	**2%**	1%	2%	2%	1%			4%
	Install insulated outside\storm door(s) w\ rebate	**1%**	4%	1%	1%	1%	3%		2%
	Install high efficiency hot water tank with rebate	**1%**	1%	1%	2%	3%	3%		1%
	Install pipe wrap with rebate	**1%**		1%	2%			1%	2%
	Install hot water heater blanket with rebate	**0%**		1%	1%	1%			1%
	Install on-demand water heater with rebate	**0%**	1%	0%				1%	1%
Total	Responses	**1566**	**247**	**891**	**416**	**199**	**172**	**253**	**429**
	Base	**681**	**103**	**376**	**194**	**80**	**74**	**105**	**182**

Column percentages may exceed 100% because multiple responses given

Plan to do this in the next 2 years

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Please indicate renovations or actions PLAN to undertake in the next 5 years	None of the above	**73%**	70%	72%	75%	74%	69%	64%	80%
	Improve insulation walls, attic, etc.	**9%**	7%	12%	6%	13%	12%	10%	7%
	Install energy efficient window(s)	**9%**	11%	11%	5%	8%	11%	14%	7%
	Install insulated outside\storm door(s)	**6%**	6%	8%	4%	8%	12%	6%	5%
	Install weather stripping or caulking	**6%**	7%	6%	7%	8%	7%	10%	4%
	Install hot water heater blanket	**5%**	5%	7%	4%	3%	5%	9%	5%
	EcoENERGY LiveSmart BC certified energy audit	**4%**	8%	5%	3%	4%	4%	6%	6%
	Install high efficiency hot water tank	**4%**	7%	4%	3%	1%	7%	4%	3%
	Install on-demand water heater	**4%**	6%	4%	2%	4%	5%	5%	4%
	Install programmable thermostat(s)	**3%**	4%	3%	3%	1%	5%	4%	2%
	Install pipe wrap	**3%**	5%	3%	2%	3%	3%	4%	2%
	Install low flow showerhead(s)	**2%**	3%	2%	2%	1%	3%	4%	1%
	Install drain pipe waste heat recovery sys.	**1%**	4%	2%		1%	3%	1%	2%
	Install hot tub	**1%**	6%	1%		1%	1%	1%	
	Install heated swimming pool	**0%**	1%	1%			1%		
	Install a sauna	**0%**		0%					
Total	Responses	**906**	**152**	**524**	**222**	**102**	**110**	**146**	**234**
	Base	**681**	**103**	**376**	**194**	**80**	**74**	**105**	**182**

Column percentages may exceed 100% because multiple responses given

SECTION F. ABOUT YOUR HOUSEHOLD

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Which region do you reside in?	Central Okanagan (Kelowna) incl. Big White	**46%**	52%	50%	35%	26%	24%	42%	63%
	South Okanagan, including Similkameen	**22%**	19%	20%	28%	24%	28%	26%	17%
	West Kootenay/Boundary	**28%**	24%	27%	31%	41%	48%	26%	17%
	Other	**4%**	5%	2%	6%	8%		5%	2%
Total	Base	**885**	**124**	**482**	**271**	**131**	**104**	**136**	**224**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
Into which of the following age categories do you fit?	18 years or under	**0%**	1%						
	19-24 years	**0%**	2%				2%		
	25-34 years	**2%**	11%			1%	1%	2%	2%
	35-44 years	**12%**	86%			3%	13%	14%	16%
	45-54 years	**24%**		44%		20%	15%	26%	29%
	55-64 years	**31%**		56%		24%	26%	32%	35%
	65 years and older	**31%**			100%	52%	43%	26%	17%
	Prefer not to answer	**1%**							
Total	Base	**885**	**124**	**482**	**272**	**132**	**104**	**136**	**224**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
How many people, including yourself, are currently living at this residence?	1	**6%**	1%	4%	10%	14%	10%	5%	1%
	2	**43%**	7%	39%	68%	48%	44%	47%	39%
	3	**16%**	10%	21%	10%	17%	16%	16%	15%
	4	**17%**	43%	17%	5%	7%	13%	11%	27%
	5	**8%**	18%	9%	1%	6%	7%	8%	8%
	6+	**9%**	21%	8%	5%	8%	12%	14%	9%
Total	Base	**869**	**121**	**475**	**267**	**130**	**103**	**133**	**223**

		Total	Age			Household income			
			18-44	45-65	65+	< $39k	$40-59k	$60-99k	$100k+
What was your total household income before taxes in 2013?	Less than $20,000	4%	2%	5%	5%	29%			
	$20,000 to $29,999	5%	1%	3%	11%	35%			
	$30,000 to $39,999	5%	2%	4%	9%	36%			
	$40,000 to $49,999	6%	8%	5%	8%		52%		
	$50,000 to $59,999	6%	5%	4%	9%		48%		
	$60,000 to $79,999	7%	7%	7%	8%			46%	
	$80,000 to $99,999	8%	11%	10%	5%			54%	
	$100,000 to $124,999	8%	11%	9%	6%				32%
	$125,000 or more	17%	23%	21%	9%				68%
	Prefer not to answer	32%	32%	32%	30%				
Total	Base	**874**	**123**	**477**	**267**	**132**	**104**	**136**	**224**

Appendix D
VERBATIM COMMENTS

Subject: FW: FBC RCR Report

From:
Sent: March-04-14 4:25 PM
To: Complaints BCUC:EX
Cc: Bennett.MLA, Bill LASS:EX
Subject: RE: inaccuracy in report

Dear

Thank you for your reply.
If the study due at the end of November is still underway (which it should be) please would you advise them of my name and email address.

We have a large customer group who are currently heavily impacted and would like to present Fortis bills which are in direct contradiction to what Fortis reported to BCUC last year.
I am assuming that BCUC is wanting a fair and transparent process this time around.

Thank you very much
Regards

From:
Sent: March-02-14 3:42 PM
To: Complaints BCUC:EX
Cc: Bennett.MLA, Bill LASS:EX
Subject: inaccuracy in report

To Whom It May Concern:

I have briefly scanned the report emanating from Fortis. I could not believe that such inaccuracies actually made it to the paper!

Seriously, if the price goes up how does the cost not go up? It defies logic that the report states that most non-gas service residents did not see an increase in electrical costs since the inception of the 2-tiered rates.
Fortis is disseminating highly flawed or false information and the Utilities Commission is not asking questions or doing due diligence.

Did nobody from your office edit this or check the data collected for this paper? Supposing this study has empirical evidence I would like to see it. Please will you send me the Criteria used for this report.

I look forward to your response.

Yours truly,

Kelowna

Subject: FW: Fortis BC Residential Conservation Rate Evaluation

From:
Sent: Saturday, March 29, 2014 10:47 AM
To: FortisBC Customer Service – Electricity
Subject: Fortis BC Residential Conservation Rate Evaluation

Hello,

I am a Fortis BC Residential Electricity Customer (account#) who has been heavily impacted by the RCR and I do not have access to other sources of heating fuel. I just received my Fortis bill for Jan-March 2014 (6205 kwh/ $839.48) and compared it to the same period in 2012 (6105 kw hours/$646.71). This is an increase of almost 30%.

I understand that the British Columbia Utilities Commission has asked FortisBC to collect additional information from potentially heavily impacted customers including residences that do not have access to other sources of heating fuel as well as customers using heat pumps. Specifically, the Commission is interested in data from customer consultations and analysis of individual monthly billing impacts for potentially heavily impacted customers. This information, as well as any proposed rate refinements, should be included in FortisBC's next RCR report to the Commission to be filed on November 30, 2014.

I am requesting that Fortis BC ensures that they consult with me and conduct a further analysis of my billing impacts for inclusion in the next RCR report.
I have included all previous correspondence that I have had with Fortis and the Utilities Commission as attachments. I would like confirmation that this will occur.

Sincerely,

From:
Sent: February-21-14 11:43 AM
To:
Subject: Fortis BC Rate increase complaint
Importance: High

Dear

Last spring, you replied to a letter of complaint that I sent you with regards to the Fortis BC Inc's rate increases – specifically the 2 tier billing rate structure. The letter is attached for your reference.
In your reply, you stated that the rate will be reviewed in early 2014 and you were compiling a letter documenting client concerns for the review.

Over the past year, our bills have continued to increase. This fall, we completed a home energy assessment and made significant attempts to reduce our power consumption by increasing our attic insulation from R12 to R50, changing all of our lights to energy efficient bulbs. Guess what – our Fortis bill still increases – my

latest bill was over $1,100. 00. I spoke with a Fortis rep this week, and she confirmed that none of the Fortis customers who she has spoken with who use electricity as their primary heat source were able to contain their electric costs within the first tier rate. I am requesting that in their Review, the team considers doubling the Tier 1 consumption rate from 1,600 kWh to 3,200 kWh for those who use electricity as their primary heat source.

We do no have an option to heat with gas. We cannot continue to pay these crazy heating costs and remain in our home.

– can you please update me on the status of the review and include my concerns with your compiled documentation?

Sincerely,

Subject: FW: I am being penalized

From: **On Behalf Of**

Sent: Monday, April 14, 2014 11:23 AM
To: FortisBC Customer Service – Electricity
Subject: I am being penalized

Your base rate of $0.08803 should apply to much more than the first 1,600 kWh for geothermal users.

Geothermal heating is by far the most efficient and energy conserving way to heat and cool a house. I specified it for my new house in Lake Country, paying about $40,000 more than I would have for traditional gas heating and electric air conditioning, not realizing how small is your base allowance of 1,600 kWh per two months. My logic was that I would rather pay more up front and then have lower monthly bills as I am retired and on a fixed income.

My meter was installed, during construction, on November 20, 2012. Since that time my electricity consumption (excluding all the additional charges such as Basic Customer Charge, Interim Rate Increases, and taxes) has been $7,446. Under your previous system of a flat $0.1056 per kWh, it would have been $6,419. So your structuring your billing to "conserve energy" has resulted in your getting $1,027 in additional revenue from what may be one of the most energy-efficient homes in the area!

I cannot compute a true average daily use since I moved in (August 2013) because during your strike your estimated meter readings were ludicrously low. But the average since the meter was installed, based on the latest actual reading, is 135 kWh a day. That is for a 3,500 sq ft home with small pool (energy consumer) and high-efficiency everything else (energy savers): LED lighting, HE washer and dryer, spray foam insulation, high-efficiency windows, induction cooktop, etc. etc. So, based on that, the allowance for base rate electricity should be at least 3,000 kWh per two months for users with geothermal systems.

From:

Sent: April-17-14 1:49 PM
To: FortisBC Regulatory Affairs – Electricity
Cc:
Subject: Issues with the Residential Conservation Rate
Attachments: RE: I am being penalized

Sirs:

I recently emailed your Customer Service department expressing concern that I am being unfairly penalized by the RCR because I went to the expense of specifying geothermal heating for my new house. My email and your representative's reply are attached ("Re: I am being penalized").

Subsequent to that, I emailed the BC Utilities Commission on April 15 with a cc to you at the above email address.

In their response to me, the BCUC note as follows: "While the RCR is in its very early stages of existence, the Commission recognizes that some customers and impacted customer groups remain concerned about the rate structure. The Commission would like FortisBC to collect additional information from potentially heavily impacted customers including residences that do not have access to other sources of heating fuel (such as natural gas) as well as customers using heat pumps. Specifically, the Commission is interested in data from customer consultations and analysis of individual monthly billing impacts for potentially heavily impacted customers. This information, as well as any proposed rate refinements, should be included in FortisBC's next RCR report to the Commission to be filed on November 30, 2014."

It is my opinion that Fortis should give heat pump users a much larger low-rate allowance than 1,600 kWh per two months as these people have gone to the expense of installing efficient equipment at their own cost, and are thus more than meeting the spirit of conservation on which the RCR is predicated. A geothermal user has gone even further, in my case about $30,000 further, which is the premium my system cost over a conventional gas heating / electric air conditioning system. Geothermal users should thus be given an even larger break on their power rates on the grounds that they have gone the extra mile to conserve energy and reduce CO2 emissions.

Further to the Commission's comments to me, quoted above, would you please make sure that my concerns are included in your "customer consultations and analysis".

Thank you,

Subject: FW: October 31, 2013 RCR Report - Dual Rate billing system.

From:
Sent: May-08-14 2:21 PM
To:
Cc: 'Complaints BCUC:EX (Complaints@bcuc.com)'; Kyla Gandy; 'Letnick.MLA, Norm (Norm.Letnick.MLA@leg.bc.ca)'; 'premier@gov.bc.ca'; 'Thomson.MLA, Steve'
Subject: RE: October 31, 2013 RCR Report - Dual Rate billing system.

I would like all my comments in my letter and follow up emails included in your next report to the commission. I would also like this email exchange to be in it as well. Just because the regulatory process was "full" does not mean that all the relevant information was considered nor that the decision was the best that could be made in the circumstances. In this process or any hearing process, the quality of the result depends on the quality of the information being considered and the independence of the decision maker to the process and the decision.

As with some of Fortis' conclusions in the October 2013 report which I have already pointed out were misleading or even misrepresentations, your email is similarly inherently inconsistent. This rate was approved in part because Fortis did not accurately report on what they knew or should have known about the program. Your October 2013 report already demonstrates that Fortis is more interested in providing information the commission is wanting to hear than providing the information that will lead to the best decision possible. Given this process was the commission's project and the inherent reluctance of Fortis to bite the hand that feeds the company, I understand why that might occur.

You state in your email below that "the Commission has further directed a review of the rate, the scope of which includes conservation results, customer impact and alternate mechanisms." This suggests Fortis is in the process of reviewing the effectiveness of the existing program and alternatives. You then state you will not be "responding to information requests outside of an established regulatory process." My information requests are entirely on point in relation to the review you are now participating in. Answering them will provide information on "the rate, the scope of which includes conservation results, customer impact and alternate mechanisms."

Consequently, please provide the information requested either directly or in your next report. I appreciate that you are taking the position that you are not obligated to provide the information outside the regulatory process, but to date, in relation to this program, this process has been based on unsubstantiated assumptions and presumptions and has relied on incomplete information and information of often poor quality. It is very likely Fortis' next review report will be no more helpful to actually providing a comprehensive and accurate review of this program than the company's October 2013 review report was. If you disagree with my description of the report, prove that the report was not as I have described it.

From:
Sent: May-08-14 10:56 AM
To:
Cc: Complaints BCUC:EX (Complaints@bcuc.com); ; Letnick.MLA, Norm (Norm.Letnick.MLA@leg.bc.ca);

'premier@gov.bc.ca'; Thomson.MLA, Steve
Subject: FW: October 31, 2013 RCR Report - Dual Rate billing system.

Thank you for your reply. I have not asked Fortis to include consumption information for my home in your report to the BCUC. That information is already in my letter. I am asking Fortis to answer the questions in my letter, which your reply ignores.

There is no evidence this this block rate billing system was or is successful. There is evidence (assuming the information Fortis has provided is reliable) the program is not designed to achieve it's conservation object. According to the commission's assumption or presumption when they started this process, inspired by government, is that conservation behavior was to be motivated by increased electrical costs to consumers. How then, can the dual rate program work when 70% of Fortis customers either experience no such conservation incentive (no effect on costs), with the vast majority of them actually receiving a conservation disincentive (reduced electrical costs)? That disincentive is subsidized by consumers who are high (but not necessarily wasteful) consumers, like my wife and I. Further, because 70% of people are unaffected or benefit from the program, the discriminatory aspects are tolerable collateral damage, and the program is considered politically acceptable.

Fortis' October 2013 follow up report concludes there was moderate awareness of the program, but as my letter points out, the report contradicts that conclusion in a number of places, making the conclusion a misrepresentation of the truth. Fortis' report also concludes consumption reductions were experienced as a consequence of the dual rate block billing system without any evidence to connect those dots, again misrepresenting the truth. Relying on this report, the commission considers they have a green light to sustain this program and their enquiry for further study is on the known impact on high consumption consumers.

This further enquiry you are embarking on (impact on high use consumers) is an avenue of inquiry that has already been answered three times. The commission was warned about the discriminatory aspects of the program by Fortis at the outset when the BCUC first asked Fortis to suggest how a dual rate program could be implemented. The commission was again told about this impact and what it would be when the BCUC approved the program. Lastly the commission was told about it a third time in the October 2013 follow up report. The effect on high consumption consumers is already well known and has been repeatedly relayed to the BCUC but they are asking you to look at that again so Fortis is going to be providing more of the same information for a fourth time. What you are not enquiring into (at least officially) nor providing to the commission is real evidence regarding actual electrical conservation behaviour resulting from this program and how effective, or ineffective it actually is. Fortis was not asked and it will not be answering whether there is a better solution to achieve conservation goals. Would a return to a single rate program with a conservation premium that funds a rebate program for customers who invest in actual conservation measures accomplish a conservation object without the discriminatory aspects of the dual rate program and actually be better at leading to actual conservation behavior?

Fortis can also reinstate rebate programs for people who make actual conservation investments, but that would cost your company money, wouldn't it? Why aren't you doing that now?

The commission is biased towards implementing and sustaining this program, regardless of whether it actually works, and Fortis' motivation is to be cooperative and supportive of the BCUC's conservation poster child because the BCUC approves it's rate increase applications. The government does not currently have the political will to address this because it might involve admitting making a mistake, which is something anyone is reluctant to do.

Fortis must make an honest effort to dig into whether the block rate program actually worked or can work. Doing what the commission has asked will not do that. Full and accurate answers my questions may accomplish this objective. Let us all know if you will be answering my questions.

Thank You for this survey!!
We are hoping someone will finally realize that we are being discrimminated against and are being exploited by FortisBC!

We have contacted Fortis many times trying to clarify this situation and to try and find a way to prevent these ridiculous rates. We have had no success with anyone there in trying to resolve this indiscretion, except rudeness and a too bad, so sad attitude from Fortis employees.

We are a rural property with two houses and we are both covered by **ONE** meter. Therefore, as frugal as we try to be with our electricity usage it is an impossible situation and I challenge you to try and keep your usage under 1600 kwh bi-monthly under the same circumstances. Both of these houses have baseboard heaters as the main source of heat. We have no natural gas service in our area and are being held hostage by Fortis to pay extremely high rates since the 1600kWh bimonthly system was implemented. The houses are not big and there are no extra bells & whistles to increase power usage, no hot tubs, no pools. no saunas, Just that we are both on **ONE** meter! Now maybe you realize why your records show an above average usage of electricity. We have **NO ALTERNATIVE!!!**

Myself and my husband reside in House 1 and our Daughter, her husband and baby live in House 2
Only one house has 1 window air conditioner. There is a wood stove in House 1 as back up but we rely on baseboard heaters in both houses.
We have considered installing heat pumps but cannot afford the expense as Fortis is taking such a big chunk of our combined incomes.

Perhaps this survey will show that this tactic to encourage people to conserve energy is not viable to everyone, and there are other people in our and other rural areas that are in the same situation we find ourselves.
Perhaps this is a good way to encourage people that are able, but in our situation we **ARE** being **discrimminated against** and **exploited** and **Overcharged**. As winter approaches we find ourselves sitting in the dark huddled under blankets for fear of turning the heat up. If our Fortis bills contunue to escalate, it will come down to whether we can afford our medication, food or electicity. How sad is that in our Country in this day and age???

Discovery Research, **October 25, 2014**

Dear Sirs ,

Forgive me if I encumber you with additional details pertaining to this matter. But I have written in the past to the British Columbia Utilities Commission and received a reply which obviously was designed to avoid the issue.

The direct email reply said virtually nothing and included with the correspondence were two documents, one 189 pages in length and the other 73 pages.

I enclose a copy of my original letter to the commission dated May 2, 2013 and a fact sheet that I have prepared from my records.

I hope this will help in your understanding of our deep concerns, not only over the unfair Residential Conservation Rate, but also over the increase in rates over the past few years.

Yours Truly,

Consumption and Cost of Electricity for Kelowna, B.C., over the past eight years.

Year	Kwh. Used	Annual Cost
• 2006	37,500	$2,788
• 2007	37,140	$2,828
• 2008	41,340	$3,231
• 2009	33,600	$2,800 – New heat pump & furnace – 03/2009
• 2010	32,604	$2,955
• 2011	29,268	$2,923
• 2012	28,658	$3,174
• 2013	30,324	$3,837
• 2014 - Aug	20,820	$2,783 – First eight months of the year

As can be seen our annual consumption decreased from 37, 500 Kwh in 2006 to 30,324 Kwh in 2013, or a decrease of 19%. At the same time our cost of the commodity went up from $2,788 to $3,837 or an increase of 37%. The increased cost of $1,049 was in spite of a significant outlay of funds by us to install a heat pump and new furnace.

The Residential Conservation Rate is blatantly unfair for consumers who use electricity for all appliances in their home.

I do not have details of all the electricity increases but I do know that since 2010 there have also been annual increases in the cost of electricity of between 1.4% and 3.3%. This added cost is further aggravating the situation and significantly adds to our house hold expenses.

British Columbia Utilities Commission,
6th Floor, 900 Howe Street,
Box 250,
Vancouver, B.C., V6Z 2N3.

May 2, 2013.

Attn. Customer Service Specialist.

Dear Sir or Madam,

We have followed the various articles and arguments about the introduction of The Residential Conservation Rate with interest and a great deal of concern. I understand that your implementation of this very unfair, two block system, was to try and conserve energy, but surely you realized that it could not work.

All you have done is create hardship for very many people. The number of letters that have been written and the platitudes that have been circulated by yourselves and the utility companies is a very good indicator of the kind dissatisfaction being displayed by customers of utility companies who claim that they are not making any additional revenue.

We have finally decided to add our voice to the increasing number of customers who are having difficulty meeting their bills, which result not only from universal increasing costs, but in particular from the terrific increase in electricity costs. We detail below the facts of our personal challenges, which have prompted us to consider selling our wonderful retirement home and seek less desirable, but less costly accommodation.

- We are both retired, for eighteen years and for twenty three years.
- We live on OAP, CPP and one small fixed pension that receives and does not increase
- We do have RIFs, but they are disappearing rapidly and we are now relying upon a bank line of credit.

The increase in the general cost of living is becoming very noticeable. In particular over the past two to three years, it would appear that all utility companies are endeavoring to increase their own revenue at a rate that is in excess of the general cost of living, as follows: -

- 2010 – September – Electricity Rate (Fortis) **increase of 2.9%**
- 2011 – June – Water Rate (City of Kelowna) increase by the imposition of a two block system. From a general rate of 0.275 per cubic meter to 0.301 per cubic meter in Blk 1, which is an **increase of 9.5%** and to 0.397 per cubic meter in Blk 2, which is an **increase of 44.4%**
- 2011 – June – Electricity Rate (Fortis) **increase of 1.4%**
- 2011 – September – Home Telephone (BC Telephone) increase from $26.24 to $27.56 an **increase of 5%**
- 2011 – November – Cable Television (Shaw Cable) increase from $64.95 to $66.95 an **increase of 3%**
- 2012 – January – Natural Gas (Fortis) **increase of 3%**
- 2012 – January – Medical Services Plan (BC Government) increase from $109.00 to $116 an **increase of 6.4%**
- 2012 – February – Internet (Uniserve) increase from $29.95 to $32.95 an **increase of 10%**
- 2012 – April - Electricity Rate (Fortis) **increase of 1.5%**
- 2012 – September - Home Telephone (BC Telephone) increase from $27.56 to $28.89 an **increase of 4.83%**
- 2012 – September - Cable Television (Shaw Cable) increase from $69.95 to $67.95 an **increase of 1.5%**
- 2013 – January –Natural Gas (Fortis) Basic delivery charge - from $3.375 per G.J to $3.691 per G.J., an **increase of 9.4%**
- 2013 – January - Medical Services Plan (BC Government) increase from $116.00 to $120.50 an **increase of 3.9%**
- 2013 – February - Electricity Rate (Fortis) **increase of 2.3%**
- 2013 – March – Water Rate (City of Kelowna) - Basic Charge from $9.25 to $10.45, an **increase of 13%**. – Delivery Block 1 from 0.322 per cubic meter to 0.361 per cubic meter, an **increase of 11%** - Water Quality Enhancement from $4.95 to $6.19, an **increase of 25%**

The above increases do not take into account the significant change made by Fortis BC in implementing the so called Residential Conservation Rate. I can tell, you that the impact on our household is dramatic.

I have kept records for a number of years and I detail some of the information below: -

Year	Kwh. Used	Cost
2006	37,500	$2,788
2007	37,140	$2,828
2008	41,340	$3,231
2009	33,600	$2,800 – New Heat pump & furnace installed
2010	32,604	$2,955
2011	29,268	$2,923
2012	28,658	$3,174

It was apparent to us in 2008 that although we were doing what we could to keep our electrical usage low, it was difficult and the cost continued to climb. So we had an energy assessment done under the Live Smart BC program. We took heed of the evaluation report which among other things, recommended that we install a heat pump and replace the old furnace, so we did that at a significant cost. The advisor reported that we could reduce our energy consumption by up to 43%. We implemented the majority of the recommendations and as can be seen from the information above there was a significant reduction in energy consumption..

By our own efforts we have managed to continue to reduce usage every year since 2009. Please note that in 2012 usage was **down by 610 KW or 2%**, but the cost was **up by $251 or 8.6%.**

This year the February bill was $1,179 on 9048 Kwh versus $934 on 9012 Kwh in 2012. The April bill is $730 compared to last year of $564, **a combined increase of over 20%**

It is important for you to note that we do not use natural gas for heating the house, we use forced air which is heated by an electric furnace. Neither do we use natural gas to heat the water tank that is done by electricity. The appliances are all powered by electricity. The only natural gas used in the house is at the living room fire place and it used very rarely.

The reason why we purchased a house that uses only electricity is because Joan has allergies and the use of natural gas is one of the triggers that gives her serious problems. Consequently the two block system imposed by Fortis BC which they cheerfully state in their most recent news letter is not their fault and I quote "Fortis BC was directed by the BC Utilities Commission ....."

You as the BC Utilities Commission I am sure have a responsibility to the consumer as well as to the large corporations and we would appreciate your comments as to how the many significant increases detailed above can be justified.

Sincerely,

CC: Fortis BC
Castanet.net

From:
Sent: Wednesday, October 29, 2014 11:51 AM
To:
Subject: Fortis BC Survey

Mr.

Yesterday I received a survey from Fortis BC regarding our household consumption of electricity. I would like to enhance my responses to the survey with the following comments.

We built our home in 2008 with an eye to living there throughout the period we raise our children and to making the best choices for energy efficiency we could.

We researched various options prior to construction for the major energy issues associated with home construction choosing low e glass throughout the home, upgrading insulation throughout the home, installing programmable thermostats with independent controls for 7 different zones in the home among many other things. All of which we chose to pay a premium to include within our home for the purpose of energy efficiency and our commitment to participating in reducing our impact on the environment.

The biggest impact, and by far the largest investment cost for us, was the decision to use geothermal heating and cooling. This is a decision that we have come to regret.

Geothermal heating and cooling was, and continues to be, touted by the provincial government as an environmentally considerate choice, based primarily on its zero emissions rating.

I should point out that in 2008 natural gas was the primary alternative heat source available in BC and while high efficiency furnaces are highly rated for their low emissions, geothermal was and continues to be rated as better on the emissions front. Natural gas prices were also at all time highs in 2008 with the shale gas revolution just taking hold. Electrical rates increased each year but in study after study geothermal heating and cooling was shown to be cost effective on top of being the better choice from an environmental view. We chose to spend the significant extra money associated with using this geothermal system.

In the years since we occupied our home, electricity rates have continued to climb and recently (2012) the BCUC made a unilateral decision to introduce tiered electrical rates, the subject matter of your survey. This was decried by the geothermal community as overly punitive, especially to home owners who had 'made the right choice' on an environmental basis, with the full support and encouragement of the BC government!

Despite being approached by geothermal advocates the BCUC has refused to consider exempting residential geothermal operators from the tiered rate structure despite our inability to operate these highly efficient systems within the boundary of the lower rate tier. That is egregious in my opinion.

Our home remains young in age yet we have had the LiveSMart BC certified energy audit in the hopes of finding ways to further reduce our consumption. The auditor called prior to attending our home to question why on earth we would be asking him to come to our relatively new home that already has the highest possible efficiency ratings available in the marketplace. Never the less he did attend our home and confirm that we had already installed everything that was considered the most energy efficient option from insulation to low-e glass to, of course, the geo system.

I continue to press our political representatives to change the BCUC policy on tiered rates as applied to consumers who have born the added expenses of geothermal to be as energy efficient as possible, but to no avail.

For their part, Fortis has offered little to no interest or support to our challenges. Despite being questioned repeatedly throughout our first years occupying the home Fortis flatly rebuffed all attempts we made to discover why our home was consuming so much power relative to other comparable homes on the street. In 2012 we finally diagnosed our geothermal unit as faulty and the entire unit was replaced, which has reduced our energy consumption by roughly 1/3. But Fortis displayed no interest in helping us identify the problem.

I would ask you to encourage your company to help when home owners contact them seeking ways to improve their energy consumption. Fortis has comparables that we as home owners simply do not have (aside from talking with our neighbours and wondering why our electrical bills are significantly

bigger). When one home is consuming conspicuously more electricity than any other home in the neighbourhood, that should warrant a discussion if the homeowner requests assistance.

I would also encourage you to discuss the tiered rate policy with the BCUC as it applies to residential geothermal consumption. These units simply cannot operate within the lowest tier of electrical pricing. How much more are we to be punished?

Sincerely,

From:
Sent: Wednesday, November 5, 2014 9:58 AM
To:
Cc:
Subject: Re: Survey

Thank you for getting back to me. I received an email back from Fortis Customer Service advising me she has forwarded my email to Powersense.

Sent from

> On Nov 4, 2014, at 10:54 AM,
>
>
>
> First of all thank you for completing the survey. Secondly, would you like me to ask someone from our PowerSense group to contact you?
>
>
>
>
>
>
>
> _____
>
> Sent: November 4, 2014 10:42 AM
> To:
> Cc: FortisBC Customer Service – Electricity
> Subject: Survey
>
> I just completed the online survey I was sent by Fortis for customers who use over 1,600 kWh bimonthly, as per your request.
>
> We moved into this home in September 2007. I have kept a spreadsheet of our Fortis usage since moving in here. In 2008, our average usage per day was 117 kWh and our monthly equal payment was $228.00. We have worked very hard at lowering our usage over the past 7 years, and in 2013, our average usage per day was 98 kWh and our monthly equal payment has skyrocketed to $446.00.

>
> We signed up for the Okanagan Energy Diet last fall, to try and discover ways we can lower our electricity bill. We live in a rural farming area, and natural gas is not available to us on our street. I was one of the first to sign up, mainly to be able to take advantage of the grant that the RDOS was providing, so that my initial energy assessment would work out to only $35 our cost (we had been quoted in the past over $350 for the assessment, due to our location, which is approximately 45 minutes from Penticton and 25 minutes from Osoyoos)
>
> About 2 weeks after I signed up, I received a call advising me that the energy assessment company would be in my area the next day, and could they come by for my assessment. Unfortunately, we had purchased tickets for a show in Kelowna weeks in advance, and would not be home when the energy assessment company would be in my area. They advised they would contact me the next time they were in the area.
>
> We never heard from them again. I sent emails to the address provided to me by Fortis' Energy Diet team, advising them of this, and never heard back. I also advised a Fortis team of this when I saw their booth at the Rock Creek fair this September. To this date, I have never heard back from ANYONE from Fortis.
>
> I can understand now why people go to the media with their stories about Hydro companies. Our monthly bill is higher than our food bill, however we have done everything in our power to try to bring it down. There are only 3 of us in our small home, we mainly heat with wood, barely used our A/C units this past summer, use our dryer sparingly, have installed programmable thermostats and energy efficient light bulbs, etc, etc, but nothing seems to bring our bills lower.
>
> I will be very interested to see if this survey actually makes a difference.
>
> Thank you for your time,
:
:
:
:
:
>
>
> _____
>
> This email was sent to you by FortisBC*. The contact information to reach an authorized representative of FortisBC is 16705 Fraser Highway, Surrey, British Columbia, V4N 0E8, Attention: Communications Department. You can unsubscribe<http://www.fortisbc.com/About/Newsletters/Unsubscribe/Pages/default.aspx> from receiving further emails from FortisBC or email us at unsubscribe@fortisbc.com<mailto:unsubscribe@fortisbc.com>.
>
> *"FortisBC" refers to the FortisBC group of companies which includes FortisBC Holdings. Inc., FortisBC Energy Inc., FortisBC Energy (Vancouver Island) Inc., FortisBC Energy (Whistler) Inc., FortisBC Inc., FortisBC Alternative Energy Services Inc. and Fortis Generation Inc.
>
> This e-mail is the property of FortisBC and may contain confidential material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by others is strictly prohibited. FortisBC does not accept liability for any errors or omissions which arise as a result of e-mail transmission. If you are not the intended recipient, please contact the sender immediately and delete all copies of the message including removal from your hard drive. Thank you.

From:
Sent: Tuesday, October 28, 2014 5:29 PM
To:
Subject: Discovery Research Survey... ID 2225

Importance: High

Good day

I have just completed the FortisBC online survey…I REALLY hope it makes a difference.

Must admit, I was very disappointed to NOT have a section to provide comments….so here goes:

We have lived on our property here in Kelowna for the last 40 years! But now…I am tired of being RAPED by the FortisBC two-tier system (RCR). Obviously, devised by a bunch of bureaucrats who give no thought to how this affects me and other landowners trapped in the ALR (Agricultural Land Reserve). Clearly, the system was devised for residences where electricity AND natural gas are available. I have no such luxury. Confined to the two-tier system, I use up the available 'cheap' energy in the first few days of the month and pay DOUBLE for the rest of the month. AAARRGGGHHH!!!!

My Fortis bill (approaching $600/month in the winter) looks like I have a 'grow-op' on my property….perhaps I will have to put one in, in order to pay for my bill(?). And it's not like I have an old decrepit house….our home is barely 20 yrs old with 2x6 walls, good windows & insulation, heat pump etc.

Please…is there anything that can be done for residents like myself & my family?

All for now….grumblings from a dissatisfied customer!

Regards;

Wright, Walter

From:
Sent: Friday, October 24, 2014 5:23 PM
To:
Cc:
Subject: Fortis Survey comments

Dear
I sincerely hope that this survey I just filled out will have an impact on the way the RCR is calculated and not another facade to look like you are doing something about the unfair RCR pricing.
There should be a consideration for customers that **do not have access to any other means of heating** their homes other than electricity. We are getting real tired of people that have access to natural gas laughing at our situation where we have no other choice but use electricity and severely exceed the RCR threshold month after month during the colder months.
We think you are really doing the province a disfavor by allowing this to continue. We and other like us have already or are considering resurrecting the old inefficient wood burning fireplace as an alternative to high priced electricity.
Sincerely,

From:
Sent: Thursday, November 6, 2014 3:59 PM
To:
Subject: Kelowna BC

Hello

I appreciate Fortis reaching out to us on this; I had been trying for results via BCUC with no success.

My home is a unique scenario in that I just built it new in 2011 to all City of Kelowna code standards and above. I installed a horizontal loop Geothermal field for heating and cooling via heat-pumps, with back-up heating via gas fireplace. The home uses more electricity than average due to the fact that all its systems run via electricity. The property is also a farm (fruit orchard) also and all irrigation is drawn from a well driven by variable electric pump; hence, bimonthly use above 1,600kWh is unavoidable. Is there not a "farm classification" rate that would apply to a user like me? I've often felt that should "carbon credits" be more than pure window dressing, shouldn't they certainly apply to an end user like myself who has invested in carbon neutral technology? The Discovery Research survey makes reference to an "EcoENERGY or LiveSmart BC certified energy audit", would you have more information regarding these and if they might be applicable to my scenario?

Thank you & best regards,

From:
Sent: Thursday, November 6, 2014 12:53 PM
To:
Subject: Fortis Survey

Dear Mr.

I recently received a survey from Fortis whose results will form part of a report to the BCUC regarding the RCR. While I am pleased that Fortis is consulting with its customer base, I wanted to make two points:

1. It is disappointing that Fortis is using the same misleading terminology - Residential Conservation Rate - that the BCUC is employing. I would have hoped that Fortis would distance itself from the use of that term, which is simply designed to try and sweeten a grossly unfair energy pricing scheme.

2. There is not a single question on the survey related to **affordability**. Whether or not rates, made even worse by the two-tier rate for those customers who only have electricity as their energy source, are now **even remotely affordable** is really the central question. I wish you were willing to address this issue since it gets to the heart of the matter.

I will complete the survey, but given in the intransigence of the BCUC, I fully expect nothing will come of it. I have resigned myself to the fact that Fortis customers will continue be mistreated, aided and abetted by the BCUC, until the government steps in and does something.

Sincerely,

E-1

May 7, 2014
Our File: 999025-2

VIA EMAIL

FortisBC
100 – 1975 Springfield Road
Kelowna, BC V1Y 7T7

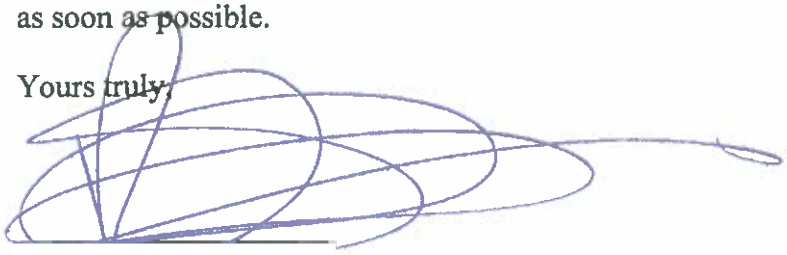
Attention:

Dear Sirs and Madams:

Re: October 31, 2013 RCR Report (the "Report")

Further to my April 11, 2014 letter, a copy of which is enclosed, I would appreciate receiving a response as soon as possible.

Yours truly,



cc - Secretary of the BC Utilities commission via e-mail: complaints@BCUC.com

FILE COPY

April 11, 2014
Our File:

VIA EMAIL AND REGULAR MAIL

FortisBC
100 – 1975 Springfield Road
Kelowna, BC V1Y 7T7

Attention:

Dear Sirs and Mesdames:

Re: October 31, 2013 RCR Report (the "Report")

I have made a few submissions to the British Columbia Utilities Commission (the "BCUC") criticizing the RCR program and commenting on FortisBC's application for a future rate increase plan over 5 years. I have recently read the Report. The BCUC has assumed and the Report claims that the RCR program "promotes conservation". This is surprising because there is no evidence in the Report that that behavioral electrical consumption reductions have occurred as a result of the RCR program as opposed to other factors. The issue here is not whether there were electrical consumption reductions one year over another. The issue is whether those reductions are related to the RCR program or not.

You have been asked by the BCUC to provide more information on the impacts which the RCR program has on high consumption customers. That is one question that should be asked, but there are a number of other questions which should also be asked. It seems no one is asking them, or if asked, they have not been answered, either by the BCUC, FortisBC or others. Unless there is a thorough analysis of the effectiveness of the RCR program at conserving power consumption, any supplemental report you provide will be incomplete and will not help answer whether the RCR program is effective.

My goal in writing you is to hopefully get answers to my questions which will get to the bottom of whether the RCR program is effective or reasonably connected with its stated objective. The difficulty I have encountered and which I believe FortisBC is affected by, is that the BCUC has presumed the RCR program is effective which is why it implemented the RCR program and required FortisBC to make the application to approve it. This systemic bias and inertia is formidable. FortisBC undoubtedly has its

own reasons (future rate increase applications and the like) to let the BCUC hear what it wants to hear. This review process seems to be one of FortisBC offering cooperation with the RCR program in the hope of receiving reciprocal cooperation on other matters. This is only one of the problems which arises when a regulatory decision maker initiates an "innovative" program on its own and then asks for a utility to apply for it, and once approved, to investigate and critique the BCUC's program.

The purpose of the Report was to "evaluate the effectiveness of the RCR program, in particular with respect to its impact on conservation" to assist the Commission on what future action is warranted. With respect to this conclusion, do you agree that:

1. The basic premise behind the RCR program is to increase the customer cost of block 2 power so that those customers are encouraged to alter their behavior to "conserve" or reduce their consumption of electricity?

2. The BCUC asked FortisBC to make the RCR program as a conservation promoting tool that was presumed to be effective?

3. The assumption behind the RCR is if electricity is made to be more expensive through the RCR program, the customer will, be encouraged to alter behavior and conserve consumption?

4. Another assumption behind the RCR program is that a consumer must be aware of the RCR program and how it operates for the incentive to conserve to become operative?

5. If through the RCR program, the cost of electricity drops for a consumer or there is no cost change for that customer, there is cost incentive to encourage that consumer to conserve under the program?

6. If the cost of electricity drops for a consumer there actually may be a disincentive for that consumer to conserve consumption of electricity?

7. The Report indicates 71% of your residential customers have actually experienced a reduction or no change to the cost of their electricity under the RCR program. Do you therefore admit the RCR rate *per se* has provided no motivation for those 71% of your customers to conserve electricity?

8. On page 13 of the Report, you indicate that 71% of customers are not aware of the RCR. Is this partially connected to the fact that 71% of your customers have not been negatively affected by the RCR system?

9. Of the complaints received about the RCR system, what portion thereof were from customers negatively impacted by the RCR system? What portion thereof were from customers positively impacted (on a billing impact basis) by the RCR system?

On page 1 of the Report, FortisBC applied a correction for equal monthly billing clients to adjust for the fact the RCR billing system created discriminatory billing for those customers because they were charged differently than they would have been charged without the equal monthly billing system. I am interested in FortisBC was so interested in focusing on alleviating this discrimination. Do you agree:

10. FortisBC can adjust its billings to eliminate discriminatory practices in its billing system?

11. This equal monthly payment adjustment was done to eliminate a discriminatory aspect to the RCR program for those customers?

12. How many customers received this adjustment?

13. Of these customers, what was the amount of the adjustments received by them (outline both positive and negative adjustments if applicable)?

14. The RCR is discriminatory against customers with larger homes and detached homes and in favour of customers with smaller homes, and townhouse/apartment condo homes?

15. FortisBC presently has no customer data on how large or what style (detached, apartment condo, townhouse etc.) a customer's home is?

16. Is the relative impact of RCR discrimination on this ground (15) more significant than the relative impact of RCR discrimination on customers receiving equalized monthly bills?

17. The RCR is discriminatory against customers with larger families or people in a residence and in favour of people living on their own or with a smaller family?

18. FortisBC has no customer data on how large their customer's families are or the number of people supported by a service?

19. Is the relative impact of RCR discrimination on this ground (17) more significant than the relative impact of RCR discrimination on customers receiving equalized monthly bills?

20. The RCR is discriminatory against customers who live in a rural environment who need to support out buildings etc. and in favour of customers who live in the urban condo/apartment style environment?

21. FortisBC has no customer data on the customers' living situation (rural/urban)?

22. Is the relative impact of RCR discrimination on this ground (20) more significant than the relative impact of RCR discrimination on customers receiving equalized monthly bills?

23. Did Fortis make any effort to obtain any such customer data from the survey group or control group and if so what are the results of that enquiry?

24. The RCR is discriminatory because Block 2 Rate paying customers negatively impacted actually subsidize Block 1 rate customers whose bill impacts are positive?

25. Is the relative impact of RCR discrimination on this ground (24) more significant for them than the relative impact of RCR discrimination on customers receiving equalized monthly bills?

26. The RCR is discriminatory against customers who use electricity for heat and light and in favour of customers who split their energy needs between electricity and natural gas?

27. Is the relative impact of RCR discrimination on this ground (26) more significant than the relative impact of RCR discrimination on customers receiving equalized monthly bills?

28. Is it not true that from the date of the initial implementation of the RCR, that any future rate increases approved by the BCUC in the future will only aggravate the disparity and discriminatory aspects of the RCR program?

29. Of the recent rate increase approved by the BCUC what is the relative bill impact disparity between Block 1 rates and Block 2 rates?

30. On page 33 of the Report, you refer to bill impacts and conservation impact. Is it not true that a customer's electrical consumption is not necessarily connected with how efficiently they consume electricity?

31. Is it in the best interests of the goal to conserve electricity that all customers be motivated to conserve electrical consumption?

32. With the RCR program, at least 70% of all customers do not receive any "conservation impact" from the RCR program? Instead this 70% receive a neutral or less expensive or positive "billing impact" from the RCR program?

33. Does it not then follow that almost ¾ of FortisBC customers are not being motivated to conserve electricity through either a conservation impact or a negative billing impact from the RCR program?

34. Is it not true that the discriminatory aspects of the RCR program would be reduced by lowering the block rate consumption threshold, thereby broadening the "conservation impact" and lessening the negative billing impact of high consumption (remembering that is not necessarily mean "careless" or "wasteful") customers ?

35. Is it not true that broadening the application of the negative impact of the RCR program would actually promote conservation among a greater proportion of your customer base, in effect broadening the "conservation impact" and lessening the customer bill impact among FortisBC customers generally?

36. Is it not in the best interests of promoting conservation that all customers receive a "conservation impact" on their electrical bill? Is it not true that a single flat rate increase accomplishes this objective?

37. Why does FortisBC not advocate for eliminating the RCR program altogether?

38. Would a single flat rate with a proportionate rate increase for all customers to create a conservation fund to be accessed by customers making decisions that lead to the conservation of their own

individual consumption levels, most equitably and fairly apply a "conservation impact" and similarly avoid a discriminatory (either negative or positive) "billing impact"?

I have some concerns as to whether FortisBC has access to data which can correlate how many of its residential customers are actually serviced by NG? On page 23 of the Report, you state that the disparity in consumption is reported to be lower than if the population was separated into groups with/without NG access. You deny that the Company is able to provide this separation. I do not understand why that would be the case. Your winter 2014 FortisBC Powerlines brochure reports on its last page that FortisBC BC is "integrating with the company's natural gas operations resulting in a smaller management team." From this the following questions may arise:

39. Does FortisBC BC and FortisBC Energy BC share computer and software resources with respect to billing, etc.? Can they?

40. Are the data base systems used by the two companies "compatible" or could they be used to find customer matches or separations?

41. Is it possible for FortisBC BC and Fortis Energy BC to establish how many electrical customers also have natural gas service? If not, why not?

42. Can Fortis Energy BC track customers who dropped NG service when they converted to electrical heat pumps?

43. Has Fortis Energy BC been asked by the Commission to implement a RCR system for natural gas customers?

44. With respect to FortisBC "Reduce your Use" program:

    a. Why did FortisBC eliminate its energy efficient light rebate program on December 31, 2013?

    b. When did this rebate program start?

    c. Did you promote the rebate program specifically to people you knew were likely to be negatively impacted by the RCR? I can say for myself that you did not. Why not?

    d. How many of your residential customers took advantage of the rebate program during its lifetime?

    e. How much money did each customer receive (OK to group them somewhat)?

    f. How much money was rebated to customers under the program in total over what period(s) of time?

    g. Of the customers who took these steps, how much did their electrical consumption change?

In terms of general customer education and awareness, I believe there was a reason customers were generally ignorant of the RCR program. The responsibility falls on the quality of the education and information provided about it. What I also notice is that there is much talk about "confusing the public". What is confusing is that the RCR is solely intended to promote conservation, 70% of the customers receive no "conservation impact" from it, they actually receive a reverse impact, and it is known to be discriminatory in many respects. Please answer the following questions about your RCR education program:

45. Why did the customer direct mailing regarding the RCR program referred to in page 16 of the Report only go to 12,800 customers?

46. Who received this mailing?

47. What did you do to differentiate this mailing from the other promotional mailings you send out (i.e. Powerlines Newsletter)?
48. Did the direct mailings explain to the customer receiving it what the impact may be on their particular service and electrical costs? If not, why not? Did you think of doing so? Why didn't you do that?

49. Did you direct this mailing to customers who were negatively impacted by RCR, explaining why this was so and what they could do to help themselves? If not, why not?

50. Is it not true that FortisBC could identify customers who would likely be negatively impacted by RCR?

51. What information does FortisBC have about how many of its customers actually read its mail-outs?

52. Did FortisBC write to its customers who were negatively affected by the RCR program to explain how and why the RCR program would negatively affect them (from a billing impact point of view) and the extent to which that might happen, and point out there is a LCD light rebate program to help? Could you have done so? Did you think of doing so? Why didn't you do that?

53. Did FortisBC write to its customers who were positively affected (billing impact – which equates to a negative "conservation impact") by the RCR program to explain why this might happen (i.e. they are being subsidized by the others?)? Could you have done so? Did you think of doing so? Why didn't you do that?

You state on page 1 of the report that "there was a moderate level of awareness of the RCR program". Later, you admit that generally, customers are ignorant of how RCR actually works and how RCR impacts them. On page 13 of the Report you state "71% of customers are not aware of the RCR, and of those who are aware there seems to be only a passing familiarity with how the rate works and the intent of its introduction." On page 25 of the Report you state there was little evidence that awareness equates to conservation. The truth is there was no evidence of a connection between awareness of RCR and consumption behavior. On page 25 of the report, you state that "RCR was not a top-of-mind concern among participants...and was often confused with time of use rates." On page 26 of the Report you state "three-in-ten (29%) of FortisBC electrical customers are aware of the RCR". On page 30 of the Report,

you state: "Given the current existing lack of understanding of RCR...." These statements are seriously inconsistent with your initial statement of "moderate awareness", which could be described in its best light, as misleading, and at worst, misrepresentation. To clarify further:

54. Is it not true that a customer's claim of familiarity with RCR could be distinct from customer actually being familiar with RCR?

55. How was "awareness" measured or determined?

56. Was "awareness" measured by "having heard about it somewhere"?

57. In terms of the awareness chart in Figure 5, did the researchers test those customers who claimed to be somewhat familiar (14%) or very familiar (5%) with RCR whether they actually were familiar with it and the degree to which they were familiar with it? If so, what did they discover? If not, why not?

58. If you didn't test whether the claims of "familiarity" were true, is it possible that in the end, all customers were actually not familiar with RCR?

59. Is it true that "awareness" does not mean " awareness and understanding of how the RCR works"?

60. Why do you describe awareness levels at the beginning of the report as "moderate"?

61. What would be described as "low awareness"?

62. What would be described as "high awareness"?

63. If you added "understanding of how RCR actually works and impacts customers" to whether a customer was "aware" of the RCR program, is it true that there is overall "little to no awareness" of the RCR program?

64. Did you ask what people actually did to conserve and what motivated them to do so?

65. If there is little or no awareness of the RCR program, is it not true customer behavior would not be affected by it?

On page 1 of the Report, you state "RCR is providing conservation results with a range of savings from 22.5 to 52.4 GWh." Page 31 refers to "conservation results, while present, are uncertain and less than forecast." I do not understand from the report how FortisBC comes to that conclusion. FortisBC purports to explain how this is on page 19 of the report, but there is no statistical proof in support of the stated conclusion. You state RCR has only been around for a year, but you fail to go historically except to a limited degree on page 22 of the report. There you look at survey results of the Survey Group over three years. You also refer to a much smaller and less statistically significant Control Group. On page 22 you also mention consumption within the admittedly small control group remains flat. On the bottom of page 17, you admit that "actual consumption behavior is beyond the control of the Company", but is

it not also true that "actual consumption is to some extent always beyond the control of the customer?". Why don't you mention that as well?

Table 7 is entitled "RCR Savings". On page 28 of the Report states: "Those who have noticed an increase in their energy bills are more likely to have conducted most conservation activities." You suggest such activities occur but there is no evidence of that. You do not say customers actually conserved electricity by their own behavior, nor what they did to conserve, nor what factors contributed or led to conservation. Your statement speculates. All that is proven and certain with the RCR structure, low users are being subsidized by the higher users. Increases in rates resulting under the RCR only aggravate this scenario into the future (see top paragraph p.32 of report). You mention that there is consumption reduction from year 2 to 3, but don't mention there was also a reduction from year 1 to 2. What caused these reductions? Why do you suggest the year 2 to 3 drop in consumption is due to the RCR? What caused the year 1 to 2 drop in consumption? What happened the year or two years, or even three years before those?

I have submitted historical consumption data for my own residence for 10 years and you have likely seen it.

Billing Period	KWH Billed	Diff Yrly Cons	Diff Rate %	Amount Billed
2004 Totals	35640	kwh	5.75	2402.52
2005 Totals	31120	-4520	3.4	2216.17
2006 Totals	30120	-1000	5.9	2263.62
2007 Totals	33040	2920	3.3	2526.26
2008 Totals	32000	-1040	2.9	2532.98
2009 Totals	34000	2000	7.6	2829.62
Totals 2010	33680	-320	6	3041.54
Totals 2011	34640	959.9	12.2	3462.12
Totals 2012	33988	-651.9	19.5	3742.21
Totals 2013	31508	-2480	10	4033.73

Overall, it shows a general decrease in consumption, with occasional increases, most likely due to climate and perhaps a loss of efficiency in the insulation attributes of the home as the home gets older. No one can attribute changes to consumption to careless use. The main variation leading to changes in consumption is most likely climate variations. Climate would probably account for variations on annual consumption figures which could easily absorb any of the differences in Table 10 of the Report. So looking at the effect of RCR on consumption:

66. Did people actually reduce consumption based on their behavior or on other factors, or both?

67. It is not true that a reduction of consumption without more information, does not prove the RCR caused the reduction on consumption?

68. Is it not true that the title of Table 10 of the report is more properly or accurately named "Customer Consumption Changes" as opposed to "RCR savings"?

69. Who among the various billing categories of customers outlined on Figure 4 and Table 5 of the Report conserved electrical consumption year over year during the last 4 years, and by how much?

70. How did those who conserved electricity actually do it?

71. What motivated those who acted to conserve consumption?

72. Did the RCR have anything to do with it?

73. Is it not true that annual reductions in consumption one year over the next may have nothing to do with billing rates generally?

74. Is it not true that annual reductions in consumption one year over the next may have nothing to do with the RCR being there or not?

75. Does the RCR promote increased consumption by the 71% of your customer base with a neutral or positive billing impact?

76. Did the RCR result in increased consumption among any customer groups?

77. Did other factors promote conservation?

78. If so, what were they? Climate?

79. Did FortisBC conduct any other surveys or gather statistical data on the RCR program or customer consumption that you did not disclose in this report?

80. Do you know the statistical accuracy of the survey results cited in the Report? If so, what are they? If not, why not? Are the survey results actually statistically valid for any purpose?

In the report you state the RCR system is revenue neutral. From information gathered from your financial statements, I observe the following:

Income Statement

	2004	2006	2007	2008	2009	2010	2011	2012	2013	% Increase
Electricity Revenue	$176,427	$204,839	$211,400	$222,667	$240,151	$248,821	$279,400	$285,000	$310,400	76%
Other Revenue	$6,599	$2,763	$8,314	$6,563	$3,949	$8,093	$3,300	$8,400	-$1,700	-126%
Total Revenue	$183,026	$207,602	$219,714	$229,230	$244,100	$256,914	$282,700	$293,400	$308,700	69%

FortisBC was not obviously a company experiencing a "revenue neutral" experience from the RCR 2012 over 2011, nor 2013 over 2012. Please answer the following:

81. What was FortisBC's total electrical supply in GWH to all residential customers affected by the RCR for 2010, 2011, 2012, and 2013?

82. What was FortisBC's total electrical supply revenues to all residential customers affected by the RCR for 2010, 2011, 2012, and 2013?

83. Of the increased revenue in these years:

    a. How much (total amount and %) of that was caused by increased consumption by those customers?

    b. How much (total amount and %) was to supply to new customers to the grid?

    c. How much (total amount and %) was attributable to general rate increases approved by the BCUC?

    d. What portion of this revenue was contributed by the billing categories listed in Figure 4 and Table 5?

84. Looking at the first quarter of 2014 (since your January 1, 2014 rate increase), and comparing it to the first quarter of 2013:

    a. What was FortisBC's total electrical supply in GWH to all residential customers?

    b. What was FortisBC's total electrical supply revenues to all residential customers?

    c. Of the increased revenue in this first quarter year over year:

        i. How much (total amount and %) of that was caused by increased consumption by those customers?.

        ii. How much (total amount and %) was to supply to new customers?

        iii. How much (total amount and %) was attributable to general rate increases?

        iv. How was the rate increase allocated and paid among the billing categories listed in Figure 4 and table 5?

I was also looking at FortisBC operating costs and trying to understand them. From the financial statements I observed that something significant happened in your financial reporting beginning in 2010. In particular look at the following:

	2004	2006	2007	2008	2009	2010	2011	2012	2013	% Increase
Power Purchase Costs	$59,014	$67,576	$68,048	$68,190	$71,553	$72,975	$71,600	$76,000	$83,300	41%
Operating Costs	$36,804	$33,021	$35,442	$36,554	$37,765	$63,873	$70,800	$73,300	$76,800	109%
Income Taxes Paid	$8,154	$6,332	$5,229	$5,280	$4,212	$4,185	$9,400	$8,800	$12,000	47%
Total Costs	$103,972	$106,929	$108,719	$110,024	$113,530	$141,033	$151,800	$158,100	$172,100	66%
Net Earnings	$21,935	$26,510	$30,056	$32,664	$36,224	$41,760	$47,500	$49,000	$49,600	126%
Dividends Paid	$9,726	$10,200	$11,800	$13,400	$14,500	$15,000	$16,000	$24,000	$46,000	373%

85. Why did FortisBC change its financial statement reporting regarding operating expenses starting in 2010?

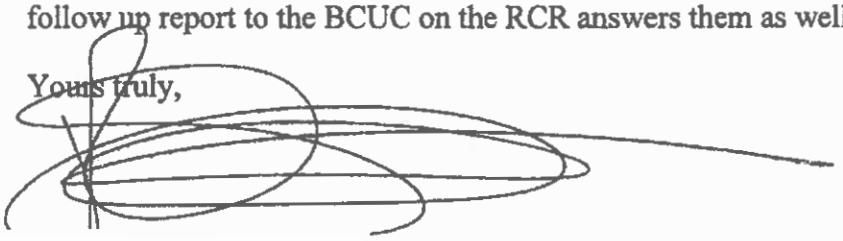
86. What are all the differences between operating expense accounting on FortisBC financial statements prior to 2010 and from 2010 onwards?

87. Is there any change to revenue accounting at this time?

88. Why did FortisBC Pacific stop injecting additional capital (through share acquisitions) into FortisBC in 2010, 2011, and 2012 (resumed to pay for Kelowna utility purchase in 2013) which historically it did between 2004 and 2009?

I look forward to receiving your responses to my questions. I appreciate there are many questions here, but getting truthful answers to them are important to me as a FortisBC customer, and to all of FortisBC customers generally, and to the integrity of the regulated BCUC system. I would appreciate if your follow up report to the BCUC on the RCR answers them as well.

Yours truly,



Encl.

cc - Secretary of the BC Utilities commission via e-mail: electricityregulatoryaffairs@fortisbc.com

Appendix E
2013 RCR REPORT

(Provided in electronic format only in order to conserve paper)

FORTISBC INC.

Residential Conservation Rate Information Report

For the Period July 1, 2012 to June 30, 2013

October 31, 2013

Table of Contents

List of Appendices

Index of Tables and Figures

1. EXECUTIVE SUMMARY

On July 1, 2012 FortisBC Inc. (FortisBC, FBC or the Company) began billing its residential electric customers on a 2-tier rate designed to promote energy conservation by charging a higher rate for power consumed above 1,600 kWh over a two month period. The rate, known as the Residential Conservation Rate (RCR), was implemented after the BC Utilities Commission (BCUC or the Commission) directed the Company to file an Application for a rate of this type and subsequently directed its implementation after a regulatory review which involved FortisBC customers and stakeholder groups.

The requirement to file an Evaluation Report by April 30, 2014 was included in the original Commission Order that approved the rate. In response to customer concerns with the impact that the rate was having on certain customers, the Commission and the Company discussed advancing the filing date and by Order G-127-13 the Commission directed FortisBC to file the report on or before October 31, 2013.

The purpose of the Report as described in Order G-127-13 is to, "provide the utility, the Commission and the interveners the opportunity to evaluate the effectiveness of the Residential Conservation Rate (RCR) program, in particular with respect to its impact on conservation", which will, "assist the Commission to determine if any further action is warranted on this matter."

The Report examined the billing records of over 97,000 residential customers over the period examined by the report and found that:

- The impact of the rate on annual customer billing is very close to that forecast in the original rate Application with approximately 71% of customers receiving bills lower than would have been received under an equivalent flat rate.
- The Company's Equal Payment Plan (EPP) that allows customers to receive 12 equal bills on a monthly basis could result in a higher billing of customer accounts. The Company has applied a correction over the period since the implementation of the rate that provides a credit to customers where this has occurred.
- The results show that the RCR is providing conservation results with a range of savings from 22.5 to 52.4 GWh. The measured savings is within the range of the original estimate, but is on the low side. The measured elasticity of demand for residential electricity consumption is estimated at -.086.
- The results show that customers with electric heat and without access to natural gas have higher than average annual consumption which leads to a higher than average impact due to the implementation of the RCR. This is consistent with information provided by the Company during the original Application process;
- Customer research undertaken by the Company indicates there is a moderate level of customer awareness and familiarity with the RCR. Customers generally are supportive of the intent of the rate but have some reservation associated with the impact on certain higher consumption customers such as those with large families and electric heat.

- The Company has discussed a number of options for adjustments or changes to the RCR including changing the level at the threshold at which the higher Tier 2 price comes into effect, changing the manner in which rate increases are applied to the RCR rate components, flattening the rate to reduce the spread between the Tier 1 and Tier 2 price, and changing manner in which the rate is applied such that monthly or seasonal variations in customer usage are considered.
- Raising the threshold level of consumption at which the higher Tier 2 price comes into effect will generally have a negative impact on higher consumption customers due to the impact that such a change has on the prices applied to consumption in both consumption blocks.
- Any change made to the rate that reduces annual bills for some customers will necessarily raise bills for another customer group. Generally high and low consumption customers will experience the opposite impact from any change to the rate.
- The RCR does not result in any increase in revenue or profit for FortisBC, nor will any change made to the rate in the future. The RCR is designed to be revenue neutral (ie. collect the same amount of revenue) with the flat rate, and results confirm that this is the case.

2. INTRODUCTION AND BACKGROUND

2.1 *REGULATORY BACKGROUND*

FortisBC implemented the Residential Conservation Rate (RCR) beginning with the July 2012 billing period. This date was determined by the Commission in Order G-3-12. Prior to July 2012, FortisBC residential customers were billed under a flat rate consisting of two rate components – a fixed Customer Charge, and a flat Energy Charge that did not vary with the level of consumption.

The RCR, or inclining block rate[1], first become a topic of discussion during the regulatory process associated with the Company's 2009 Cost of Service and Rate Design Application. In its opening statement during the oral hearing associated with that process, FortisBC stated that, "*FortisBC does not propose to implement different residential rate structures, such as inclining block, in the relatively brief interim period before the contemplated installation of AMI."* There was, however, discussion of the inclining block rate structure during the information request phases of the process and questions posed to the Company during the oral hearing.

At the time, FortisBC expressed concerns that the impact of an inclining block rate may have undesirable impacts to electric heat[2] customers, may cause stranded investment[3], and that the impact on energy conservation was difficult to estimate with any surety. A cumulative conservation of approximately 1.7% of residential load was forecast, and this assumption was later utilized in the Company's Residential Inclining Block (RIB) rate Application.

Ultimately, the Commission directed FortisBC to submit an application for an inclining block rate by March 31, 2011. The Company submitted the Application on that date. A written regulatory process was initiated to review the Application. The public process included the filing of the Application, associated evidence, two rounds of information requests and final arguments. There were 15 interveners registered in the process representing a wide range of interests. By the end of the process, 88 different rate options had been examined.

All of the various RIB options included in the original Application contained a key design parameter based on customer impact that acted as a constraint on the rates put forward for consideration. Rates were designed with a cap on the number of customers exposed to annual bill increases greater than 10% due solely to the implementation of the RIB rate when compared to bills that would be received on the prevailing flat rate. Rates options specified a cap of 0%, 5%, and 10% of customers. Based on forecast customer bill impact and conservation, FortisBC

[1] When the Company submitted its application for the RCR in March of 2011 it referred to the rate as a Residential Inclining Block rate, or RIB.
[2] Response to Okanagan Environmental Industry Alliance, Natural Resource Industries, and Hedley Improvement District, IR 2.10.2 in the COSA process.
[3] FortisBC COSA Final Argument, page 53

preferred an option with a 5% cap.[4] Simply put, the rate option preferred by the Company specified that on a forecast basis,

> *The block 1 and block 2 rates are set such that 95% of customers will experience annual bill impacts of less than 10 percent.*[5]

The data in the Application was therefore clear that based on the amount of consumption that was assumed to occur above the threshold of 1,600 kWh bi-monthly, which was a level set at approximately 90% of median consumption, 5% of customers would experience relative bill increases greater than 10%. In addition, bill increases greater than 20% were indicated for 0.2% of customers. Without some degree of negative impact to customers, there is no revenue available with which to provide an incentive for customers to conserve energy.

On January 13, 2012, the Commission issued Order G-3-12 which approved the rate option preferred by the Company. Specifically, the Order directed,

> *FortisBC is to implement this RIB rate as soon as is reasonably practicable, and by no later than July 31, 2012. FortisBC is to file a revised Tariff Sheet for Rate Schedule 01, no later than 30 days prior to the date the RIB rate becomes effective.*

and

> *FortisBC is directed to apply Pricing Principle 1 to future rate increases for the years 2012 to 2015. Specifically:*
>
> *(a) The Customer Charge is exempt from general rate increases, other than rate rebalancing increases;*
> *(b) The Block 1 rate is subject to general and rebalancing rate increases; and*
> *(c) The Block 2 rate is increased by an amount sufficient to recover the remaining required revenue (i.e., the residual rate).*

2.2 RATE COMPONENTS

The rate components in effect since the introduction of the RCR since the implementation date are as follows:

[4] Original RIB options can be found in the Company's March 31, 2011 RIB Application at page 22
[5] March 31, 2011 RIB Application page 1

Table 1: Residential Conservation Rates Since Implementation

Date	July 1, 2012	January 1, 2013
Customer Charge ($/billing period)	29.65	30.33
Tier 1 Rate (¢/kWh)	8.258	8.803
Tier 2 Rate (¢/kWh)	12.003	12.952
Threshold	1600 kWh	1600 kWh
Block Differential[6]	1.45	1.47

The structure above provides that consumption up to the threshold during a two month billing period is billed at the Tier 1 Rate and consumption above the threshold is billed at the Tier 2 rate. While the price increases at the threshold, a customer will not actually receive a higher bill than under the flat rate until about 2,500 kWh are consumed. The differential between the rates is intended to provide an incentive to reduce consumption. The design of the rate including the pricing of the tiers and the threshold is revenue neutral to FortisBC as compared to the same overall residential consumption of a flat rate.

2.3 *THE RESIDENTIAL CONSERVATION RATE REPORT*

Commission Order G-3-12 also contained two directives related to reporting on the experience with the RCR as follows:

5. *FortisBC is directed to provide a RIB Rate Evaluation Report (Report) covering the period from the date of implementation to December 31, 2013. This Report should provide the utility, the Commission and Interveners the opportunity to evaluate the effectiveness of the RIB program, in particular with respect to its impact on conservation.*

   The Report is to include, but not be limited to, the following:

   a. *The energy consumption reductions achieved;*
   b. *Whether the consumption reductions persist or are temporary;*
   c. *How the rate design impacts electric heat customers; and*
   d. *The resulting operating cost reductions to the utility.*

   The Report should also include an in-depth analysis of the full long-run marginal cost of acquiring energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate; the combined effect of integrating TOU and RIB rates on the conservation achieved by the RIB, should that information be available; an update of the Conservation Potential Review and report on the potential effects of interaction

[6] The Block Differential is the ratio of the Tier 2 to Tier 1 rates. It will widen over time as long as some the Customer Charge is not subject to any general rate increase.

between RIB rates and Demand Side Management targets; comparison of energy usage of indirect customers with the energy usage of direct customers; and an analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers. This Report should be submitted to the Commission no later than April 30, 2014.

6. *FortisBC is directed to establish a control group in conjunction with the introduction of the RIB rate to develop elasticity data for its own customers. The results of this elasticity study are to be included in the RIB Rate Evaluation Report.*

Subsequent to Order G-3-12, the Commission issued two further Orders amending the timing and scope of the RCR Report.

1. Order G-127-13 – Which required an interim report to be filed by FortisBC by October 31, 2013 covering the period between the date of implementation and July 31, 2013, and amended the scope of the report to include additional items required by the Commission. Order G-127-13 is attached as Appendix A.
2. Order G-153-13 – This changed, at the request of the Company, the period to be included in the report to July 1, 2012 to June 30, 2013 inclusive. Order G-153-13 is attached as Appendix B.

The primary purpose of this RCR Information Report is to provide information on the impact of the RCR over the Report Period in light of the Commission's comment in Order G-127-13 that,

This Report will assist the Commission to determine if any further action is warranted on this matter.

2.4 CUSTOMER COMPOSITION

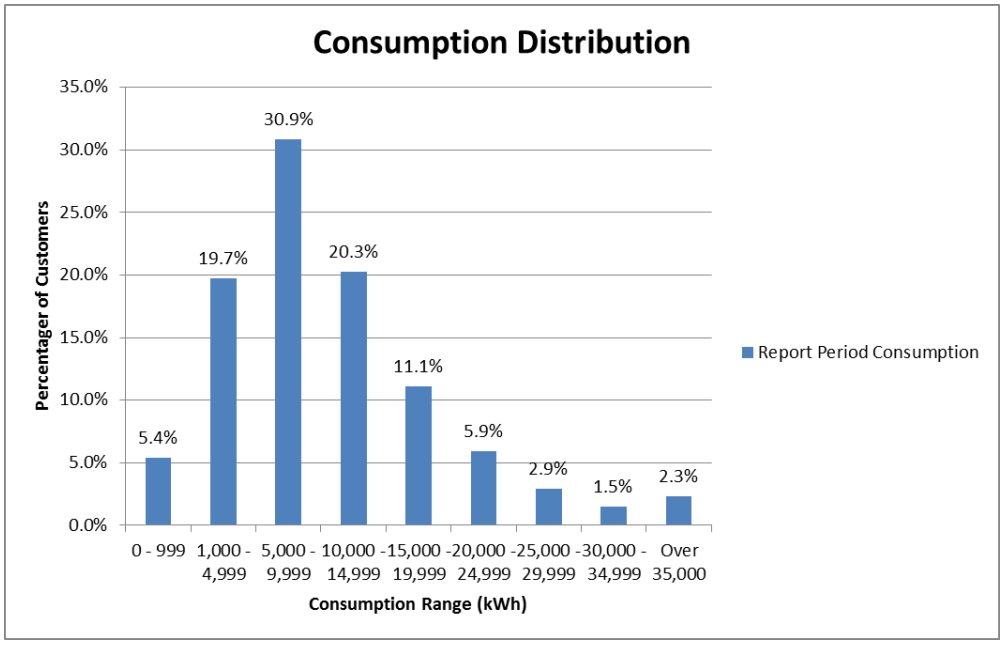
A FortisBC customer consumption profile considers information from 97,873 customer accounts, including consumption billed from July 1, 2012 to June 30, 2013 (the Report Period). These customers were drawn from the following rate types:[7]

Table 2: RCR Customer Composition

Rate Type	Number of Customers
Residential - Bimonthly Billing	83,635
Residential - Monthly Billing	14,238
Total	97,873

As context for the Report, the chart below shows a breakdown of the annual consumption characteristics of FortisBC customers based on bills issued during the Report Period.

Figure 1: Consumption Distribution



Information in Figure 1 is interpreted as 5.4% of customers had consumption during the Report Period of between 0 and 999 kWh, 19.7% of customers had consumption during the Report Period of between 1,000 and 4,999 kWh etc.

[7] Customers who were formally served by the City of Kelowna were not included as they were not FortisBC customers during the entire Report Period.

Figure 2: Cumulative Consumption

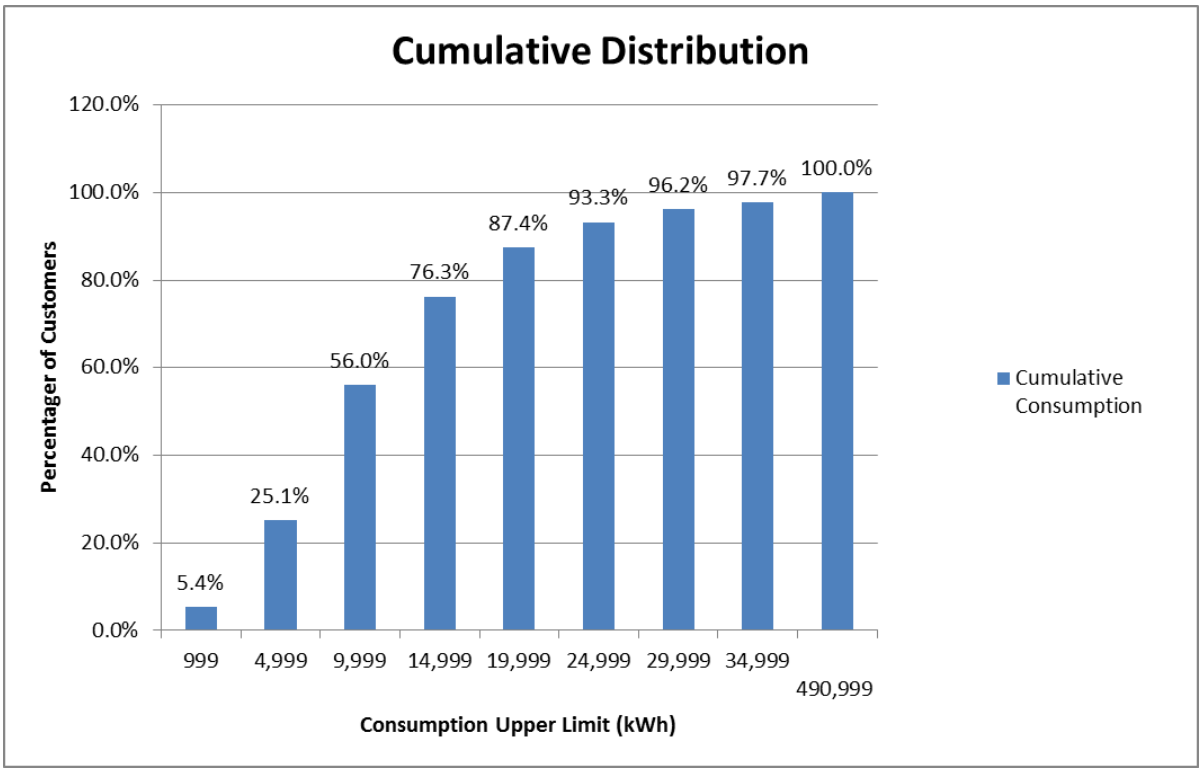
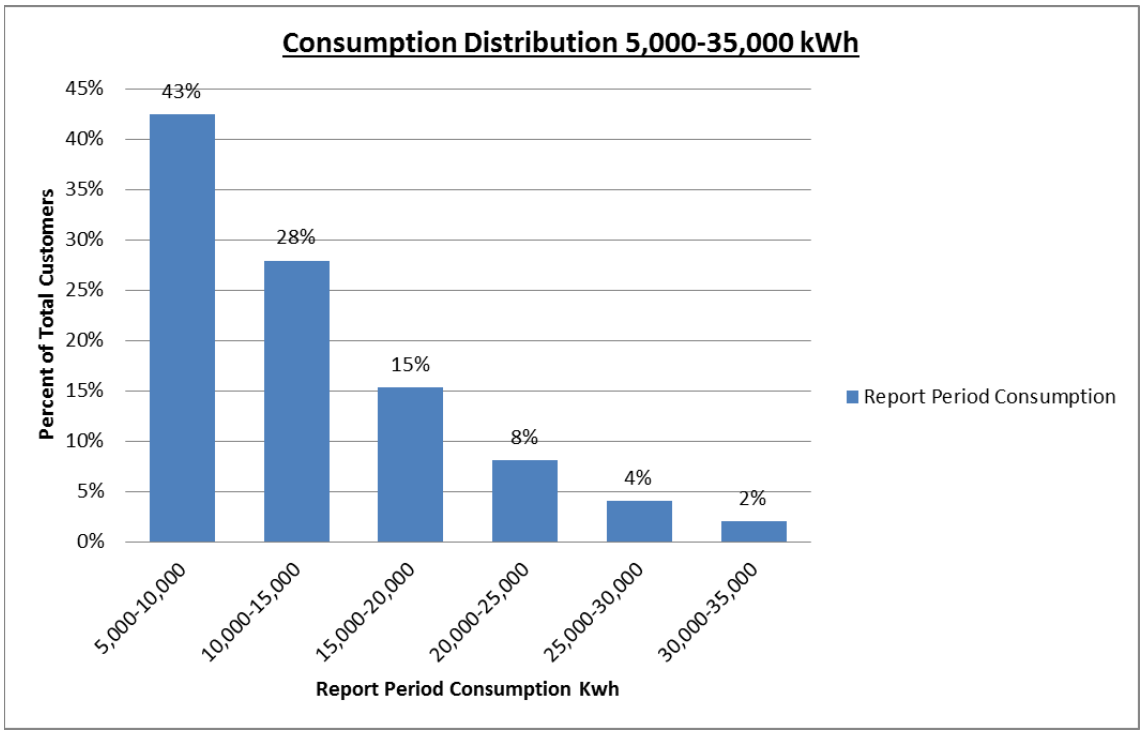


Figure 2 above displays the percentage of customers with consumption below a certain level. For example, 25.1% of customers had consumption during the Report Period of 4,999 kWh or less, 93.3% of customers had consumption during the Report Period of 24,999 kWh or less. No customer had consumption greater than 490,999 kWh. (The highest consumption for any single customer was 490,308 kWh)

The simple annual mean consumption[8] of the customer group is 11,181 kWh. There is however significant variation within this result given the large percentage of FortisBC customers with consumption at the lower end. For accounts with annual consumption of between 5,000 kWh and 35,000 kWh, the mean is 12,501 kWh.

[8] Calculated as total consumption / total number of customers.

Figure 3: Consumption Distribution for 5,000 – 35,000 kWh



n = 71,013

3. OVERALL IMPACT ON CUSTOMERS DUE TO THE INTRODUCTION OF THE RCR

Commission Order G-127-13, Directive 2(g) and 2(h) requires FortisBC to provide information on the,

Overall impact on customers due to the introduction of the RCR:

- Percentage who have seen their bills decrease, by how much?
- Percentage who have seen their bills increase, by how much?
- How many customers have taken advantage of the Residential Demand Site Management Reduce Your Use program, which was introduced in 2012 to coincide with the introduction of the RCR?
- Comparison of the actual impacts of the RCR versus anticipated impacts. Please indicate if any lessons were learned on this matter.
- An evaluation as to how the rate structure works with the Equal Payment Plan and indicate what action FortisBC is taking to ensure estimated bills are accurate

3.1 *BILL IMPACT METHODOLOGY*

The impact of the RCR on customer bill amounts over the Report Period is determined by comparing the total dollar amount of bills as calculated by applying both the RCR and the prevailing flat rate to the actual consumption recorded for each billing period. This is the same basis for comparison that was used in evaluating the original RIB Application.

The Customer Bill Impact measures included in this report are based the aggregation of individual customer consumption over the Report Period. In other words, they reflect the impact on all customers included in the analysis. Individual customer accounts will vary from the averages presented. This measure is concerned primarily with the relative level of bills received under the RCR versus the bills that would have been received under a flat rate given the same level of consumption. Such an examination provides information assuming that a customer made no behavioural or investment decisions as a result of the rate and also allows for the assessment of the revenue neutrality of the RCR.

In order to isolate the Customer Bill Impact of the RCR it is necessary to compare the billing information calculated using the RCR against that calculated using the flat rate that would be in effect had the RCR never been implemented.[9] This rate is the same as the Residential Exempt Rate (RS03 and RS03A which differ from each other only in the level of the Threshold and Customer Charge).

[9] This comparison is the basis of the Residential Conservation Calculator available online at http://www.fortisbc.com/Electricity/CustomerService/ForHomes/ResidentialConservationRate/Pages/default.aspx

The Customer Bill Impact for the Report Period was determined using the rates in effect as of January 1, 2013.

Table 3: FortisBC Residential Rates[10]

Rate Component	Residential Conservation Rate	Flat Rate
Customer Charge	$30.33 Bi-Monthly	$32.53 Bi-Monthly
Tier One Rate	$0.08803/kWh	$0.10222/kWh
Tier Two Rate	$0.12952/kWh	n/a
Threshold	1,600 kWh Bi-Monthly	n/a

For example, a residential customer on RS01 (Residential RCR with bi-monthly billing) would normally get 6 bills per year. These six bills could have consumption as follows

Bill 1 1,200 kWh
Bill 2 1,800 kWh
Bill 3 1,900 kWh
Bill 4 2,000 kWh
Bill 5 1,200 kWh
Bill 6 1,100 kWh

Total consumption is 9,200 kWh which under the RCR would be billed 900 kWh at the Tier 2 Rate and 8,300 kWh at the Tier 1 Rate assuming a 1,600 kWh Threshold.

Under the flat rate, all 9,200 kWh would be billed at the flat rate per kWh.

In each case, the applicable Customer Charge would be billed once for each of the 6 bills.

This would result in annual bills at the current rates of:

Table 4: Sample Bill Impact Comparison

		8,300 kWh	**900 kWh**	
	Customer Charge	**Tier 1 Charges**	**Tier 2 Charges**	**Total Bill**
Rate				
RCR	$ 183	$ 731	$ 117	$ 1,030
Flat Rate	$ 195	$ 940	n/a	$ 1,136

[10] Where customers are billed monthly, both the Customer Charge and the Threshold are ½ of the amounts shown.

The annual totals under both scenarios can be compared to determine the impact due to the RCR on each bill. This basic process was repeated for over 96,000 customers' bills over the Report Period to arrive at the aggregate bill impact statistics for the residential customer base.

3.2 *ADDITIONAL NOTES ON THE DATA*

No customers have been excluded from the analysis of consumption characteristics included in the Customer Distribution section of the report. When considering financial billing impact, those customers with annual consumption above 100,000 kWh and below 120 kWh were excluded in an effort to prevent customers at the extremes of consumption from influencing the results for what would be considered more normal levels of consumption. There are a number of customers at either end of the consumption range that could be considered atypical. For example, there are:

- 1231 customers with consumption below 120 kWh
- 282 customers with consumption above 75,000 kWh
- 135 customers with consumption above 100,000 kWh
- 3 customers with consumption above 250,000 kWh
- 789 customers with consumption above 50,000 kWh that while comprising .8% of customers account for 5.7% of total consumption.

3.3 *OVERALL IMPACT ON CUSTOMERS DUE TO THE INTRODUCTION OF THE RCR*

Based upon the customer research conducted by the Company for this report 71% of customers are not aware of the RCR and of those who are aware there seems to be only a passing familiarity with how the rate works and the intent of its introduction.

When examining the impact of the RCR on the customer base overall, it is clear that the rate does not have a negative impact on the majority of customers. For those customers who are negatively impacted and have publically stated opposition to the rate, it appears that the perception of the impact is greater than that actually experienced. The group that is negatively affected is far smaller than is reflected by the publicity garnered by the rate.

The purpose of this section of the Report is to provide an accurate summary of the actual impact to customer bills *due solely to the introduction of the RCR*, and is based on the actual consumption of more than 96,000 customers over the Report Period.

FortisBC is not intending to in any way dismiss customer concerns with the RCR. There are customers who have experienced bill increases versus the existing flat rate, which is consistent with the information contained in the original RIB Application. In some cases the increases are material and cannot be addressed through conservation efforts.

When faced with a high bill, customers often see only the dollar amount of the bill without properly attributing consumption and the level of rates generally as contributing factors. A customer that receives a $1400 bill for two months of consumption can miss the fact that the roughly 12,000 kWh required to produce such a bill would result in a bill over $1200 on the flat rate. The difference is not minor in terms of dollars, but it is certainly not the doubling or tripling of bills under the RCR that has been reported. As shown by the data below, no customer has seen an increase greater than 23.0[11] % due to the RCR as compared to a bill that would result under the flat rate. Most are much less even at very high consumption. Certain groups of customers have been affected more than others, however the fact that part of the issue is with customer perception means that changing the structure of the rate can only have an impact on the portion of the increase that is actually attributable to the RCR.

For the purpose of the RCR Report, impact to customers' bill amounts over the Report Period is determined by comparing the total amount of the bills as calculated by applying both RCR and the prevailing flat rate to the actual consumption recorded for each billing period. This is the same basis for comparison that was used in evaluating the options presented in the original RIB Application.

The Company has maintained a Flat rate schedule (RS03) as a referent upon which to base the RCR. This rate is also used for the customers in the Control Group and other exempt

[11] Of customers who had 6 billing periods of consumption during the report period.

customers such as those with BC Assessment Farm status.[12] This rate has been adjusted for rate increases since the implementation of the RCR in a manner consistent with past Company practice and would be the default residential rate in the absence of the RCR. All comparisons in this section are therefore done by comparing the current RS03 rate to the current RCR.

For clarity, if FortisBC had not been directed to implement a stepped rate, residential customers would be billed on a default flat rate that would be exactly the same as the current flat rate RS03.

This point is of particular importance in understanding customer concern directed at the RCR. The lack of an obvious comparator for the RCR leaves many customers who perceive an increase in electrical rates to blame the RCR where the isolated impact of the RCR is less than believed.

The Company acknowledges that there was a general and rebalancing rate increase that took effect on January 1, 2013. Since the differential percentage between the block 1 and block 2 rates has increased slightly with that increase, the impact of the RCR will be slightly overstated in the analysis herein for the Report Period which uses current rates for the entire time.[13]

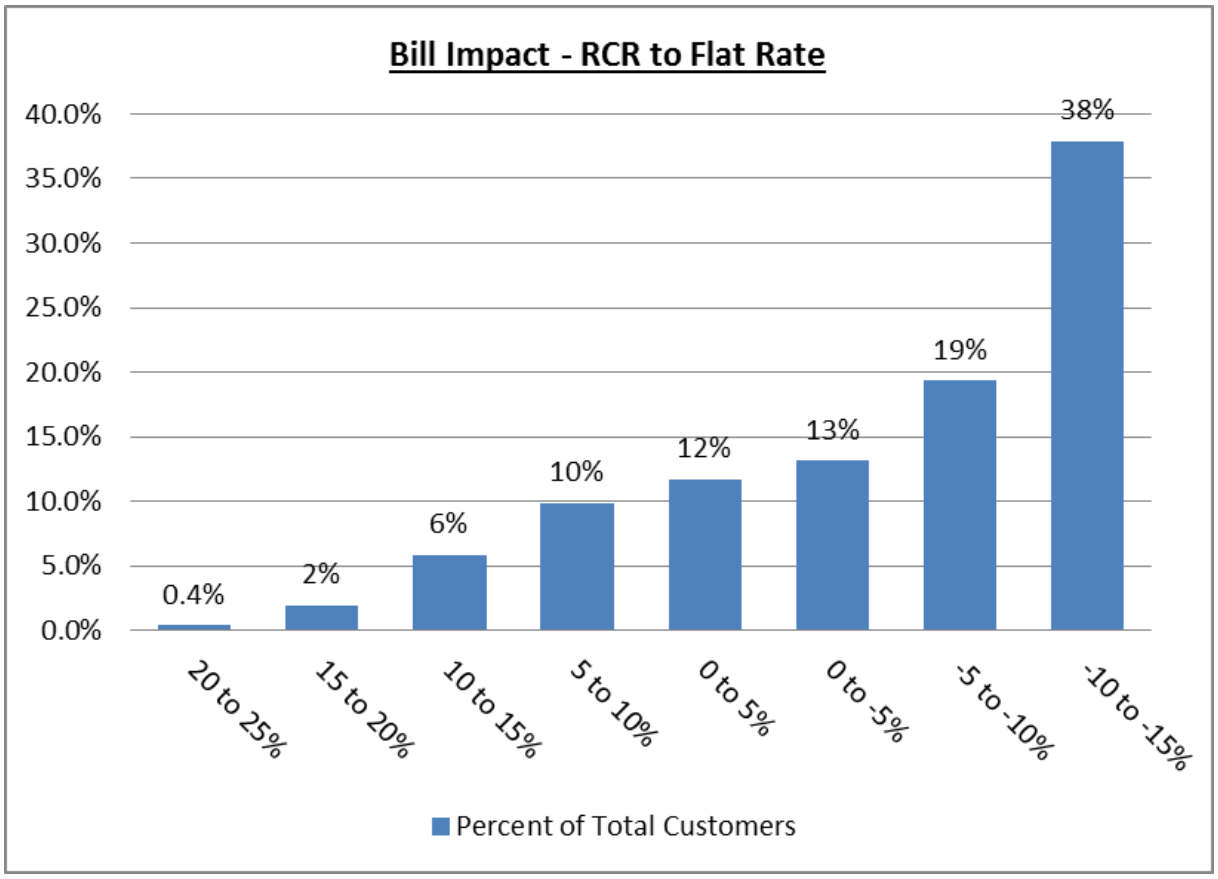
The distribution of customer annual bill impact due to the introduction of the RCR is shown in the chart below.[14]

[12] A Farm Status exemption was granted by Commission Order G-167-12.

[13] The block differential increases because the Customer Charge is frozen which requires the block 2 rate to increase faster than the block 1 rate. Impact is overstated because the rate with the higher differential has been applied to the July 1, 2012-December 31, 2012 period.

[14] Information in this section is drawn from all customers billed on RS01 and RS01A with consumption between 120 and 100,000 kWh in the Report Period.

Figure 4: Distribution of Bill Impact over the Report Period



Negative percentages indicate RCR savings as compared to the flat rate.

From the above chart, it can be seen that over the Report Period, due to the introduction of the RCR 38% of customers had bills between 10 and 15 percent lower than if billed on the flat rate, 19% of customers had bills between 5 and 10 percent lower than if billed on the flat rate, and 13% of customers had bills between 0 and 5 percent lower than if billed on the flat rate.

Six percent of customers had bills between 10 and 15 percent higher than if billed on the flat rate, 10% of customers had bills between 5 and 10 percent higher than if billed on the flat rate, and 12% of customers had bills between 0 and 5 percent higher than if billed on the flat rate.

A return to a flat rate would effective see the reverse of the impacts shown in the table above. That is, an immediate negative rate impact to over 70% of customers.

The results can also be examined based upon the billing impact to customer segmented on the basis of consumption. The table below shows the percentage of customers in each consumption range as well as the median dollar difference and percentage difference between the RCR and flat rate bills. For example, approximately 32% of FortisBC customers have consumption in the 10,000 – 19,999 kWh range. For these customers, the average decrease in bill amount was 6 dollars.

Table 5: Bill Impact of RCR by Consumption Level

Current RCR vs Flat Rate			
Consumption	% of Total Customers	Ave. $Δ	Ave. %Δ
120 - 9,999	55%	-$ 70	-9.84%
10,000 - 19,999	32%	$ 6	-0.31%
20,000 - 29,999	9%	$ 256	9.56%
30,000 - 39,999	2.3%	$ 528	14.34%
40,000 - 49,999	0.7%	$ 807	17.10%
50,000 - 59,999	0.3%	$ 1,089	18.91%
60,000 - 69,999	0.2%	$ 1,355	20.10%
70,000 - 79,999	0.1%	$ 1,637	21.05%
80,000 - 89,999	0.07%	$ 1,926	21.62%
90,000 - 99,999	0.04%	$ 2,218	22.25%

3.3.1 The Reduce Your Use Program

Commission Order G-127-13, Directive 2(h) requires FortisBC to provide information on the,

- *How many customers have taken advantage of the Residential Demand Site Management Reduce Your Use program, which was introduced in 2012 to coincide with the introduction of the RCR?*

Since Reduce Your Use (RYU) offer was initiated in mid-2012, there have been 115 participants who have had a free energy assessment (EnerGuide audit) completed, including ten low-income participants who were issued a pre-paid voucher for the cost of the audit ($150).

This was a relatively low response rate considering that two direct mailings were sent to approximately 12,800 eligible customers as well as RYU promotions in the FortisBC PowerLines newsletter, strategic print ads and referrals by the Trail contact centre. The current RYU offer ends December 31, 2013.

By comparison, the two community Energy Diet initiatives launched in 2013, in the Kootenays (May) and Okanagan (September), have already yielded over 350 completed EnerGuide audits of households with electric heat. The Energy Diet program offers a lower-cost (but not free ($35-$60 depending on local government contributions) EnerGuide audit, as well as the direct install of low-flow showerheads and CFLs.

3.3.2 Comparison to the Original RIB Application

Commission Order G-127-13, Directive 2(h) requires FortisBC to provide information on the,

- *Comparison of the actual impacts of the RCR versus anticipated impacts. Please indicate if any lessons were learned on this matter.*

The table below shows the bill-impact related results of the RCR implementation as compared to the results forecast in the original application.

Table 6: Comparison of the Actual Impacts of the RCR versus Anticipated Impacts

Residential Conservation Rate Customer Impact Summary July 1, 2012 - June 30, 2013		
	Original Application Forecast[15]	Current RCR
Percentage total consumption in the second Tier:	36.6%	39.7%
Percentage of customers with lower annual bills under the RCR	75.7%	70.3%
Maximum percentage increase by any customer due to the RCR	22.6%	23.0%
Percentage of customers with increase over 10% due to the RCR	5.0%	8.2%
Percentage of customers with increase over 20% due to the RCR	0.2%	0.4%
Percentage of customers with consumption in Block 2 at least once	72.8%	68.7%

The difference in the results between those included in the original Application and the results determined for the Report Period comes primarily from the methodologies employed in each case. For the current analysis, the Company has used the actual billing data for all current customers applied over only the rates that are actually in place.

For the Application, actual billing data from 2010 was also used, however the billing data was grouped into block of annual usage, and outliers removed prior to the analysis being performed. This was necessitated by the large number of rate options being examined at the time.

Were the Application methodology applied to the Report Period data, the results are very consistent with those presented in the Application. The percentage of consumption in the second tier would be 35.1%, the percentage of customers better off is 77%.

The comparison indicates that the impact on customers which was forecast in the Application is fairly close to the actual results achieved when the currently approved rates are run through the entire customer base. The primary reason for the variance that does exist is the higher than expected percentage of consumption that occurred in the second block. This drives a higher percentage of consumption to be billed at the Tier 2 rate.

Actual customer consumption behaviour is beyond the control of the Company and will always vary from forecast to some extent. Overall FortisBC views the impact as consistent with the projections presented to the Commission in the RIB Application. Because the actual impacts were fairly close to those forecast, there is no variation that points to an obvious lesson to take from the results.

[15] From FortisBC's Application for a Residential Inclining Block Rate, Exhibit B-1, Table 7-2

3.3.3 An Evaluation as to How the Rate Structure Works with the Equal Payment Plan

FortisBC offers a monthly Equal Payment Plan in which customers receive 12 equal bills on a monthly basis, based on their historical annual bills. Since meters are read bi-monthly, the customer receives an estimate of their actual consumption in the off-cycle billing months. Customers on the monthly plan have the first tier set at 800 kWh and all usage above this tier is then billed at the higher per kWh rate.

This estimation did not result in billing issues under the flat rate. However, under RCR, two possible overbilling scenarios may occur:

1. Bill # 1 is an estimate and the kWh usage estimated is in Tier 1 only (under 1600 kWh for bimonthly, 800 kWh for monthly). The following bill is a verified read and the kWh usage goes into Tier 2 (over under 1600 kWh for bimonthly, 800 kWh for monthly).
2. Bill #1 is an estimate and the kWh usage estimated goes into Tier 2 (over 1600 kWh for bimonthly, 800 kWh for monthly). The following bill is a verified read and the kWh usage goes into Tier 1 only (under 1600 kWh for bimonthly, 800 kWh for monthly).

Data for all bills on rate IDs RS01, RS01A, RS02 and RS02A for time period July 1, 2012 to April 30, 2013 was obtained and analyzed. This analysis showed that 6.7% of monthly bills and 0.2% of bimonthly bills fall into issue scenario #1. Similarly, 5.9% of monthly bills and 0.1% of bimonthly bills falls into scenario #2.

In order to correct the issues arising from this estimation error, FortisBC averages consumption for all bills that are based partly or entirely on estimates once a second verified read is obtained. This process can only take place once the second verified read is obtained, and then any corrections are calculated using the average consumption instead of the estimated consumption. The use of the average consumption over the estimate period results in the maximum tier 1 consumption and always results in a credit or no change to the previous bills.

FortisBC has applied this correction for the period July 1, 2012 to June 30, 2013 for all monthly billed customers. FortisBC intends to apply this correction for all other customers at the end of 2013 and on a periodic basis thereafter.

3.3.3.1 Energy Reductions Achieved

This section of the Report summarizes the findings related to customer consumption and conservation over the Report Period. It is drawn from the full report which is attached to the Report as Appendix C – Customer Conservation Methodology.

In order to examine the elasticity impacts, as well as the many other factors surrounding RCR impacts of interest to the Commission, it was necessary to collect residential billing data from all residential customers.

In addition, FortisBC randomly selected a Control Group at the time of RCR implementation to aid in determining the impacts associated with the RCR. This Control Group faced rates that were flat but designed to be revenue nuetral to the RCR.

The data that was collected was used for the regression analysis as well as for other comparisons. Data was generated for a three year-period starting in July of 2010 and ending in June of 2013. The data included one year with the RCR in place and the prior two years.

Table 7: RCR Savings

	Original Application			Updated Estimate	
	Low Case	Medium Case	High Case	Measured	Upper End
Block 1 Elasticity	-.05	-.10	-.20		
Block 2 Elasticity	-.10	-.20	-.30	-.086	-.20
Residential % Savings	1.9%	3.7%	5.5%	2.8%	6.4%
GWh Savings	19.7	38.4	57.0	22.5	52.4

The residential savings percentages provided in the original application are the combined impacts associated with block 1 and 2. To derive the corresponding GWh savings amounts these percentages were applied to the actual 2011-2012 GWh for the residential class. This year was used as it would reflect the consumption prior to the implementation of the RCR rates. Resulting savings were estimated to be in the range of 19.7 to 57 GWh for the first year of implementation.

Based on the preliminary elasticity estimates found in the regression analysis, updated savings found as a result of the RIB can also be determined. Because the elasticity values were based on the kWh for all bills that had any usage in block 2, they must be applied to that same metric to determine the GWh savings. Table 10 provides the results based on the measured elasticity of -0.086 and the new upper end value of -0.20.

These results show a range of savings from 22.5 to 52.4 GWh. The measured savings is within the range of the original estimate, but is on the low side. With the new upper end estimate, the value fall within the original range of savings, however, the range is now not as wide as originally thought.

3.3.3.2 Are the Consumption Reductions from RCR Persistent?

Energy savings resulting from the Residential Conservation Rate have been measured over a relatively short period of time (one year). There is simply not enough data to assess whether the savings will be persistent for a period longer than one year or will increase over time as customers have more time to adapt to the RCR. The filing of the next RCR report as required by order G-3-12 will provide further insight as to the persistence of energy savings from the rate.

Commission Order G-127-13 directed FortisBC to comment on the impact of the RCR to specific groups within the greater FortisBC customer base.[16] Specifically, these groups are:

1. Electric heat customers;
2. Customers that have no access to natural gas.
3. Customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available; and

3.4 *ELECTRIC HEAT CUSTOMERS*

While FortisBC does not collect data on the heat source for all of its customers, data was collected from the Control Group to provide comparison data.

The Control Group data was supplemented using information from the 2009 Residential End-Use Study, in which FortisBC completed a survey of approximately 900 customers that included classification by heating source. Data from this survey, along with the associated consumption data for this group, was used extensively within the RIB application. This Survey Group was used in the current evaluation to determine the separate impacts on those customers with and without electric heat.

A summary of the characteristics and billing results for the Report Period for bi-monthly billed customers in the Control Group is shown below. The primary purpose of this exercise was to determine if heating choice was a significant determinant in consumption level as was discussed during the RIB Application process. Additional information on customers' choice of heating type was also available from a larger sample of customers contained in the Residential End Use Survey (REUS) data discussed in more detail in the Report section on conservation results. Those results are consistent with the smaller sample from the table below.

As compared to all bi-monthly billed customers, the results are:

[16] Directive 2 (page 3), 2(c) and 2(d)

Table 8: Comparison of Population to Control Group by Heat Source

	RS01 Population	Control Group Electric	Control Group Non-Electric
Percentage total consumption in the second Tier:	40%	46%	39%
Percentage of customers with lower annual bills under the RCR	73%	67%	84%
Percentage of customers with increase over 10% due to the RCR	7.4%	10.3%	5.6%
Percentage of customers with increase over 20% due to the RCR	0.6%	0.0%	1.9%
Percentage of customers with consumption in Block 2 at least once	65.5%	79.5%	66.4%

As expected, electric heating customers have a higher average usage per customer and they also see more variability from year to year. In each case the average usage goes down each year as the HDD has declined over the three year period.

It follows that since customers with higher consumption regardless of the reason will have a higher likelihood of greater bill impact; this segment of customers is more adversely affected by the RCR than customers as a whole. This result is not unexpected.

The comparison for electric heat vs non-electric heat is further shown in tables 9 and 10. For the Control Group, the average use is roughly 30% higher in year 1 and about 18% higher in years 2 and 3. The differential is higher in year 1 due to the fact that it has the highest number of HDD. The year over year change is a reduction of 9% in 2011-2012 for the electric group. Average usage was nearly flat during that same time period for the non-electric heat group, as would be expected since they would be less sensitive to HDD. However between year 2 and year 3, the average usage is relatively flat for both types of customers.

Table 9: Comparison of Control Group With and Without Electric Heat

	2010-2011	2011-2012	2012-2013
Average Annual Use			
Control Group Electric Heat	2,562	2,322	2,314
Control Group No Electric Heat	1,972	1,966	1,968
Percent Difference			
Electric Heat vs Non-Electric Heat	29.9%	18.1%	17.6%
Year-to-Year Percent Difference			
Control Group Electric Heat		-9.4%	-0.3%
Control Group No Electric Heat		-0.3%	0.1%

When looking at the Survey Group, the usage for electric heat customers is in the range of 60-70% higher than for non-electric heat customers. In this case the two groups are more extreme than the Control Group. The electric heat customers have higher usage in the Survey Group than in the Control Group. And the non-electric heat customers have lower use in the Survey Group than in the Control Group. This is true in years 1 and 2 when both group faced the same rate was well as in year 3 when the Survey Group faced RCR rates. As the Survey Group is a much larger sample, it is likely that it includes more customers with extreme energy use, causing more variability in this group than in the Control Group. Because of these differences it is important to look at the results in both groups rather than just looking at one or the other.

Table 10: Comparison of Survey Group With and Without Electric Heat

	2010-2011	2011-2012	2012-2013
Average Annual Use			
Survey Group Electric Heat	2,774	2,700	2,497
Survey Group No Electric Heat	1,675	1,602	1,553
Percent Difference			
Electric Heat vs Non-Electric Heat	65.6%	68.5%	60.8%
Year-to-Year Percent Difference			
Survey Group Electric Heat		-2.7%	-7.5%
Survey Group No Electric Heat		-4.3%	-3.1%

One impact we can see from the Survey Group is that both the customers with and without electric heat see reduced consumption in year 3 relative to year 2. This differs from the Control Group where the usage remains relatively flat. We can expect this difference to be due to the fact that the Survey Group faces the RCR rate while the Control Group does not. As expected, the electric heat group saw a much larger reduction in consumption than the non-electric heat customers.

3.5 *CUSTOMERS WITHOUT ACCESS TO NATURAL GAS*

FortisBC has been able to identify those electric customers who are located in portions of the service area that do not have natural gas service available as an option. This is distinct from those customers who have a local supply of natural gas (ie – service at the street level) but who choose not to receive natural gas service.

There is considerable overlap between the customers with no gas availability and customers with electric heat. While customers without gas access generally have access to propane, the costs are higher than for natural gas. It is also expected that this group represents a more rural environment where wood may be likely used as a primary or secondary source combined with electric heat.

The comparison was conducted between the RS01 customers without access to natural gas and the entire RS01 population inclusive of the group without NG access. The resulting disparity is therefore lower than if the population had been separated into groups with/without NG access however the Company is not able to provide this separation.

The impact on customers without natural gas access is similar to the impact on electric heat customers in the billing impact metrics presented in the table below.

Table 11: Comparison of Population to Customers without Access to Natural Gas

	Entire Sample	No Access to Natural Gas
	RS01	**RS01**
Percentage total consumption in the second Tier:	40%	52%
Percentage of customers with lower annual bills under the RCR	73%	58%
Percentage of customers with increase over 10% due to the RCR	7%	14%
Percentage of customers with increase over 20% due to the RCR	0.5%	1.4%
Percentage of customers with consumption in Block 2 at least once	65.5%	74.7%

The results indicate that customers without natural gas service have higher average consumption and a higher portion of that consumption subject to the second tier rate than customers generally. Consequently, this segment of customers is more adversely affected by the RCR than customers as a whole.

Table 14 compares the average use per customer for the no gas group with all customers and with the electric heat customers found from the Survey Group. While the no gas customers have average use that is roughly 12% higher than the average customer, the usage is also about 12% lower than that of customers known to have electric heat. It is likely that the no gas group has a greater than average use of electric heat, but they are not necessarily 100% electric heat.

The table also shows that the 7.2% drop in consumption in year 3 is much closer to the electric heat customers than it is to the average customer. This would indicate that they are likely largely impacted by the RCR rates. It should also be noted that the -0.23 elasticity found for this group, although not statistically significant, was in between the electric heat group and the total block 2 group.

Table 12: Comparison of No Gas Group With All Customers and Electric Heat Customers

	2010-2011	2011-2012	2012-2013
Average Annual Use			
All Customers	2,186	2,081	1,970
No Gas Availability	2,457	2,348	2,179
Survey Group - Electric Heat	2,774	2,700	2,497
Percent Difference			
No Gas vs All Customers	12.4%	12.8%	10.6%
No Gas vs Survey with Electric Heat	-11.4%	-13.0%	-12.7%
Year-to-Year Percent Difference			
All Customers		-4.8%	-5.4%
No Gas Availability		-4.4%	-7.2%
Survey Group - Electric Heat		-2.7%	-7.5%

3.6 *ALTERNATIVE HEATING/COOLING SYSTEMS*

In Order G-127-13 the Commission Directed in item 2c. (Page 2 - the next Directive on page 3 is also numbered 2) that FortisBC report on,

> *How the rate design impacts electric heat customers including how has the rate impacted customers that use alternative heating/cooling systems such as heat pumps (geothermal/air source), if available;*

The Company has reported on electric heat customers in the preceding section. FortisBC does not have these customers further segmented in its billing system in a manner that would allow it to provide additional analysis related to such alternative heating/cooling systems as mentioned in the Directive. This information is not available in order to perform an analysis. FortisBC has had anecdotal reports that customers with alternative electric heating systems are unhappy that they have invested in an energy efficient option that they now perceive as having diminishing benefits due to the RCR.

4. CUSTOMER FEEDBACK

4.1 *SUMMARY*

Research indicates there is a moderate level of customer awareness (know about) and familiarity (knowledgeable about) with the Residential Conservation Rate (RCR). When the RCR was explained to participants a majority supported the intent of the RCR with some reservations about its impact on larger households or those that use electricity for space heating.

There was little evidence that an awareness of the RCR had an impact on customer conservation behavior with similar patterns of behavior reported by both those aware of the RCR and those not aware of it. Participants wanted FortisBC to provide a greater level of education about the RCR, especially around why it was implemented and how it was designed.

4.2 *BACKGROUND AND METHODOLOGY*

FortisBC (FBC) engaged Insights West, a Vancouver-based research vendor, to undertake a study regarding the Residential Conservation Rate. The key objectives of the research were:

- Measure awareness of the RCR
- Understand customer perceptions of the RCR
- Determine if the RCR had incented customers to conserve electricity

The study was comprised of both focus groups and an online quantitative survey. The focus groups, while part of a larger Corporate Reputation study also included an extensive discussion of the RCR. Two in-person focus groups were held with Kelowna residents on August 22, 2013 and an online discussion board was conducted with Kootenay residents from August 27–29, 2013.

An online survey with FortisBC electricity customers was conducted from September 3-10, 2013. A total of 1,620 FortisBC electricity customers completed the online survey. The sample was weighted by age, gender and region according to Census Canada figures to ensure that it was broadly representative of the FBC customer base.

4.3 *FOCUS GROUP FINDINGS*

Qualitative research suggests that the RCR was not a top-of-mind concern amongst participants. Only when prompted did people recall the RCR and voice concerns about the two-tiered rate. The RCR is not well understood; many participants think it is just a way for FBC to get more money from its customers. Overall, even those who were aware of the RCR had difficulty accurately describing how the RCR works. In fact, it was often confused with time-of-use rates.

Those who held negative views of the RCR expressed concerns about large families that cannot stay within the lower tier and low income/fixed income households that cannot withstand the higher charges. Those in favour of RCR believe it is fair to charge more to those who use more electricity; what is debatable is the cutoff point for the first tier and whether it is fair.

They wanted FBC to be transparent about what the RCR is, the reasons it was implemented and how the rates were determined. As such, there was a general consensus that FBC should do more to educate customers about the rate.

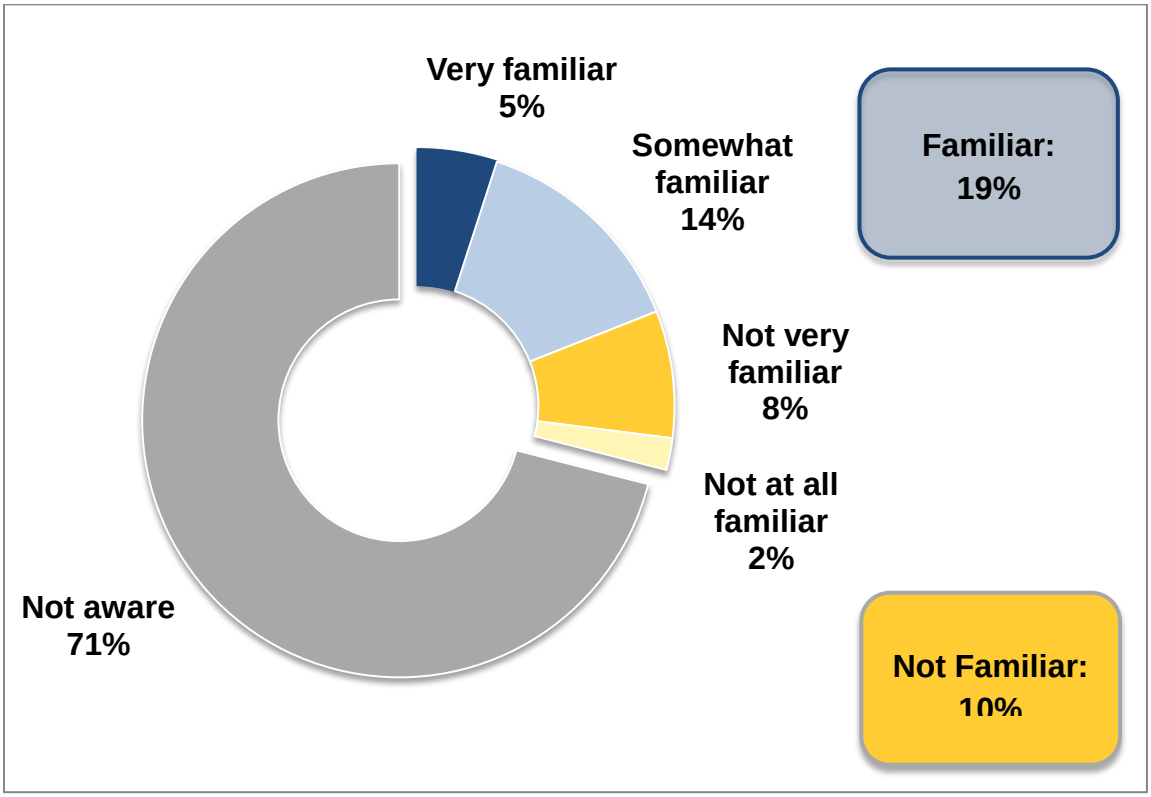
4.4 *QUANTITATIVE RESULTS*

4.4.1 Awareness

Three-in-ten (29%) FortisBC electricity customers are aware of the RCR with older customers and those in the South Okanagan having the greatest awareness. Customers who had experienced either a decline or increase in their bill were also more aware of the RCR.

Among all respondents, only a small percentage claimed to be very familiar (5%) with the RCR. Overall, one-in-five respondents claimed at least some familiarity with the RCR.

Figure 5: Customer Familiarity with the RCR



More than half (52%) of FortisBC electricity customers have noticed an increase in their electricity bills over the past 12 months, while one-in-eight (13%) have seen a decrease. However, customers were more likely to attribute changes to increases in the cost of electricity/monthly fees rather than the RCR.

4.4.2 Perceptions of the RCR

Among all customers, nearly six-in-ten support the RCR; while one-third *oppose* the RCR. Those who *support* the RCR are more likely to: come from groups that have benefitted somewhat from the RCR:

- have smaller household sizes
- live in an apartment/condo/ row/town house/duplex/triplex, and
- be low consumption customers (bi-monthly electricity bill of less than $200)

They are also more likely to be: women; younger; live in the Kootenay/Boundary region; unaware of the RCR; and have noticed a decrease or no change in their electricity bills.

Figure 6: Customer Familiarity with the RCR vs. Demographic

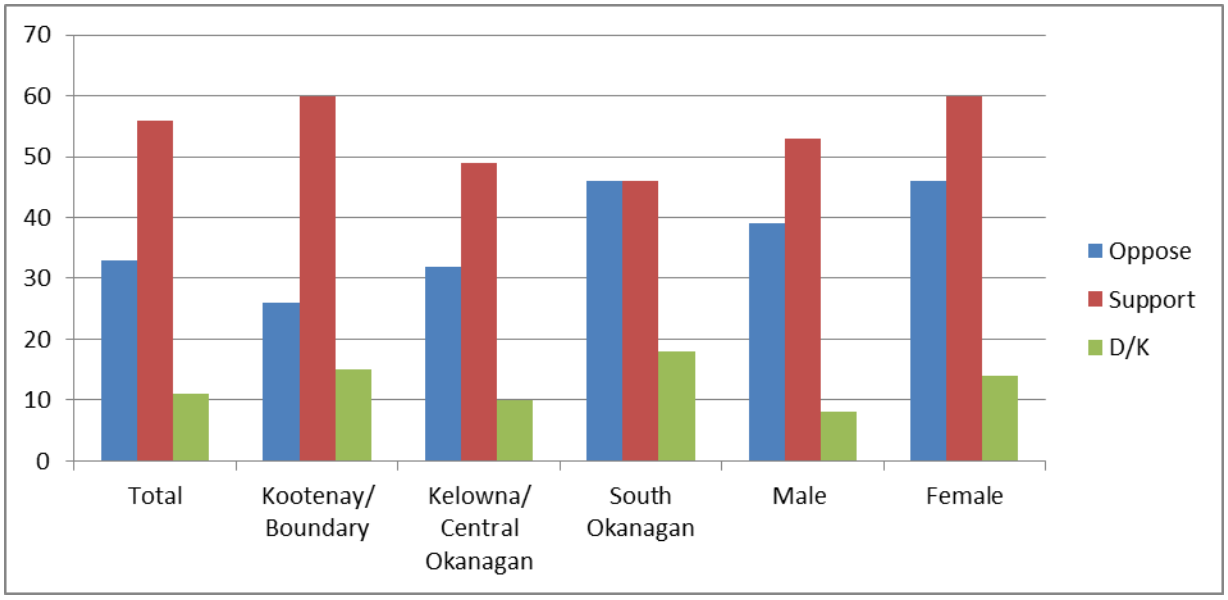
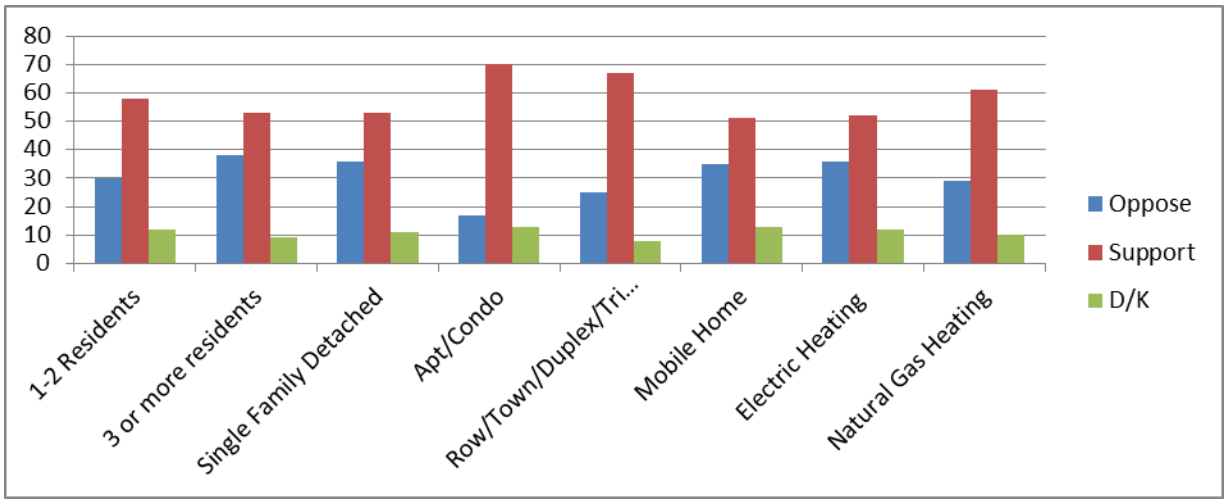


Figure 7: Customer Support for the RCR vs. Housing Type



Conversely those who oppose the RCR are more likely to have higher bi-monthly electricity bills of $300+. They are generally more of, and familiar with the RCR. Interestingly, even those who have experienced an increase in their electricity bill show moderate levels of support for the RCR (43% vs. 48% oppose).

More than eight-in-ten agree that the RCR penalizes those that must use electricity for heating (85%) and larger households (82%). Even among those who support the RCR, roughly eight-in-ten agree with these concerns. A majority of customers believe that the RCR results in higher electricity bills (68%) and is a way for FortisBC to get more money from consumers (63%)

4.4.3 Does it Encourage Conservation?

Approximately two-thirds of FortisBC electricity customers agree that the RCR encourages people to use less electricity (69%), lowers bills for lower-than-average consumption (68%) and is better for the environment (66%).

Those who have noticed an increase in their energy bills are more likely to have conducted most conservation activities; however, this was not directly tied to awareness of the RCR. The only significant difference is that those with prior awareness of the RCR are more likely to have invested in better insulation/windows. This suggests that those unaware of the RCR were conducting these activities on their own – not directly as a result of the RCR.

4.4.4 Verbatim Customer Comments

FortisBC has included customer correspondence as well as a copy of a petition received by the Company and the Commission regarding the RCR in Appendix D.

5. ADDITIONAL INFORMATION REQUIRED BY ORDER G-127-13

The page 3 Directive 2 from Commission Order G-127-1 contains several additional items that FortisBC is to include in the Report if available. These are,

Where reasonable, the Report must include:

a. *A summary analysis of the full long-run marginal cost to acquire energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate;*
b. *The combined effect of integrating Time of Use and RCR rates on the conservation achieved by the RCR, should that information be available;*
c. *An update of the Conservation Potential Review and report on the potential effects of interaction between RCR rates and Demand Site Management targets;*
d. *Comparison of energy usage of indirect customers with the energy usage of direct customers;*
e. *An analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers.*

5.1 *DISCUSSION*

A summary analysis of the full long-run marginal cost to acquire energy from new resources, including the long-run marginal cost to transport and distribute that energy to the customer, and how that cost compares to the Block 2 rate;

In recent regulatory proceedings, FortisBC has calculated a number of long run marginal costs (LRMC) ranging from the LRMC of market purchases at $45.33/MWh in 2013 dollars ($56.61/MWh flat) to the LRMC of New Clean Resources of $92.23/MWh in 2010 dollars ($111.96/MWh flat). The range reflects a range of FBC options to meet its future resource gap, from continuing to rely on market purchases to meet incremental load to building new clean resources. In its 2012 Long Term Resource Plan, FortisBC stated that it will continue to rely on market purchases for the short to medium term, and plans to build new resources in the long-term. The selection and timing of such new resources would be part of the portfolio analysis required for future resource plans.

BC Hydro has stated in its Draft 2013 Integrated Resource Plan that its LRMC is falling. BC Hydro's current LRMC is based on the 2008 Clean Power Call, and is $135/MWh. In its draft IRP BC Hydro states its current LRMC is now $100/MWh[17], and could fall as low as $85/MWh depending on what happens with future LNG loads[18]. This may impact FortisBC's calculation of LRMC of New Clean Resources, since that number was based on the BC Hydro Standing Offer, which in turn was based on the bids in BC Hydro 2008 Clean Power Call.

[17] BC Hydro 2013 Draft IRP, Chapter 8, page 8-50, lines 4-7
[18] BC Hydro 2013 Draft IRP, Chapter 8, page 8-50, lines 9-12

FortisBC expects to file a more fulsome LRMC analysis of its LRMC as originally required in order G-3-12.

FortisBC notes that the current Tier 2 RCR rate is higher than any LRMC values listed above.

The combined effect of integrating Time of Use and RCR rates on the conservation achieved by the RCR, should that information be available;

The Company does not have any customers that are on both its TOU rate and RCR concurrently and does not offer this as an option to customers. Therefore, a quantitative analysis of this scenario is not available. The Company considers that given the current existing lack of understanding of the RCR, layering a further level of complexity through the addition of TOU time periods over the RCR would not be in the best interests of customers. In addition, there is not currently any cost-based rationale for applying a time-based component to the rate. With the additional information that will be available after data made available by the AMI implementation the Company will be better able to determine if such a cost-based TOU rate may be justified in the future.

An update of the Conservation Potential Review and report on the potential effects of interaction between RCR rates and Demand Site Management targets;

The achievable potential estimated in the CPR remains the same regardless of any incentive or pricing mechanisms used to achieve that potential. The RCR rate may cause consumers to make behavioural changes and could also cause higher uptake in DSM program offerings. This may change the program take-up rate over time, but does not materially impact the overall potential. The DSM Plan forecasts are fundamentally based on the CPR potential and the applicable ramp rates, which have not been modified as a result of the RCR.

If in the future there is a measureable increase in residential PowerSense program interest, a number of changes would be considered.

1. Adjusting the ramp rates. This would be done to show the achievable potential is being realized at a faster pace
2. Adjusting measure savings values. For example, if people are leaving the lights off for longer periods, then the measure savings values would need to be adjusted downward
3. Undertaking additional research or an impact evaluation. These would be conducted to show and verify the impacts of any changes, and from that FBC could more clearly estimate the difference between naturally occurring or behaviour-based conservation and that achieved through the program.

Comparison of energy usage of indirect customers with the energy usage of direct customers;

In order to provide a meaningful analysis of this item the Company would require information on indirect customer consumption that it does not currently have and could not acquire and

adequately deal with within the compressed period required by the interim nature of this report. FortisBC intends to initiate discussions with its wholesale customers in an effort to have this analysis available in the RCR report to be filed in 2014.

An analysis of the potential effect of a two-tier wholesale rate on the consumption of its wholesale customers.

Similar to the item above, this information is not currently available but will be provided as part of the RCR report originally discussed in Commission Order G-3-12

5.2 *POTENTIAL CHANGES TO THE RCR*

In Order G-127-13 the Commission directed in item 2(f.) (Page 2 - the next Directive on page 3 is also numbered 2) that FortisBC,

Provide an evaluation of the feasibility of changing the rate structure and/or the threshold. Potential options to be evaluated include:

- Threshold set too high or too low
- Household threshold
- Individual threshold (ie. AMI based)
- Other;

5.2.1 General Discussion

The results of the current inclining block rate structure have validated many of the concerns expressed by FortisBC during the Company's 2009 Cost of Service Analysis[19] and Rate Design and original 2011 Residential Inclining Block Rate Application processes.

Namely,

- A portion of customers have the benefit of a relative bill reduction without having made any effort towards conservation behaviour or through purchase decisions (free riders),[20]
- A portion of customers have experienced significant bill increases due to their use of electric heat (either by choice or as a result of having no other economic options),
- The RCR is poorly understood in terms of its structure, intent, and impact on FortisBC,
- Conservation results, while present, are uncertain and less than forecast.

The Company recognizes that there is a segment of customers that due to their individual circumstances, which may be demographic or geographic in nature, will have a very difficult

[19] Reference to COSA final Argument
[20] References to be included

time changing consumption habits. These customers may experience negative bill impacts without an opportunity to take action to prevent that outcome.

While an inclining block rate may be well suited to other jurisdictions, experience has shown that in FortisBC's service area, which is largely rural and has a relatively low penetration of alternative heating options such as natural gas, it is not without issues. Given the Company's current load and resource mix there is little to suggest that the RCR in its current form provides an economic benefit to FortisBC's customers through a reduction in overall costs, and to the extent that it results in a decrease in load spread while reducing power purchases a relatively small amount (due to low power purchase costs), the existing customer base may place further upward pressure on rates.

In the opinion of the Company a move away from a flat rate structure is not an obvious or necessary conclusion given FortisBC's circumstances. From an operational and cost perspective this will continue to be the case until and unless the data provided by the Advanced Metering Infrastructure yields information that supports a change in rate structure based upon a concrete need of either the Company or its customers from either an economic or customer choice perspective.

The Company believes that the Commission provided sound guidance on the appropriate considerations in rate making when it stated,

> *… a RIB rate structure that is incorrectly priced can have disadvantages and unintended consequences, the principal among them being that customers overuse underpriced resources and underuse overpriced resources. The choices made are suboptimal and the consequence is lower productivity and/or lower conservation. A rate structure based on sound rate-making principles can ensure that what consumers pay will reflect the true economic value of the energy they buy, and that energy resources find their best possible uses.*[21]

The current level of the Block price is above FortisBC's current marginal price of electricity which in the opinion of the Company runs counter to the economically efficient setting of rates. Both of these factors are inherent in comments made by the Commission in the RIB Decision,

> *Accordingly, the Commission Panel determines that the long-run marginal cost of new supply continues to be the appropriate referent for the Block-2 energy rate.*
>
> *Should, then, the Block 2 rate be capped at the long-run marginal cost of new supply? The Panel accepts FortisBC's submission that pricing electricity above FortisBC's long-run marginal cost is not economically efficient. However, the Panel is not prepared to direct that the Block 2 rate be capped at the LRMC as proposed by FortisBC in this hearing.*[22]

[21] FortisBC RIB Decision G-3-12, page 21
[22] FortisBC RIB Decision G-3-12, page 40

However, the Company accepts that although the current RCR is cost based in the sense that it is based on the flat rate confirmed pursuant to a cost of service analysis (COSA), the levels of the given rate components are not, and are based on policy and legislative imperatives for rates reflecting a conservation price signal.

5.2.2 Feasibility of Changes to the Rate Structure

As part of this report, the Commission directed FortisBC to comment of the feasibility of changing the rate structure and/or the threshold.

It must be recognized that any change to the existing RCR would involve a trade-off between conservation impact and customer bill impact. If the rate is changed to provide smaller bill impacts to customers, conservation results will be lowered. Furthermore, as was clear from the implementation of the RCR, any changes to the rate should be gradual in order to minimize bill impacts.

Given the fixed cost of providing service to the residential class as a whole, as reflected in the revenue requirement, there is also a trade-off in terms of bill impact between individual customers within the class. Any change that benefits one group of customers will necessarily have a negative impact on another group of customers. This division is generally between levels of consumption. If a change is made to benefit higher consumption customer, lower consumption customers will be impacted negatively and vice versa.

Once the acceptable level of conservation and/or customer bill impact is established, and the tradeoffs previous mentioned are acknowledged, it is technically feasible for the Company change a number of factors within the rate to achieve a particular result.

With that in mind, FortisBC provides the following comments on those options specified by the Commission and a number of other options available for consideration.

5.2.2.1 Changes to the Threshold Level

The Customer Billing Impact can be redistributed amongst customers by varying the amount of consumption that is billed at the Tier 1 rate before the Tier 2 rate comes into effect. The Company is aware that a change in the Threshold as a means to provide mitigation to billing impacts has been suggested by customers, the media and local government representatives. The rationale often cited for this proposal is to provide relief to those customers with electric heat or without a readily available alternative for primary heating such as natural gas. However, this solution is most often proposed in the absence of an understanding of how the various components of the RCR are determined and may not yield the results that these parties seem to expect. The reason for this is explained below.

The components of the RCR (Tier 1 Rate, Tier 2 Rate, Threshold and Customer Charge) are interdependent. In other words, it is not possible to simply raise the Threshold without also impacting the level of the Tier 1 and Tier 2 rates. In the aggregate, the RCR is required to be revenue neutral to the flat rate. A change in any rate component results in a change to all the

other rate components which leads to a different distribution of bill impact among customers, but the overall impact is revenue neutral.

Overall class revenue is determined during the Company's Revenue Requirement Application process and the relationship between the allowed revenue and the rate components is described by the formula:

$Revenue_{Class}$ = (Customer Charge x # of Bills) + ($kWh_{Block\ 1}$ x $Rate_{Tier\ 1}$) + ($kWh_{Block\ 2}$ x $Rate_{Tier\ 2}$)

Where $kWh_{Block\ 1}$ and $kWh_{Block\ 2}$ is the total annual kWhs consumed at the Tier 1 and Tier 2 rates.

The total annual kWhs consumed at the Tier 1 and Tier 2 rates are determined by the level of the threshold. Changing the threshold and maintaining revenue neutrality cannot be done without changing the level of at least one of the rates. Changing the threshold and maintaining both revenue neutrality and the Customer Impact criterion cannot be done without changing both the rates. It follows that simply changing the Threshold in isolation cannot be done.

In terms of whether high consumption customers are better off with a higher or lower threshold, the following results are indicated:

- A higher percentage of customers are negatively impacted as the threshold rises;
- There is an increase in the price of the Block 2 rate as the threshold increases;
- High consumption customers are generally worse of as the threshold increases. This is due to their high number of kilowatt- hours that are billed at the tier 2 rate. The increase in the tier 2 rate erodes the benefit of having more consumption in the first tier.

Moreover, given the revenue requirement and customer impact restraints, any impact, regardless of direction is likely to be small in comparison to the overall bill.

5.2.2.2 Other Threshold Options

In Order G-127-13, the Commission directed that FortisBC provide input on the possibility of setting a threshold based on:

- Household threshold
- Individual threshold (ie. AMI based)

Such a threshold would be set according to either the demographic make-up of the household (number of residents, age, income or other), or by setting a threshold based on the consumption level of the residence during some comparable previous period.

The Company supports the setting of rates based on the cost to serve customer segments with identifiable and common load characteristics. There is not a sufficient variation in service cost based on the demographic composition of a household upon which to further segment the residential rate.

An individual threshold approach is an attractive notion in that it recognizes a previous level of consumption as a target on which to gauge the conservation efforts of individual account holders. It does however provide a higher amount of lower cost power to customers with higher levels of consumption and would not recognize previous, embedded conservation efforts. The Company is concerned that providing different levels of access to Tier 1 priced power to customers that lack distinguishing cost-based differences could be discriminatory.

Regardless, neither of these options is possible from a practical perspective. The billing system cannot accommodate such a variation in Thresholds and the need to negotiate thresholds (or explain why negotiation isn't permitted) would be administratively burdensome and costly.

5.2.2.3 Changes to the Pricing Principle

"Pricing Principles" refers to the manner in which rate increases approved by the Commission are applied to the individual components of the RCR.

The Pricing Principles that are currently in effect were established as part of Order G-3-12 and are as follows:

a. *The Customer Charge is exempt from general rate increases, other than rate rebalancing increases;*
b. *The Block 1 rate is subject to general and rebalancing rate increases; and*
c. *The Block 2 rate is increased by an amount sufficient to recover the remaining required revenue (i.e., the residual rate).*

Historically, rate increases have been applied on an equal percentage basis to all rate components. That is, if a 3% general rate increase was approved by the Commission; each rate component would be increased by 3%. The effect of the Pricing Principle established by G-3-12 is to create a deficiency in the revenue collected by the Customer Charge which is then collected in the revenues that attract the Tier 2 rate. The impact of this is to increase the percentage differential between the block 1 and block 2 rates with each rate increase thereby increasing the impact of the rate on customers with consumption in the second tier.

This situation will occur until the rate increase exemption currently in effect for the Customer Charge expires in 2015.

There are options for altering the Pricing Principle varying the relative impact on the rate components, including:

1. Removing the Customer Charge exemption and applying rate increases equally across all rate components;
2. Capping the Block 2 Rate at its current level and maintaining the Customer Charge exemption and
3. Capping the Block 2 Rate at its current level and removing the Customer Charge exemption.

The impact of any of these changes is to reduce the price differential between the tier 1 and tier 2 rates. The current pricing principle will increase the block differential to close to 49% from its current 47.1%.

Each of the different approaches above would decrease the differential from its current level.

Any change to Pricing Principle will result in impacts to customers that vary with consumption to the benefit of some and the detriment of others. In general, a change to the pricing principles that lowers the block differential will benefit high consumption customers and have a relatively higher dollar positive impact to that small group of customers while resulting in a lower dollar amount impact to a larger number of customers in the lower consumption ranges.

5.2.2.4 More Dramatic Changes to the RCR

The above options, changes to the threshold and pricing principles, would be considered by FortisBC to be minor changes, or "tweaks" to the existing RCR.

In the alternative, the Commission could choose to explore a more dramatic change to the RCR, either in the overall structure, or by effecting a larger change to the pricing of the rate.

A feasible option would be to compress the block price differential from its forecast 2014 level of approximately 49% to a percentage such as 20% or 30%. This option is also feasible and would reduce the magnitude of the billing impact for all customers relative to both the current RCR and flat rate.

Another alternative that would alter the structure of the RCR would be a version where the pricing could change based upon the time of year. The rate could flatten during specific months or seasons reflecting either shifts in the cost of providing service if any, or with regard to customer impact that may vary with season. This more complex option could be designed so as to reduce the impact on certain high consumption customers (while still having the opposite impact on low consumption customers). It is technically feasible though more difficult to understand for customers and may have some issues with pro-rating consumption between months with different rates that is not present in other options.

Both of the more dramatic changes to the current RCR would have a negative impact on conservation greater than any of the smaller changes discussed previously.

The Company has estimated the bill impact of moving from the current RCR back to the flat rate and for two rates where the block differential is compressed to 30% and 20% respectively.

The tables below provide a breakdown of the impact to annual customer bills broken down by percentage of customers that would experience a given bill impact, and by the average bill impact experienced by customers in a given consumption range.

Table X Percentage of Customers by Bill Impact

	Impact of Changing from the Current RCR		
Relative Percentage Increase	Back to the Flat Rate	To a Compressed Rate (30%)	To a Compressed Rate (20%)
	Percentage of Customers		
10 to 15%	38%		
5 to 10%	19%		37%
0 to 5%	13%	70.4%	34%
0 to -5%	12%	28.7%	22%
-5 to -10%	10%	0.9%	8%
-10 to -15%	6%		
-15 to -20%	2%		
-20 to -25%	0.4%		

For example, in the table above, moving to a compressed rate with a 20% differential would cause a 5% to 10% bill increase for 37% of customers.

Table X Average Bill Impact by Consumption Level

	Impact of Changing from the Current RCR		
	Back to the Flat Rate	To a Compressed Rate (30%)	To a Compressed Rate (20%)
Consumption	Percent Average Bill Impact		
120 - 9,999	9.8%	3.1%	4.9%
10,000 - 19,999	0.3%	0.2%	0.3%
20,000 - 29,999	-9.6%	-2.8%	-4.7%
30,000 - 39,999	-14.3%	-4.1%	-6.9%
40,000 - 49,999	-17.1%	-4.8%	-8.1%
50,000 - 59,999	-18.9%	-5.3%	-8.9%
60,000 - 69,999	-20.1%	-5.6%	-9.4%
70,000 - 79,999	-21.0%	-5.8%	-9.9%
80,000 - 89,999	-21.6%	-5.9%	-10.1%
90,000 - 99,999	-22.3%	-6.1%	-10.4%

For example, in the table above, moving to a compressed rate with a 20% differential would cause customers in the 120 – 9,999 annual kWh consumption range to experience an average bill increase of 4.9%.

It is clear from these results that any move away from the current RCR provides a benefit primarily to a relatively small percentage of customers at the upper end of the consumption spectrum.

6. CONCLUSION

Changes to the current RCR can be made. However, there is no one solution that appears as an obvious option. Any RCR that is put in place, whether by small adjustments or more dramatic changes will create winners and losers relative to both the flat rate and the existing RCR.

There are trade-offs between conservation and bill impact, or trade-offs between customers with different consumption characteristics. All of these issues must be considered if a change to the RCR is to be the subject of a regulatory process led by the Commission. None of the possible changes have any impact on the revenue of approved return of FortisBC.

6.1 *REVENUE NEUTRALITY*

All utility rates are designed to collect the amount of revenue approved by the Commission through the examination and regulatory process associated with the Revenue Requirement Application filed by the Company. For each class of customers, the rates are determined in consideration of the amount of load that is forecast to occur over the course of the year.

In the case of the residential rates, the Company determines the flat rate based on the forecast load and number of anticipated bills to be sent out, which determines the revenue collected via the Customer Charge. For the RCR, the same basic process is followed except that an additional forecast must be made of the amount of load that will be billed at the Tier 1 and Tier 2 rates. Both the flat rate and the RCR are design to collect the same amount of revenue were it the only rate in effect, and as such are said to be revenue neutral to each other.

Actual revenues collected by the Company can vary from the forecast for a number of reasons that are common to most classes. Both the load and number of customers can vary from the forecast amounts. As well, the amount of capacity versus energy can vary for those classes that are billed on capacity, and for classes where there are tiered rates such as commercial and residential classes, if the percentage of load that occurs in each block is different than that assumed when the rate is designed, all else equal, an over-collection or under-collection of revenue as compared to the forecast may occur.

Since it is not practical to adjust rates in response to variances during the year, rates are typically set once and stay in place for the entire year. If there is a variance between the forecast and actual revenue during the year it is captured in a Revenue Variance Deferral Account and is either returned to or collected from customers through an adjustment to rates in subsequent years. These fluctuations will vary from year to year and for residential load are especially sensitive to weather.

While customers may express a concern that the RCR is a means to collect more revenue than approved by the Commission, this concern is unfounded.

For the report period, residential load was approximately 7% lower than forecast, and revenue collected was about 4.5% below the forecast level. This load related shortfall in revenue was mitigated somewhat by a higher than forecast percentage of load billed at the block 2 rate. The revenue variance was about 1% of sales on a flat rate basis which is well within acceptable variances normally associated with load forecasts. While the higher than expected block 2 load resulted in a positive revenue variance it is minor to the extent that the Company can confirm that the RCR is revenue neutral to the flat rate against which it is designed. No action in addition to the variance flow-through is being contemplated by the Company.