BC hydro

2015 Rate Design Application (RDA)
Residential Rate Workshop - May 21, 2015
RDA Workshop 9(b)

Discussion Guide

Jurisdictional Review for Residential Rates;
Dual Fuel Interruptible Service (E-Plus) Rates;
Non-Integrated Area (NIA) Rates;
Rates for Farm and Irrigation Services

Table of Contents

List of Tables

List of Figures

1 Jurisdictional Assessment of Residential Rates

1.1 General

By way of background, BC Hydro provided its description of the Bonbright eight rate design criteria[1] for purposes of assessing BC Hydro's existing rates and rate options at 2015 RDA Workshop 1 on May 8, 2014. Based on feedback from Association of Major Power Consumers of British Columbia, BC Hydro considers jurisdictional assessment as part of the 'customer understanding and acceptance; freedom from controversies as to proper interpretation' Bonbright criterion. The question is what jurisdictions are relevant for the particular BC Hydro existing rate or rate option. The relevant jurisdictions may differ depending on which BC Hydro rate is examined. For example, while BC Hydro does not propose to review Ontario for general residential rate purposes, BC Hydro did examine Ontario to respond to stakeholder requests for a survey of low income rates and as part of its preliminary NIA jurisdictional assessment.

On March 12, 2015 BC Hydro circulated for stakeholder comment its list of jurisdictions to be examined for purposes of BC Hydro's residential rates. The selected jurisdictions span Canada and the western United States (**U.S.**):

- For Canada, the goal was geographic diversity while recognizing that BC Hydro is a vertically integrated monopoly. Accordingly, for residential rate purposes BC Hydro proposed surveying public utilities in all provinces except Ontario and Alberta (different market structures; Alberta's market is unbundled, for example[2]) and Prince Edward Island (size);

[1] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, *Principles of Public Utility Rates* (2nd Ed.; Public Utilities Report, Inc.: Arlington, Virginia, 1988), pages 383 to 384.

[2] In the mid-1990s, Alberta deregulated generation, mandated open access for regulated transmission and distribution and introduced a real-time electricity spot market. Alberta has a competitive wholesale and retail electricity market. In 1998, Ontario unbundled transmission, generation and

- For the U.S., BC Hydro used the Rates Comparison Regulation[3] enacted under the *Clean Energy Act*,[4] the fact that BC Hydro is part of the Western Electricity Coordinating Council (**WECC**)[5] region, and size as inputs with the result that BC Hydro proposes an assessment of the relevant residential rates of several public utilities in Washington State (Puget Sound Energy and Seattle City Light), Oregon (Pacific Power Oregon, which is a PacifiCorp entity and Portland General Electric), California (the three largest investor-owned utilities) as well as Idaho, Colorado and New Mexico.

The selected public utilities together with the number of customers they serve are listed at slides 28 to 31 of the Workshop 9 slide deck presentation.

BC Hydro asked if stakeholders agreed with the proposed residential rate jurisdictional selection, and if stakeholders wanted a BC Hydro survey of low income rates including statutory underpinnings. To date, no stakeholder has disagreed with the proposed residential rate jurisdictional selection. Several stakeholders asked BC Hydro to conduct a survey of low income rates together with a description of the relevant legislation.

dispatch, and in 2002 it introduced competitive wholesale and retail markets. Today, Ontario operates under a hybrid structure where there is wholesale and retail competition, but a large amount of generation remains regulated or subject to long-term government-backed contracts. The remaining provinces have government- or investor-owned vertically integrated public utility structures, which offer bundled services at regulated rates.

3 B.C. Reg. 119/2011; copy available at https://www.canlii.org/en/bc/laws/regu/bc-reg-140-2009/latest/bc-reg-140-2009.html. Section 2 of the Rates Comparison Regulation provides that BC Hydro is to provide an annual report to the B.C. Minister of Energy And Mines concerning average prices for BC Hydro's residential, commercial and industrial customers in comparison with other North American public utilities, including those in Washington State, Oregon and California.

4 S.B.C. 2010, c.22; copy available at https://www.canlii.org/en/bc/laws/stat/sbc-2010-c-22/latest/sbc-2010-c-22.html.

5 The WECC territory is composed of two Canadian provinces, British Columbia (B.C.) and Alberta; parts of 14 western U.S. states (California, Nevada, Arizona, Utah, Idaho, Oregon, Washington State, Wyoming, most of Montana, Colorado and New Mexico, and a part of South Dakota, Nebraska and Texas; and the northern portion of Baja California, Mexico. The WECC is the body that sets electricity system operating performance and reliability standards for members in Western Canada and the Western U.S.

1.2 Jurisdictional Assessment of Low Income Rates

For purposes of RDA Workshop 9, BC Hydro surveyed Canadian utilities and focused on Ontario and Nova Scotia as the subject of court decisions on the topic of low income rates.

1.2.1 Background

The issue of the British Columbia Utilities Commission's (**Commission** or **BCUC**) jurisdiction to approve a differentiated rate for BC Hydro's low income customers arose in 2008 as part of the regulatory review of BC Hydro's Residential Inclining Block (**RIB**) rate. BC Hydro's and other intervener submissions concerning this topic are found at the Commission website. The Commission determined that it was unnecessary to decide for purposes of the RIB decision whether the Commission had the jurisdiction to set 'lifeline rates' for low income customers.[6]

1.2.2 Ontario

Statutory Regime: The Ontario Energy Board (**OEB**) is granted authority to use "any method or technique it considers appropriate" in approving "just and reasonable rates" under Part III (Gas Regulation), section 36 of *Ontario Energy Board Act*[7] (***OEB Act***).

Court Decision: In 2008, a majority of the Ontario Superior Court of Justice, Divisional Court in *Advocacy Centre for Tenants-Ontario v. Ontario Energy Board*[8] found that OEB has the jurisdiction to take into account the ability to pay in setting rates given the expansive wording of section 36 of the *OEB Act.* In this regard, the Ontario court contrasted section 36 of the *OEB Act* with section 67 of Nova Scotia's *Public Utilities*

[6] Section 2.0 of the Commission's decision: *In the Matter of British Columbia Hydro and Power Authority: Residential Inclining Block Rate Application*, Reasons for Decision to Order No. G-124-08, 24 September; copy available at: http://www.bcuc.com/ApplicationView.aspx?ApplicationId=187.

[7] S.O. 1998, c.15, Sch. B; copy available at http://www.canlii.org/en/on/laws/stat/so-1998-c-15-sch-b/latest/so-1998-c-15-sch-b.html.

[8] [2008] OJ No. 1970. Refer also to *Toronto Hydro-Electric System Ltd. v. Ontario Energy Board*, 2010 ONCA 284.

Act[9] (***NSPUA***), which provides that rates must "under substantially similar circumstances and conditions in respect of service of the same description be charged equally to all persons and at the same rate" (refer to section 1.2.3 below).

Low Income Energy Assistance Program: In 2011, OEB introduced the Low Income Energy Assistance Program[10] (**LEAP**) through amendments to the Distribution System Code, Retail Settlement Code and Standard Supply Service Code. All regulated utilities are required to offer LEAP. There are three LEAP components:

1. Emergency financial assistance – up to $500 for electricity bills ($600 if electrically heated);
2. Rules – Security deposit waiver; equalized billing payments (spread evenly over 12 months); suspension of disconnection process for 21 days; more time to pay outstanding balances; and
3. Demand Side Management (**DSM**) programs.

In April 2014 the Ontario Minister of Energy requested OEB recommendations on rate relief consisting of credits applied against low income electricity bills. In February 2015 the Ontario Minister of Energy announced such rate relief would proceed, with costs to be recovered from all regulated utility ratepayers.[11]

[9] R.S.N.S. 1989, c.380; copy available at https://www.canlii.org/en/ns/laws/stat/rsns-1989-c-380/latest/rsns-1989-c-380.html.

[10] http://www.ontarioenergyboard.ca/OEB/Consumers/Consumer+Protection/Help+for+Low-Income+Energy+Consumers.

[11] Copies of the Ontario Minister of Energy's letters and details concerning the announced rate relief are found at http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory%20Proceedings/Policy%20Initiatives%20and%20Consultations/Low-Income%20Assistance%20Review%20%28EB-2014-0227%29.

1.2.3 Nova Scotia

Statutory Regime: Section 67 of *NSPUA* is quoted above in section 1.2.2. Note that there is no definition of "rate" in the *NSPUA.*

Court Decision: In 2006, the Nova Scotia Court of Appeal (**NSCA**) in *Dalhousie Legal Aid Service v. Nova Scotia Power Inc.*[12] held that the Nova Scotia Utility and Review Board (**NSURB**) does not have jurisdiction to set a rate featuring credits for low income customers as the *NSPUA* did not authorize NSURB to set rates based on customer income level. The NSCA agreed with NSURB that low income rate relief is a social and public policy question for the Nova Scotia legislature.

Regime: Nova Scotia Power does not have a 'lifeline' rate. Nova Scotia Power through section 6.6 of its Regulations[13] (which sets out the terms and conditions of service) does not require a deposit from customers receiving social assistance or similar types of income security payments unless there is a history of bad credit. Efficiency Nova Scotia and the Province of Nova Scotia fund the DSM Home Warming Program, which provides free draft proofing, and insulation upgrades for low income homeowners.

1.2.4 Other Canadian Utilities

Other than Ontario, cost-based ratemaking is the most widely-used standard for evaluating whether rates are 'fair, just and not unduly discriminatory'. Canadian jurisdictions typically offer targeted low income DSM programs, as opposed to rate discounts (e.g., waiver of charges) or specific low income rate designs (low-income energy customers are charged a different rate for electricity based on assumptions regarding the correlation between income and usage levels):

[12] 2006 NSCA 74. Refer also to *Re Affordable Energy Coalition*, 2009 NSCA 17 where the NSCA held that the provisions of the *NSPUA* do not violate section 15 of the *Charter of Rights and Freedoms*, enacted as Schedule B to the *Canada Act 1982*, 1982, c.11 (U.K.).

[13] http://www.nspower.ca/site/media/Parent/Regulations%20January%201%202014.pd.

- **Manitoba Hydro** – There are no low income-specific rate discounts or rate designs. DSM program: Affordable Energy Program;
- **Hydro Quebec** – There are no low income-specific rate discounts or rate designs. DSM program: Refrigerator Replacement Program, through which low income households can get an Energy Start Fridge for between $75 and $120;
- **SaskPower** – There are no low income-specific rate discounts or rate designs, and no low income DSM programs;
- **New Brunswick Power**: The Low Income Energy Efficiency program installs free basic energy efficiency measures as well as insulation and ductless heat pump upgrades for low income households. There are no low income-specific rate discounts or rate designs. Some Interveners in a 2007 New Brunswick Power proceeding requested a reduction in late interest charges applicable upon certain economically vulnerable customers. In its January 2007 decision[14], the New Brunswick Energy and Utilities Board ruled: "The Board is cognizant of its legislative authority under the *Electricity Act*, which requires the Board to approve rates that are just and reasonable. The Board is an economic regulator and its role is to establish classes of service and rates for each class that are appropriate having regard to the costs that each classes imposes on [Distribution and Customer Care Corporation]. 'Just and reasonable rates' mean that once the specific rates are established they should apply equally to all customers in the same class. All customers who qualify for a particular service should pay the same rate for that service and there should be no undue discrimination between customers. The Board is aware of jurisdictions where the relevant legislation

[14] *In the Matter of a Review of New Brunswick Power Distribution and Customer Care Corporation's Customer Care Policies*, 29 January 2007; http://www.nbeub.ca/index.php/en/board-decisions.

establishes policies that are clearly designed to assist certain customers. The Board considers this is the appropriate way for such policies to be established";

- **Newfoundland Power** - There are no low income-specific rate discounts or rate designs. Newfoundland and Labrador Housing (a government housing authority) offers the Residential Energy Efficiency Program, which provides grants to low income homeowner to upgrade the energy efficiency of their home.

2 E-Plus Rates

2.1 Stakeholder Input

BC Hydro is seeking input as to: (1) whether there are any other E-Plus rate design options in addition to the three rate design options described in section 2.4 of this Discussion Guide; (2) which E-Plus rate option is preferred; and (3) if E-Plus Option 2 is preferred (transfer of E-Plus customers to the RIB), what the proposed transition period should be.

BC Hydro proposes to address E-Plus rates as part of Module 1 of the 2015 RDA, to be filed with the Commission on or about Thursday, September 17, 2015. (2015 RDA 'Module 1' will include BC Hydro's proposals and evidence on Cost of Service (**COS**) and the default rate structures for the main customer classes - Residential, Small General Service (**SGS**), Medium General Service (**MGS**), Large General Service (**LGS**), and Transmission Service. Discussion of Transmission Service rate options recommended by the Industrial Electricity Policy Review task force will also be included).

2.2 Overview and Stakeholder Engagement to Date

E-Plus service is an interruptible service (closed to new customers) under which customers pay a discounted rate on condition of having an alternative fuel back-up

heating system. There are approximately 8,000 residential and 250 commercial E-Plus customers. Residential E-Plus customers take service under Rate Schedule (**RS**) 1105, while commercial E-Plus customers take service under RS 1205/1206/1207. (While this Discussion Guide focuses on RS 1105, observations concerning RS 1105 carry over to RS 1205/1206/1207 as the relevant Special Conditions 1 and 3 in the respective rate schedules are virtually identical). The F2016 RS 1105 discounted energy rate is 5.22 cents per kilowatt hour (**/kWh**). The F2016 RIB Step 1 energy rate is 7.97 cents/kWh and Step 2 energy rate is 11.95 cents/kWh, and the exempt Residential RS 1151/1161 F2016 energy rate is 9.55 cents/kWh.

E-Plus rates were introduced in 1987 to residential and commercial customers when BC Hydro had surplus electricity available.[15] The purpose of the rates was to market surplus energy that would have been spilled because at the time consistent access to the export spot market was not available. The E-Plus residential rate was initially targeted to serve "those areas where natural gas is not available such as Vancouver Island, Sunshine Coast and certain communities in the Interior".[16] The rates were closed to new customers in 1990 when energy conditions changed.[17]

As part of the 2007 RDA BC Hydro applied to phase out E-Plus service because at the time BC Hydro was a net importer of energy with access to export markets, and thus there was no practical requirement to interrupt E-Plus customers. The Commission denied BC Hydro's proposal. 2007 RDA Decision Direction 14[18] required BC Hydro to

[15] Commission Order No. G-24-87, dated May 19, 1987.

[16] B.C. Ministry of Energy, Mines and Petroleum Resources news Release, 'New Interruptible Electrical heating Rate Unveiled', May 22, 1987.

[17] Commission Order No. G-3-90, dated January 5, 1990.

[18] *In the Matter of British Columbia Hydro and Power Authority: 2007 Rate Design Application Phase-1*, Decision, October 26, 2007 (**2007 RDA Decision**), pages 111 to 136 and 208. A copy is found at BC Hydro's 2015 RDA website: http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/regulatory-matters/bcuc-order-g-130-07-and-reasons-for-decision.pdf.

include E-Plus customers as a separate class in future COS studies. The Commission approved restricting the ability to transfer the E-Plus rate to a new customer by amending the Availability clause to state that the E-Plus rate is available "only in Premises where there has been no change in customer since April 1, 2008." The Commission directed that BC Hydro invest the necessary time and resources to ensure E-Plus customers comply with the conditions of service.

BC Hydro acted on the E-Plus compliance portion of the 2007 RDA Decision by requesting E-Plus customers confirm their compliance with the conditions of the rate. Two direct mailings were sent between November 2007 and February 2008 and an additional four were done between December 2011 and May 2014; follow-up phone calls took place in spring 2008 and in October 2012. Non-responsive customers were transferred off the rate as were non-compliant customers. While BC Hydro does not have separate COS data, it has Smart Meter Infrastructure-related data on which it can estimate a load profile of E-Plus customers to inform the development and assessment of rate options.

BC Hydro raised E-Plus rates at Workshop 1. British Columbia Old Age Pensioners Organization *et al* (**BCOAPO**) and British Columbia Sustainable Energy Association and Sierra Club B.C. Chapter (**BCSEA**) provided written comments. BCOAPO stated that all E-Plus rates should be phased out by 2018 at the latest, and requested the revenue to cost (**R/C**) ratios of residential and commercial E-Plus rates. BCSEA wrote that E-Plus rates should be phased out if it they do not serve a useful function.

In late February 2015, BC Hydro asked for feedback, in a letter, on the E-Plus rate as part of the 2015 RDA customer engagement (**Attachment 1**). In the letter to E-Plus customers, two options for the E-Plus rate were put forward:

- Option 1 – maintain the E-Plus rate under the same terms and conditions; and

- Option 2 - phase out E-Plus rate over a period of time (e.g., five to 10 years) after which customers would pay the default rate for their rate class for all consumption.

E-Plus customers were requested to provide feedback in a mail-in form, an online form and/or at open houses held in Nanaimo and Victoria on April 1 and April 2, 2015. BC Hydro informed E-Plus customers that it would make a decision on its 2015 RDA E-Plus proposal after June 30, 2015.

Approximately 2,000 customers have so far responded to the letter with the vast majority supporting Option 1. Customer concerns include: the E-Plus rate is a contract between BC Hydro and the customer[19]; investments in back-up systems were made in good faith; the rate will end soon enough under natural attrition given the generally older age of E-Plus customers and that the rate is closed to new customers; and that BC Hydro has surplus hydro presently and E-Plus is a positive contribution to margin. Customers have also expressed concerns about electricity affordability, generally and in relation to if the E-Plus rates were to end.

BC Hydro has responded in writing to several E-Plus customer questions during this engagement. The latest version of the Question and Answer document is **Attachment 2** to this Discussion Guide.

In consideration of feedback to date, BC Hydro developed another option which would entail amending the RS 1105 terms and conditions (Option 3). Refer to section 2.4 below.

[19] In its 2007 RDA Decision, page 133, the Commission Panel determined that it was "not persuaded by the E-Plus Group's argument that its members have "contracts" with BC Hydro that the Commission has limited jurisdiction to abrogate, or that those contracts are everlasting in nature with a guaranteed price cap. ... The Commission Panel is of the opinion that it had the jurisdiction to find Rate Schedules 1105 and 1205 to be in the public interest in 1987, to amend them in the public interest in 1992 and that that jurisdiction remains."

2.3 Issues and Considerations

1. The period of time that BC Hydro would expect E-Plus service to end through attrition (excepting certain commercial customers on the rate that would likely never close account) – section 2.3.1;
2. RS 1105 interruption constraints and practicality (definition of "surplus hydro energy", spot market prices, etc.) and BC Hydro's load-resource balances (LRBs) - section 2.3.2;
3. COS methodology for E-Plus customers, the resulting R/C ratios and the estimate of foregone revenue based on the discount – section 2.3.3; and
4. Indicative customer bill impacts of closing E-Plus – section 2.3.4.

2.3.1 Attrition

BC Hydro's estimate of the natural termination of the E-Plus rate for residential customers is about 20 to 25 years. Table 1 provides the annual attrition (reduction) in the number of E-Plus accounts between 2008 and 2014. From Table 1 the average annual reduction (attrition) in the number of residential E-Plus accounts since 2008 is 513 accounts. The number of residential E-Plus accounts at the end of 2014 was 8,177, which divided by the average annual reduction of 513 accounts equals about 16 years. Table 2 reports the estimated age distribution of E-Plus Residential customers, which provides further context to the attrition in residential E-Plus accounts.

Table 1 E-Plus Account Attrition Estimate

Year	Residential Accounts	Commercial & Industrial Accounts	Total
2008	645	31	676
2009	638	24	662
2010	519	21	540
2011	508	12	520
2012	458	14	472
2013	376	15	391
2014	444	7	451
Average Annual Attrition	513	18	530

Table 2 Age Distribution of Residential Customers

Age of Residential Customers (Years)	E-Plus Residential Customers Percent By Category	All Residential Customers Percent By Category
18 to 24	0.1	1
25 to 34	0.6	9
35 to 44	2.8	12
45 to 54	12	18
55 to 64	30	24
65 or older	54.5	36
Total	100	100

2.3.2 Interruption Provisions and BC Hydro's LRBs

Pursuant to Special Condition 1 of RS 1105, BC Hydro has the right to interrupt the supply of electricity whenever there is a lack of "surplus hydro energy" and "the service cannot be provided economically from other energy sources". This is different language than the typical interruptible rate provisions providing that BC Hydro will only provide service when it has available energy and capacity to do so.[20] As a result of Special

[20] Refer, for example, to the definition of "Non-Firm Electricity" in section 2 of Tariff Supplement No. 76, providing for interruptible (non-firm) service to cruise ships docked at Canada Place in Vancouver.

Conditions 1 and 3 (the latter sets out notification requirements) BC Hydro has never interrupted E-Plus load. E-Plus load is currently included in both the energy and peak demand load forecasts, and treated as firm load for purposes of load forecasting as well as supply planning.

The phrases “surplus hydro energy” and “economically available from other energy sources” are not clearly defined in RS 1105. BC Hydro forecasts surplus energy through its 20-year resource planning horizon (F2033) assuming no Liquefied Natural Gas (**LNG**) load, and through F2021 assuming LNG load of 3,000 gigawatt hours (**GWh**) per year at which time bridging resources may be required in advance of Site C. BC Hydro is able to operationally manage short periods of energy deficit through management of reservoir levels across multiple generation facilities. There are other periods where BC Hydro is short on energy and it is economical to purchase supply from the spot market. Current and forecast spot market prices, for at least five years, are well below the RS 1105 discounted energy rate of 5.22 cents/kWh (F2016). For example, the 2013 Integrated Resource Plan mid-spot market forecast is about $33 per megawatt hour in 2020 (Real 2016 $CDN). Periods of energy deficit would be hourly or one to two days, commonly, and possibly up to two weeks duration.

It is difficult to define the Special Condition 1 phrase “lack of surplus hydro energy” within this operational framework, given the flexibility of BC Hydro’s system and BC Hydro’s access to energy markets. This is compounded by Special Condition 3 notice provisions (hand delivery or issuance by registered mail) which entail longer notice and activation periods, and the dispersion of E-Plus customers. The E-Plus rate therefore provides no value for short-term, real-time needs. Currently, the only plausible interruption period would need to be several months and during the winter season (November to February) when the BC Hydro system experiences its peak demand load and when E-Plus load is the highest (about 60% of the 95 GWh of E-Plus consumption

in F2014 occurred in the four winter months of November to February; about 80% of E-Plus consumption in F2014 occurred between October and March).

2.3.3 Cost of Service

Direction 14 of the 2007 RDA Decision provides that BC Hydro is to "include the interruptible service to its E-Plus customers as a separate class in future [COS] … and to calculate the costs of providing service as though it had the ability to interrupt the class for the four winter months …". This language indicates that costs should be calculated as if E-Plus service was non-firm in terms of capacity. BC Hydro had general agreement through RDA Workshop 2 (COS) - related stakeholder engagement that this does not make sense given Special Condition 1 and the fact that BC Hydro has never interrupted E-Plus customers – and that therefore demand and energy costs should be added to the COS.

BC Hydro continues to be of the view that E-Plus load should be in the peak demand load forecast because RS 1105 Special Condition 1 heavily qualifies BC Hydro's ability to interrupt; BC Hydro cannot interrupt for capacity-related reasons. RS 1105 specifically refers to interruptions for energy which implies there should be a full allocation of Generation, Transmission and Distribution demand costs to E-Plus customers in the 2015 RDA COS study. After revisiting the issue, it is BC Hydro's view that E-Plus load should not be in the energy load forecast. While there is no definition of the phrase "lack of surplus hydro energy" in Special Condition 1, it is circular to include E-Plus load for purposes of determining whether there is such a surplus. The COS analysis set out in Table 3 includes one COS allocation method whereby E-Plus heating load does not attract any Generation energy-related costs for COS.

Table 3 E-Plus COS Methods

Method	Pros	Cons
Method 1: Full Assignment of Generation Energy cost R/C = about 45%	• Recognizes that Independent Power Producers (**IPPs**) and other energy sources are sunk costs that have already been acquired to serve E-Plus loads and should be allocated accordingly • Recognizes that BC Hydro is currently unlikely to curtail E-Plus loads given Special Condition 1, even during times of significant net energy imports in the winter (which occur frequently)	• Would not recognize removing E-Plus load from the energy load forecast • Does not recognize that E-Plus load could potentially be curtailed in the future, even if low probability, for example if the intertie was out of service
Method 2: Cost assignment based on a market proxy R/C = about 45%	• BC Hydro is in a net import situation in more than 50% of the hours in which E-plus load occurs. If incremental E-plus load results in higher imports, BC Hydro's short run costs are equal to the market price • The result is close to Method 1 because forecast 2016 prices plus a wheeling fee are close to the average cost of Generation Energy (~$36/MWh) • Jurisdictional support: Manitoba Hydro's COS treatment of Interruptible loads in their Surplus Energy program where assigned costs are equal to the market price	• Market prices can be volatile and difficult to forecast • Using them in the COS study would add an additional element of uncertainty • During hours in which incremental E-Plus load is served from storage, BC Hydro's cost of serving E-Plus may be its "opportunity cost" in that hour. Determining the source of E-Plus supply (imports, storage, or reduced exports) and the appropriate value introduces significant complexity to the COS analysis
Method 3: No Assignment of Generation Energy cost R/C = about 65%	• Do not plan for E-Plus energy load under the presumption it is truly interruptible	• Implies there is no energy cost to serve E-Plus loads • To the extent E-Plus loads are served by imports, BC Hydro's costs are related to the market price, which is typically greater than zero

As set out in Table 4, for all remaining consumption (i.e., not including RS 1105 heating load) the E-Plus R/C ratio is about 95 per cent, which is close to the R/C ratio for the residential class as a whole.

Table 4 Estimated Revenue and Costs Under Three COS Methods

F2014 ($ million)	Total Revenue	Total Cost	Revenue Shortfall	R/C Ratio
All Residential	1,905	2,025	120	~ 95%
Residential E-Plus customer – remaining load	7.6	8.1	0.4	~ 95%
Method 1 & Method 2: Full Energy Cost Allocation (Generation assignment or Market Price proxy)				
Residential E-Plus - Heating	4.7	11.0	6.3	~ 45%
Method 3: No Energy Cost Allocation				
Residential E-Plus - Heating	4.7	7.4	2.7	~ 65%

2.3.4 Bill Impacts

BC Hydro has modelled preliminary residential E-Plus bill increases if the residential E-Plus rate were to end and customers were transferred from RS 1105 to the RIB. Table 5 shows the distribution of cumulative bill increases, not including general rate increases. Cumulative bill increases should be interpreted to mean that the total estimated impact is the same regardless of an assumed number of years under which the E-Plus rates would end under transition; for example, the median approximate 42 per cent bill increase is cumulative – and would be equivalent to about a 10 per cent increase each year under a four-year transition, about a 4 per cent increase each year under a ten-year transition, etc., relative to F2016 rates.

Table 5 Preliminary cumulative bill increase if Residential E-Plus accounts transferred to RIB rate

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
~ 0.1%	~ 27%	~ 42%	~ 57%	~ 101%

Table 5 assumptions: F2014 Load Analysis data; F2016 rates

2.4 E-Plus Rate – Residential Options

2.4.1 Option 1 – Status Quo (SQ)

Option 1 would not change the existing Special Conditions of RS 1105.

2.4.2 Option 2 – Transition E-Plus to Default Residential Inclining Block (RIB) Rate

Option 2 would end RS 1105 and transition all E-Plus heating load to the applicable residential rate, in large part to the RIB. The basis for Option 2 would be that E-Plus heating load is provided at the same level of reliability and service as for the residential class as a whole; that is, it is firm load and will not ever be interrupted. Total bill increases are estimated to be about 40 per cent (refer to Table 5 above) to the average E-Plus residential account, although the impact in any year would be subject to transition provisions. As part of the 2007 RDA, BC Hydro considered phase-out periods of three, four and five years for E-Plus rates. The 2007 RDA proposal was to increase RS 1105 energy rate to two-thirds of the then standard residential rate over a five year period and eliminate the rate following a 10-year notification period.

In addition to strong E-Plus customer opposition, Option 2 is complicated by the current circumstances of available surplus energy and low market prices. BC Hydro heard from some E-Plus customers that they perceive their use of “non-firm” BC Hydro electricity for heating with the F2016 energy rate of 5.22 cents/kWh is a net benefit to BC Hydro due to current low market prices, even though that may not necessarily always be the case given BC Hydro’s access to mature energy markets.

2.4.3 Option 3 – Amend RS 1105 to make the rate interruptible

Option 3 is designed to make the rate interruptible in practice by at a minimum amending Special Condition 1 and Special Condition 3 regarding notice/method of interrupting. For example:

- Amend Special Condition 1 along the lines of the recently submitted Shore Power Application – 'as available' for both energy and capacity; and
- Amend Special Condition 1 so as to not restrict interruptions to periods of energy deficit only.

2.4.4 Other Possible Changes

For Options 1 and 3, the E-Plus energy rate could be increased by revenue requirement increases. The E-Plus energy rate could also be re-priced under Options 1 or 3. Two potential re-pricing options are:

- Re-Pricing Option A: Target E-Plus R/C ratio = overall class R/C ratio (subject to assignment of energy costs): ~7.5 c/kWh for Residential under no energy cost assignment; and
- Re-Pricing Option B: Constrain rate increase to a "two-thirds increase over standard rates": ~6.5 cents/kWh for Residential (9.55 Exempt Res. * 67 percent).[21]

Any re-pricing under Option 3 should recognize that the rate would be fully operational and interruptible for reliability or economic reasons.

3 NIA Rates

3.1 Stakeholder Input

BC Hydro is seeking from stakeholders: (1) input as to whether there are any other high level Zone II rate options in addition to the three options described in section 3.6 of this Discussion Guide; and (2) suggestions for options analysis, including relevant jurisdictional assessment and bill impact analysis.

[21] The use of "two-thirds" is illustrative and comes from a BC Hydro January 1991 letter to E-Plus customers that stated after 31 March 1991 "the rate would never exceed two-thirds of the regular price of electricity".

BC Hydro proposes to address NIA rates as part of the 2015 RDA Module 2, to be filed with the Commission in mid-2016. There is particular uncertainty in the design of two-part MGS and LGS rates in Zone I going forward. BC Hydro's position is to first confirm BC Hydro's proposed GS designs to properly inform the option as to whether to equalize Zone II and Zone I rates. Revenues from GS customers in Zone II are near 50 per cent of all Zone II revenues. ('Module 2' of the 2015 RDA will include the Transmission and Distribution extension policy proposals, together with a number of rate structure issues that are better addressed after BC Hydro has clarity on the default rates for the classes listed in section 2.1 above).

3.2 Overview

When BC Hydro was formed in 1962, the system contained many stand-alone small thermal and/or small hydro generating stations. As the integrated system expanded, many of these plants met the criteria for integration and communities were tied into the grid system. Communities that remained uneconomic to integrate form the basis for what's classified today as the NIA. Zone II was created in 1966 as a separate rate zone within the NIA and currently includes the districts of Anahim Lake, Atlin, Bella Coola, Dease Lake, Elhlateese, Fort Ware, Haida Gwaii, Hartley Bay, Telegraph Creek, Toad River and Tsay Keh. Refer to **Attachment 3** of this Discussion Guide for a map of all rate zone limits. The majority of the NIA are covered by Zone II rates. Bella Bella is served under Zone IB rates, rates that are equivalent to the Residential rates in Zone I on a flat rate basis; that is, exempt from the RIB rate structure. Zone IB is briefly described in section 3.7 of this Discussion Guide.

Rates in Zone II were designed to reflect the higher costs of providing diesel generation in the NIAs and have existed in their current form since about 1980:

Residential Zone II (RS 1107, 1127)

- Up to consumption of 1500 kWh/month, Residential customers in Zone II pay a rate that is generally equivalent to Zone I rates on a flat rate basis; and
- For consumption beyond 1500 kWh/month, Residential customers in Zone II pay a higher rate to discourage electric space heating from diesel-generated electricity.

SGS (<35 kW) Zone II (RS 1234)

- Up to consumption of 7000 kWh/month, SGS customers in Zone II pay a rate that is equivalent to the flat rate applicable to SGS customers in Zone I; and
- For consumption beyond 7000 kWh/month, SGS customers also a pay a higher rate to reflect the higher costs of providing diesel generation in the NIAs.

GS Zone II (>35 kW) (RS 1255, 1256, 1265, 1266)

- Up to consumption of 200 kWh per kW of demand, GS customers in Zone II pay a rate that is equivalent to the flat rate applicable to SGS customers in Zone I;
- For consumption beyond 200 kWh per kW of demand, GS customers also a pay a higher rate to reflect the higher costs of providing diesel generation in the NIAs; and
- At exactly 35 kW of demand there is no difference in energy cost with Zone II SGS customers because the first 7,000 kWh are priced at the same rates. As demand grows above 35 kW the size of the lower cost block increases.

Refer to section 3.3 below for additional detail on the Zone II SQ rates. Overall, the Zone II rate structures appear to have been designed at the time to ensure consistent treatment between the NIA and the integrated system for the first 1,500 kWh of monthly residential consumption and the first 7,000 kWh of monthly GS consumption:

- With the introduction of the RIB rate and the Medium GS and Large GS 2-part rates in Zone I, the general consistency between rates in the NIA and in Zone I has not been maintained; and
- The Zone II rates for higher cost energy have not kept pace with increasing marginal costs of diesel generation.

3.3 Comparison of Zone II and Zone I Residential Rates

Most Zone I residential customers are served on the RIB rate (RS 1101), where a higher rate is applicable to consumption greater than 675 kWh/month. This 675 kWh/month threshold is equal to about 90 per cent of the consumption of the typical average customer in Zone I. The higher rate for consumption above this threshold is intended to provide an efficient price signal for Zone I residential customers to conserve energy. This higher rate is set in reference to BC Hydro's Long Run Marginal Cost (**LRMC**) of energy. Residential customers in Zone I for whom the RIB rate is not applicable (exempt) are charged a flat rate equal to 9.55 cents/kWh (F2016) for all consumption under RS 1151/1161.

Incremental amounts in Zone II are set at a higher rate (compared to Zone I) to partially reflect the higher cost of electricity generation in these remote areas. The monthly threshold at which the higher rate in Zone II applies is over double the monthly threshold of the RIB.

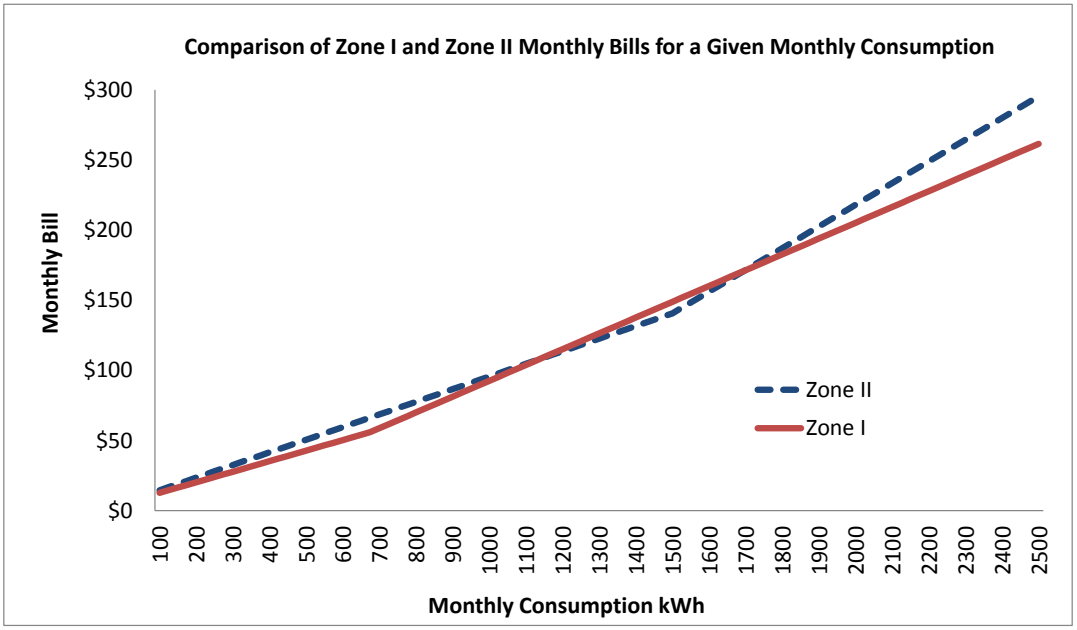
Table 6 Comparison of RIB and Zone II Residential Rate

F2016 Rates	Residential Zone I RIB Rate (RS 1101)	Residential Zone II Rate (RS 1107)
Basic Charge/day (cents)	17.64	18.82
Consumption Threshold (kWh/month)	675	1500
Rate for Consumption Below Threshold (cents/kWh)	7.97	9.55
Rate for consumption above threshold (cents/kWh)	11.95	16.41

Overall, and as illustrated below in Figure 1, this means that:

- At about less than 1150 kWh/month, a monthly Zone II bill will be higher than a Zone I bill at the same monthly consumption level;
- At about between 1150 and 1700 kWh/month, a monthly Zone II bill will be lower than a Zone I bill at the same monthly consumption level; and
- At about greater than 1700 kWh / month a monthly Zone II bill will be higher than a Zone I bill at the same monthly consumption level.

Figure 1 Comparison of Zone I and Zone II Rates



Figures 2 and 3 below illustrate the distribution of Residential customer size and load shape across Zone II. Relatively few Residential customers in Zone II see the 1,500 kWh/month threshold in any given year, and thus for these customers it is expected that their total bills would be comparable to the bills they would pay if taking service in Zone I. For example, a customer with average (mean) consumption in Zone II would have an annual bill equal to approximately $1250 per year. On Zone I rates this annual bill would drop by only about $2 per year, as an average customer would rarely exceed the 1500 kWh/month threshold, nor by any great amount. The reason for this is because Zone II customers pay the equivalent Zone I flat rate up to the higher threshold in Zone II. The implications of this in terms of overall subsidization of the Zone II rates are highlighted in the discussion of rate design options in section 3.5 below.

Figure 2 Proportion of Zone II Residential Customers by Annual kWh

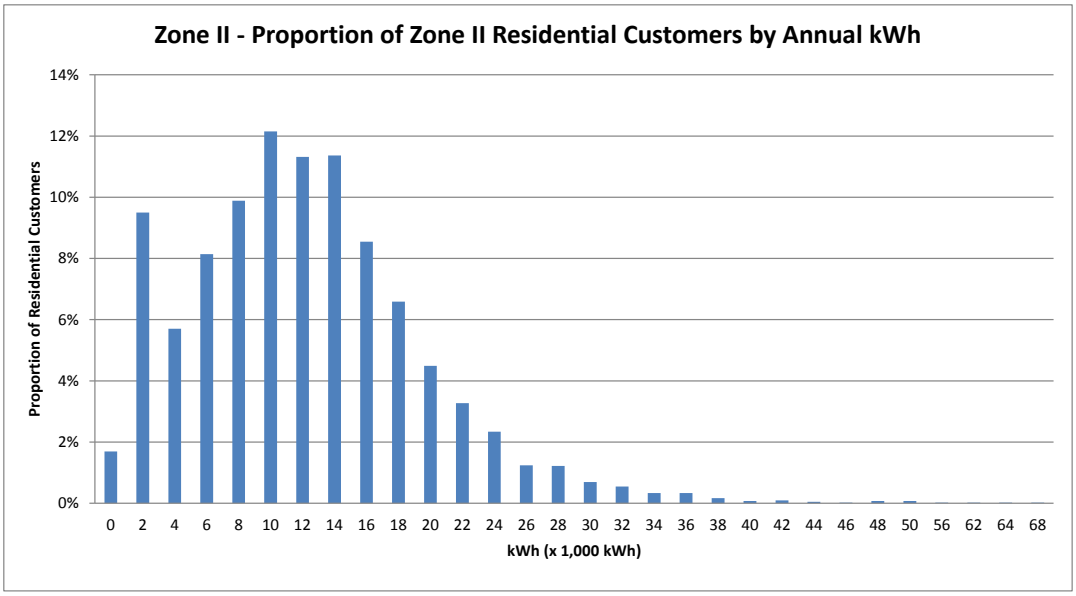
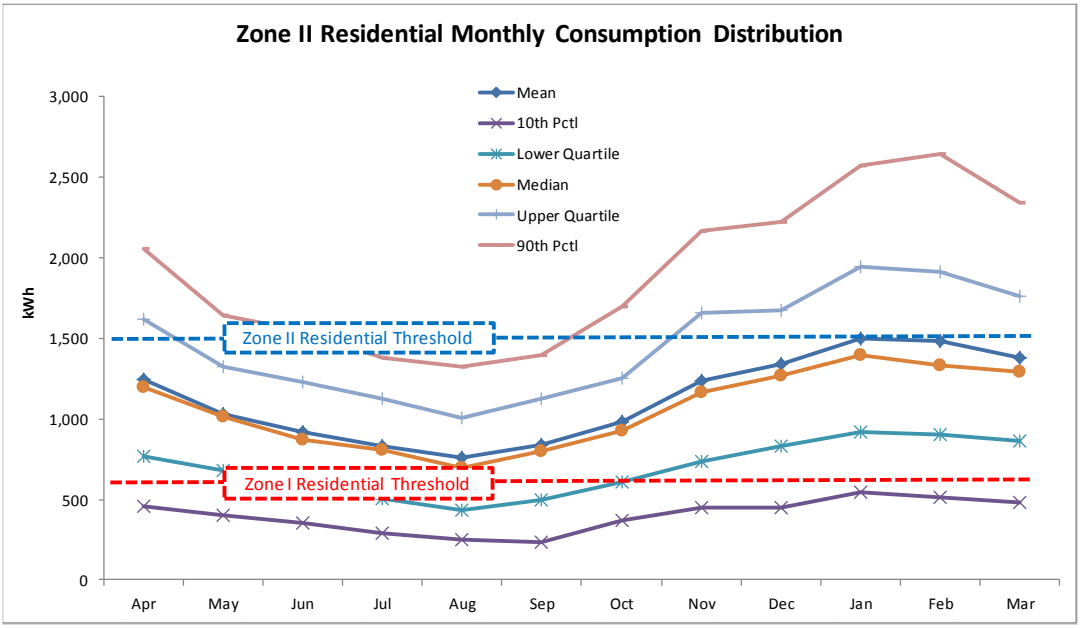


Figure 3 Zone II Residential Monthly Consumption Distribution



3.4 Zone II Revenues and Costs

The revenues from Zone II rates are less than BC Hydro's cost to serve customers in Zone II. Under-recovered costs in Zone II equalled approximately $31.5 million in F2014, and are expected to total approximately $34 million and $35 million in F2015 and F2016, respectively.

Table 7 Zone II Revenues

Zone II Accounts, Revenues and Costs	Accounts (F2014 approx.)	Revenues (F2014 $million)	Revenues % of Total
Residential	5,300	5.4	56
General < 35 kW	1,100	2.1	22
General > 35 kW	100	2.1	22
Total	6,500	9.8	100
Total Costs	n/a	41.3	100
Total Zone II Under-recovered Costs	n/a	31.5	n/a

- Under-recovered costs in Zone II yield a R/C ratio equal to about 25 per cent; and
- The subsidy of operating losses in diesel areas is paid for by ratepayers in Zone I.

3.5 Other Canadian Jurisdictions

BC Hydro is in the process of conducting jurisdictional assessment of NIA rates. To date, BC Hydro has examined five utilities in Canada that are known to have or have had 'NIA areas': Manitoba Hydro, Hydro One (Ontario), Hydro Quebec, SaskPower and New Brunswick Power. Rate differentiation is based on either remoteness from the system (formerly Manitoba Hydro and currently Hydro Quebec) or population density (Hydro One, SaskPower, New Brunswick Power)[22]. BC Hydro plans to examine NIA rates in the U.S. The starting point for the U.S. survey will be to examine service

[22] The Canadian Off Grid Utilities Association lists the following regulated utilities within Canada as serving isolated off-grid communities: ATCO Electric (Alberta); BC Hydro; Hydro Quebec; Hydro One (Ontario); Manitoba Hydro; Newfoundland & Labrador Hydro; Northwest Territories Power Corporation; and Qulliq Energy Corporation/Nunavut Power.

territory maps to determine if territories are non-integrated or non-contiguous; BC Hydro plans to select U.S. jurisdictions from the National Rural Electric Cooperative Association membership directory.

3.5.1 Manitoba Hydro

Manitoba Hydro serves four diesel communities in Northern Manitoba. Manitoba Hydro originally served 27 but most of these were later connected to the grid. Originally, customers in Manitoba Hydro's NIA were restricted to 15 amp service and this was later upgraded to 60 amp service. The 60 amp restriction remains in effect to limit the ability of customers to use electric space heating in the NIA.

Manitoba Hydro employed similar rate design objectives as BC Hydro when designing residential NIA rates:

- Fair treatment compared to the integrated area: Manitoba Hydro applied integrated rates for Residential power usage less than 2,000 kWh per month, but a higher NIA rate above 2,000 kWh per month. Effective 2011, Manitoba Hydro's Residential customers taking diesel service no longer face the 2,000 kWh/month threshold and now pay the same rate as all Manitoba Hydro residential customers; and
- Cost recovery: For GS usage beyond 2,000 kWh per month Manitoba Hydro's diesel rates jump to about 40 c/kWh.

3.5.2 Hydro One (Ontario)

Hydro One is an example of a Canadian utility that introduced the concept of customer density into rates.

Hydro One serves isolated communities in Northern Ontario with diesel generators. Customers in these communities have historically been served at rates below their cost of service. Ontario applies a 0.13 c/kWh charge on all customer bills across the

province to pay for the cost of Rural and Remote Rate Protection (**RRRP**), which is designed to ensure that rates in the remote communities remain low. Customers classified as year round residences in remote areas ("low density zones") receive RRRP, which is a credit of $28.50 that is applied to a customer's monthly distribution service charge (like a Basic Charge). Factoring in the credit, the total monthly distribution service charge of Hydro One low density zone customers is about double that for residential urban high density l customers. [23] Overall, the rates for General Service customers differ whether designated as urban density or not, but the RRRP does not apply.

3.5.3 Hydro Quebec

Residential customers that are part of off-grid systems north of the 53rd parallel are subject to a different, higher rate for consumption in excess of 30 kWh per day. When Hydro Quebec took over responsibility of the off-grid systems in the 1980s, electric heating was not used in this region. Hydro Quebec also levies a connection charge of $5,000 if an electric heating system is used in relation to an off-grid system north of the 53rd parallel.

3.5.4 SaskPower

SaskPower uses a density concept for residential rates. SaskPower's service area is categorized into City, Town and Rural with residential rates as set out in Table 8[24].

[23] Residential urban high density zones are areas containing 3,000 or more customers with a line density of at least 60 customers per kilometer (**km**); Residential medium density zones are areas containing 100 or more customers with a line density of at least 15 customers per km; and Residential low density zones are areas other than urban or medium density zones; http://www.hydroone.com/RegulatoryAffairs/RatesPrices/Pages/ServiceTypes.aspx.

[24] http://www.hydroone.com/RegulatoryAffairs/RatePrices/Pages/ServiceTypes.aspx
http://www.saskpower.com/wp-content/uploads/residential_rates.pdf

Table 8 SaskPower Residential Rates (Effective 1 January 2014)

Rate	E01 (City)	E02 (Town, village and urban resort)	E03 (Rural and rural resort)
Basic monthly charge ($)	20.22	20.22	29.19
Energy charge (c/kWh)	11.931	11.931	11.987

3.5.5 New Brunswick Power

New Brunswick Power has a concept of density for residential rate. There are two categories: (1) residential customers located in incorporated cities, towns and villages with a population over 2,000; and (2) residential customers located in other areas not included under the residential urban category. Refer to Table 9[25].

Table 9 New Brunswick Power Residential Rates

Rate	Residential Urban	Residential Other Areas
Service charge ($ per billing period)	20.08	22.02
Energy charge (c/kWh)	10.05	10.05

3.6 Zone II Rates – Preliminary Options

3.6.1 Option 1: SQ

Option 1 would maintain the current rate structures in Zone II as a means to signal the higher costs of providing diesel generation in the NIAs:

- Option 1 results in an under-recovery of costs from Zone II customers;
- Option 1 is an exception to postage stamp pricing principles; and
- Option 1 would require a review of forecast marginal diesel generation costs and an assessment of whether the existing pricing and notional consumption thresholds remain appropriate to the intended purpose of the current Zone II rate structure.

[25] https://www.nbpower.com/html/en/residential/rates/policies/rspn1.html

3.6.2 Option 2: Full Cost Recovery

This option would maintain the Zone II distinction but increase rates to fully recover the cost to serve Zone II customers (increasing Residential rates by roughly a factor of four to fully recover costs to serve Zone II Residential customers):

- This would impose significant bill impacts; and
- This would further depart from postage stamp pricing principles in comparison to the SQ.

3.6.3 Option 3: Equalize Zone II and Zone I Rates

Option 3 would equalize electricity rates on a postage stamp basis across the entire BC Hydro service area, while likely maintaining the Zone II designation in the Electric Tariff terms and conditions for other purposes. A summary level evaluation of the impacts on Residential customers is as follows, assuming that the RIB rate would apply to all Zone II residential customers:

- Most Zone II residential customers would see a bill decrease, with the largest bill reductions available to the largest consumers;
- Assuming no change in residential consumption behaviour, the amount of the under-recovered costs in Zone II is estimated to increase approximately $300,000, a relatively small amount equivalent to about a one per cent of the existing under-recovery (Residential only). The effect in respect of GS rates has not been estimated; and
- This option does not take into account escalating cost of diesel generation.

3.7 Zone IB

Bella Bella is in rate Zone IB and is exempt from the RIB, taking service on RS 1151 and RS1161 - Exempt Residential Service Zone I. Unlike other communities in the NIA, the electricity needs of Bella Bella are largely served by run-of-river hydro generation. Under-recovered costs in Bella Bella are $2.4 million in F2014, on revenues that total approximately $700,000 thousand; a R/C ratio of roughly 23 per cent.

BC Hydro is in the process of reviewing Zone IB rates and intends to address the associated issues and options as part of RDA Module 2, along with the other NIA rates.

4 Rates for Farm and Irrigation Services

4.1 Stakeholder Input

BC Hydro met with the BC Agriculture Council in April 2015 to provide an overview of farm and irrigation customers, loads and rates; to highlight key issues and policy questions; and to seek feedback on how future engagement with farm and irrigation customers could be structured going forward and whether there are additional issues for BC Hydro to consider. The key issues and policy questions identified by BC Hydro are:

- Is there a COS basis to determine that some farms belong on residential rates and some belong on commercial rates? That is, does farm use have a uniform load profile across all farms?
- Should all farms continue to be billed at the exempt residential service rate (RS 1151) instead of ineligible for the RIB rate (RS 1101)?
- Should different uses of electricity be separately metered on farms? i.e. domestic use vs. commercial use.

At this stage, BC Hydro is not presenting specific options or proposals but rather is seeking feedback on the policy questions set out above, and its plan to consider farm and irrigation rate design during 2015 RDA Module 2. The main reason to defer a review of farms and irrigation rate design to Module 2 relates to the fact that most residential farms are on the exempt residential rate (for ease of reference, this Discussion Guide refers to these farms as 'residential farms'), while larger farms have the choice to move from the residential rate to MGS or LGS rates. Given this optionality, it will be difficult for customers to understand and evaluate their preferences and for BC Hydro to evaluate trade-offs until final residential, MGS and LGS rate designs are resolved through customer engagement, BC Hydro's proposals and a Commission decision on 2015 RDA Module 1.

4.2 Overview

The definition of "Residential Service" found in section 1 of the Electric Tariff provides the following four criteria in respect of farms and farm use: 1) use electricity in conjunction or not with a single family dwelling (a customer does not need to have a single family dwelling to qualify for exempt residential rate RS 1151); 2) does not process products from other farms; 3) have only farming-related commercial activities (e.g., no boarding of animals belonging to others); or 4) have no more than a small roadside stand to sell their products. Based on a review of historic tariff documents, these four criteria date back to the 1960s.

During the 2008 RIB proceeding BC Hydro created the flat RS 1151 exempt rate to be applicable to, among others, farm customers on the residential rate that are metered by a single meter for the entire property. BC Hydro created specific rules and business practices to manage the types of farms on this exempt rate. Since the 2008 RIB rate proceeding, a number of challenges have emerged, including:

1. In many cases farms can qualify for multiple rates, which has proven to be confusing for customers.

2. The criteria set out above to determine who qualifies for RS 1151 are difficult for BC Hydro to execute consistently. BC Hydro relies on a customer's self-declaration on the four criteria for RS 1151, as there are insufficient resources to conduct site checks or to regularly assess if a customer's rate schedule is still appropriate once service is connected. To provide additional supporting evidence that a farm is most likely operating as a farm, BC Hydro has been requesting that a customer provide a Property Assessment Notice or Property Tax Notice that classifies the property as farm land.

3. The four criteria for RS 1151 are potentially subjective to interpret and apply. For example, the criteria require BC Hydro to assess whether the customer has a "small" road side stand or processes products from other farms. BC Hydro is considering simplifying the criteria to determine the rates customers are eligible for.

4.3 Comparison of Rates

BC Hydro serves a diverse group of farm customers on a number of different rates including residential, SGS, MGS, LGS and Irrigation rates. These farms cover a range of industries including crop production, animal processing, water and sewage and food/wholesale distribution:[26]

- In F2014, BC Hydro served: 22,200 residential farms; 1,500 commercial farms; and 2,700 irrigation customers. In terms of energy sales, residential farms account for

[26] Based on North American Industry Classification System codes recorded in BC Hydro's billing system.

about 600 GWh,[27] commercial farms about 170 GWh and irrigation about 70 GWh; and

- As a group, residential RS 1151 farms are winter peaking and have hourly load profiles that resemble the overall residential class profile. Commercial farms are summer peaking but still have significant winter consumption while irrigation customers are summer peaking with very little winter consumption.

4.3.1 Farms on Exempt Residential Rate

Although most residential farms produce products that are sold commercially, BC Hydro has historically allowed residential farms to retain a single point of metering and have their entire consumption billed at the residential rate. There is currently no restriction on the amount of electricity farms can purchase on the exempt residential rate, and BC Hydro does not force farms onto commercial rates so long as they meet the four criteria for residential farm service listed in section 1 of the Electric Tariff.

Approximately 1,000 of the RS 1151 farms are eligible for commercial service under the MGS or LGS rates. BC Hydro determined that the largest RS 1151 farm customer consumes more than 2 GWh per year and has a peak demand approaching 500 kW. Table 6 shows the distribution of RS 1151 accounts based on size of load and demonstrates that there is a group of large RS 1151 customers that would otherwise be eligible for an MGS or LGS rate

[27] 490 GWh from farms on the exempt RS 1151 rate, and another 110 GWh from farms which may be on the RIB rate.

Table 10 Distribution of RS 1151 Accounts

kW Demand	Number of RS 1151 Accounts
0 to 25 kW	16,004
25 kW to 35 kW	393
35 kW to 150 kW	516
Over 150 kW	46

4.3.2 Commercial farms

Almost 50 per cent of commercial farm load is related to crop production, which includes a number of greenhouses in the Lower Mainland. More than 70 per cent of commercial farms use less than an average single family dwelling (about 10 MWh per year) and are served at the SGS rate. Larger commercial operations are billed at the MGS or LGS rate.

4.3.3 Customer Choice – current practices

Currently, residential customers who qualify under the Electric Tariff's criteria for RS 1151 can choose to take service under MGS/LGS rates provided their demand is less than 35 kW or less than 150 kW respectively. However, a residential RS 1151 customer cannot choose to take commercial service under the SGS rate (RS 13xx). Both residential and commercial customers can qualify for RS 1151 if they the meet the four qualification criteria described above. If a farm customer does not meet the Electric Tariff's four criteria for RS 1151, they are billed at the RIB, SGS, MGS or LGS rates.

4.4 Other Jurisdictions

Similar to NIA, BC Hydro is in the process of conducting jurisdictional assessment for farm and irrigation rates. To date, in Canada it appears that only SaskPower has a separate agricultural rate class. U.S. utilities are much more likely to have separate farm rates and class of service.

4.4.1 Hydro Quebec

Rate D (domestic) is applicable to commercial farming given three conditions: (1) commercial activities must not exceed maximum load of 10 kW, (2) commercial and domestic use must be metered by a single meter and (3) commercial operations are carried out on a farm that is otherwise a residential farm. Farm Rate D includes fixed charge plus inclining block rate with second tier pricing applicable to consumption that is in excess of 912 kWh/month. If Rate D does not apply, the farm is billed at the appropriate commercial rate for its size.

4.4.2 Manitoba Hydro

The Residential Rate is applicable to farms that are metered together with domestic service if the connected load related to any commercial activity does not exceed 3 kW or if the combined load does not exceed 50 kW. The Residential Rate includes a fixed monthly charge plus flat energy rate.

4.5 Considerations: Policy Questions

4.5.1 Should residential farms be treated differently than commercial farms?

From a COS point of view, residential farms are winter peaking while commercial farms are summer peaking. The difference between residential and commercial farms is that the former have significant winter consumption. The load characteristics of these different customer profiles drive a portion of BC Hydro's costs (generation, transmission and some distribution costs); therefore, there appears to be justification for continuing to identify farms as either residential or commercial customers.

4.5.2 How can BC Hydro determine which farms belong on residential or commercial rates?

A number of criteria can be used including:

- whether the farm has a single family dwelling;
- the farm's peak load (kW) and energy consumption (kWh);
- whether the farm's load characteristics align with either residential or commercial customer load profiles; and
- whether the farm's property assessment includes a residence and farm classification.

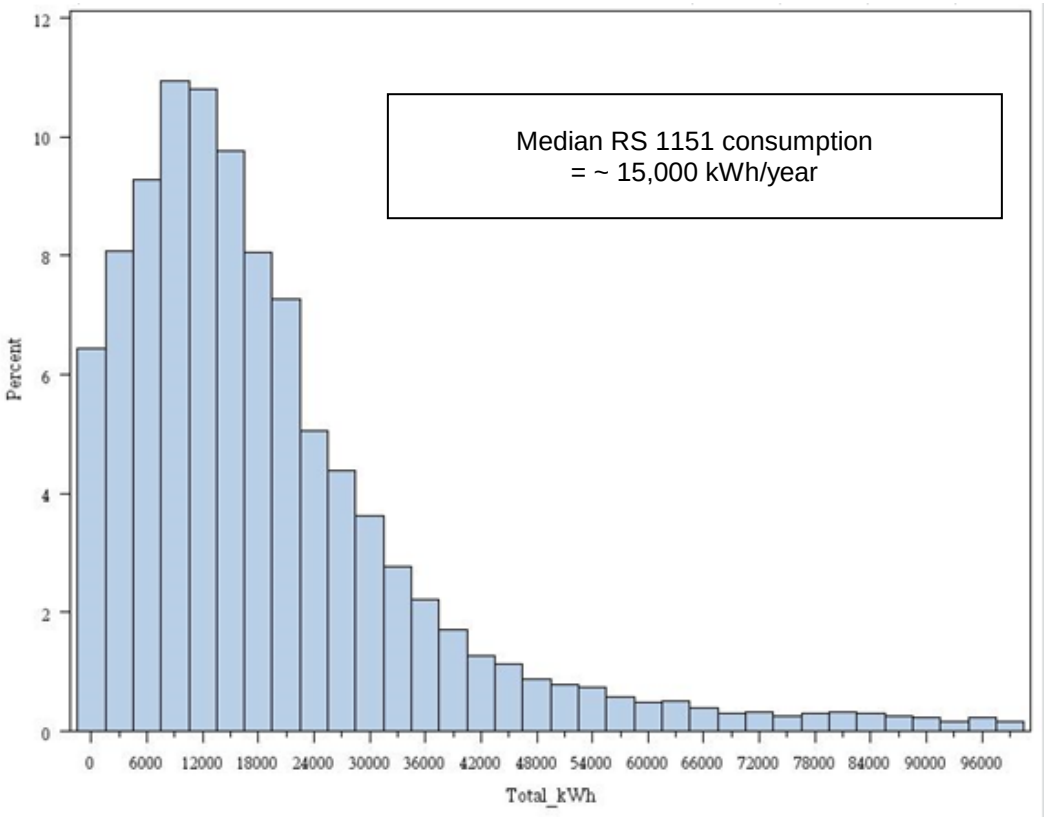
4.5.3 Should residential farms be billed at the RIB rate or should BC Hydro continue offering the Exempt Residential Rate under RS 1151?

In the Commission's decision concerning FortisBC Inc.'s (**FBC**) Application for Permanent Residential Conservation Rate Exemption for Qualified Farm Customers, FBC was directed to gather sufficient information to be able to address in its next rate design application the suggestion of BCOAPO of "creating a new rate class for farm customers where the conservation threshold recognized the non-residential use".[28]

There are issues with developing a threshold that would enable tiered rates for non-residential RS 1151 load. There is great diversity of customer size for customers under RS 1151, including some very large loads, as shown in Figure 5 below and the bill impacts of a tiered rate would be a significant barrier preventing BC Hydro from applying a single threshold for all residential farms. Furthermore, the existing RS 1151 flat energy rate, at 9.55 cents/kWh (F2016), lies within the energy LRMC range and efficiently sends price signals on the margin. Given the overall consumption of farms on the exempt residential rate (~ 600 GWh), there would be no substantial rate structure conservation from a move away from the flat rate.

[28] Commission Order No. G-96-14A, Direction 2; and Appendix A, "Reasons for Decision", pages 2 and 3 of 5.

Figure 4 Residential Farms – Histogram F14 kWh



4.5.4 Should customers continue to have choice?

At a certain consumption level, a residential farm load profile will look like a commercial load because the commercial nature of the farming operation load begins to dwarf the dwelling's load profile. In these situations, there may be an appropriate cut-off such that BC Hydro would change the rate that the customer is billed at to a commercial rate. BC Hydro will also assess the practicality of separately metering some of the customer's operation such that a portion of the load remains at a residential rate with the balance transferred to a commercial rate.

4.5.5 Should non-farm customers continue to be eligible for the irrigation rate?

Some of BC Hydro's largest Irrigation Rate customers are not farms, including service to municipalities and golf courses. BC Hydro will examine the cost of service basis for the Irrigation Rate class to determine the eligibility requirements for the rate.

<Name>
<Address>
<City> <Province> <Postal Code>

MMM DD, YYYY

Account Number: <Account Number>

Re: Your feedback on the E-Plus Rate

BC Hydro is currently reviewing all of its rate structures in preparation for filing a Rate Design Application (RDA) with the B.C. Utilities Commission (BCUC) in late summer 2015. As part of this review, BC Hydro is asking for your feedback on the E-Plus rate. BC Hydro will be making a decision on its proposal regarding the E-Plus rate after **June 30, 2015**, and your feedback will help inform that decision.

Why is BC Hydro reviewing the E-Plus rate?
During a RDA BC Hydro reviews all its rates to ensure that they are fair, efficient and balance the needs of all customers. As part of this process, BC Hydro consults with customers and stakeholder groups to gather their feedback, and then proposes any changes to its rates through a RDA filed with the BCUC for approval.

What options is BC Hydro considering for the E-Plus rate?
BC Hydro is considering two options for the E-Plus rate:

- ***Option 1 – maintain the E-Plus rate***
  In this case, the current discount would continue under the same terms and conditions.

- ***Option 2 - phase out the E-Plus rate***
  In this case, the rate discount would be phased out over a period of time (e.g. 5-10 years), after which you would pay the applicable default rate for all consumption.

Based on E-Plus customers' feedback during the previous 2007 RDA, BC Hydro expects that you will be in favour of Option 1 - maintain the E-Plus rate. We would still appreciate your feedback on both options, the reasons you support or do not support each option, and the potential phase-out period for Option 2.

Why would BC Hydro consider phasing out the E-Plus rate?
E-Plus rates were introduced in 1987 when BC Hydro had surplus electricity. A discount on standard rates was offered to customers who invested in back-up heating systems and accepted the possibility of a potential power interruption to their heating system.

Since its introduction the E-Plus supply has never been interrupted. The cost of providing electricity through the E-Plus service is not covered by the revenue collected through the rate, so the supply is subsidised by other BC Hydro customers.

How can you provide feedback on the E-Plus rate options?
BC Hydro appreciates that as an E-Plus customer you will be most impacted by any change to the rate. Your feedback will be included in BC Hydro's considerations for a proposal on the E-Plus rate. Please provide your feedback by **June 30, 2015** through one of the following ways:

1. ***Online*** – by completing an online form at **bchydro.com/2015RDA**. You will need your account number, which can be found at the top of this letter and the attached form.

2. ***By mail*** – by completing the enclosed feedback form and mailing it to the address listed at the top of the form.

3. ***In person*** – by attending one of two drop-in sessions to be held in:

    - **Nanaimo** - on April 1, 2015 at the Coast Bastion Hotel (11 Bastion St), please drop in between 5.00 pm - 8.00 pm; or

    - **Victoria** - on April 2, 2015 at the Hotel Grand Pacific (463 Belleville St), please drop in between 5.00 pm - 8.00 pm.

When will a decision be made and how will you hear about it?
In addition to E-Plus customers' feedback, BC Hydro is also meeting with stakeholder groups to discuss the E-Plus rate. In spring 2015 BC Hydro will discuss the two options set out above for the E-Plus rate with stakeholder groups who typically represent residential, commercial and industrial customers in BCUC proceedings.

Once BC Hydro reviews your feedback and feedback from stakeholder representatives, it will:

- summarise the feedback provided and post this summary online at **bchydro.com/2015RDA** shortly after June 30, 2015; and

- decide which option it will propose for the 2015 RDA. BC Hydro's decision and the reasons for the choice will be posted online at **bchydro.com/2015RDA** prior to submitting the 2015 RDA to the BCUC for its review in the late summer 2015.

BC Hydro will inform you when the application is filed and how you can participate in the public review process. Following the public process, the BCUC will make its decision on the E-Plus rate and we will write to you again to notify you about this decision.

Thank you in advance for providing your feedback on BC Hydro rates. If you have any questions about this letter, please call BC Hydro at 1 800 BCHYDRO (1 800 224 9376).

Sincerely,

Keith Anderson
General Manager, Customer Service

Customer Name: <Name>
Account Number: <Account Number>

You can provide your feedback online at **bchydro.com/2015RDA** or by retuning this form to the following address by **June 30, 2015**:

BC Hydro Regulatory & Rates
333 Dunsmuir Street, 16th Floor
Vancouver, BC V6B 5R3

In your opinion, which option should BC Hydro pursue for the E-Plus rate? (Tick one)

☐ **Option 1 – maintain the E-Plus rate**
The current discount continues under the same terms and conditions; your heating costs are charged a discounted rate.

☐ **Option 2 - phase out the E-Plus rate**
The rate discount is phased out over a period of time. You pay the applicable default rate for all consumption following the phase out.

Why should BC Hydro pursue the option you have chosen? (Attach additional paper if needed.)

Please do not provide personal information or any information that could identify you or third parties.

If BC Hydro pursued Option 2
1. What's a reasonable time frame to phase out the E-Plus rate? _____ years.
2. What would be the fairest way to do this? (Attach additional paper if needed.)

Please do not provide personal information or any information that could identify you or third parties.

Thank you for your feedback. Please ensure it reaches BC Hydro by June 30, 2015.

BC Hydro is collecting your personal information on this form to inform its 2015 RDA filing. This information is collected to further BC Hydro's mandate under the *Hydro and Power Authority Act*, the *Clean Energy Act*, and the BC Hydro Electric Tariff, as regulated by the BCUC under the *Utilities Commission Act* and related Regulations and Directions. If you have any questions about how BC Hydro collects, uses or discloses your personal information with regards to this form, please contact Customer Service at 1 800 BCHYDRO (1 800 224 9376).

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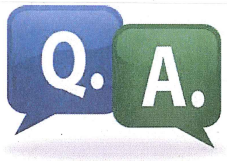

Question 1

How many E-Plus Customers were there on the date of the BCUC October 26, 2007 decision and order with respect to the 2007 RDA (or the last billing prior to that date)?

Answer:

On October 26, 2007 there were 12,155 E-Plus accounts.

Question 2

For each year from 2008 through 2014, how many E-Plus customers were there as of December 31 (or the last billing prior to that date)?

Answer:

Date as of	Residential E-Plus Accounts	Commercial & Industrial E-Plus Accounts	Total E-Plus Accounts
31 Dec 07	11,765	356	12,121
31 Dec 08	11,120	325	11,445
31 Dec 09	10,482	301	10,783
31 Dec 10	9,963	280	10,243
31 Dec 11	9,455	268	9,723
31 Dec 12	8,997	254	9,251
31 Dec 13	8,621	239	8,860
31 Dec 14	8,177	232	8,409

Question 3

For each year from 2008 through 2014, what was the annual electric usage (in kWh) of E-Plus customers for heating as shown by the separate E-Plus metering?

Answer:

Date As Of	Residential E-Plus Heating (kWh)	Commercial & Industrial E-Plus Heating (kWh)	Total E-Plus Heating (kWh)
31 Dec 2008	145,893,308	37,929,004	183,822,313
31 Dec 2009	129,985,390	34,935,784	164,921,174
31 Dec 2010	114,153,697	32,643,248	146,796,946
31 Dec 2011	119,354,060	34,444,956	153,799,015
31 Dec 2012	105,465,559	30,839,172	136,304,731
31 Dec 2013	96,197,589	29,618,353	125,815,942
31 Dec 2014	86,320,107	27,970,845	114,290,951

Question 4

I would like to know how many households in BC are able to use [E-Plus] and if possible an idea of the age range of the residents in those homes

Answer:

The total number of Residential E-Plus accounts as of 31 December 2014 was 8,177, as shown in the response to Question No. 2. The rate was closed to new customers in April 2008. Please see the response to Question No.5, which sets out the age range of E-Plus customers.

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Question 5

Have you gathered any information on the age of E-Plus customers? If so, provide that information.

Answer:

Based on the results of BC Hydro's Residential End-Use Survey (REUS), the estimated age distribution of Residential E-Plus customers in percentage terms is as follows. For comparison, the estimated age distribution of all BC Hydro Residential customers in percent is also reported.

Age Category (Years)	E-Plus Residential Customers Percent By Category	All Residential Customers Percent By Category
18 to 24	0.1	1
25 to 34	0.6	9
35 to 44	2.8	12
45 to 54	12	18
55 to 64	30	24
65 or older	54.5	36
Total	100	100

Question 6

How much would BC Hydro intend to save by phasing out E-Plus?

Answer:

There will be no significant cost savings to BC Hydro if the E-plus rate is eliminated. Presently, under-recovery of the costs to serve E-Plus customers is recovered in the rates of other customers.

Question 7

What was the exact reason why the previous request for E-Plus to be terminated was rejected and why is BC Hydro raising this again?

Answer:

BC Hydro periodically reviews all rates charged to customers to ensure that they are fair, efficient and balance the interests of all customers. Any proposed changes are included in a Rate Design Application (RDA) filed with the BC Utilities Commission (BCUC) for review. In 2007 BC Hydro filed an RDA with the BCUC, proposing to phase out E-Plus service. The BCUC turned down BC Hydro's request because they believed BC Hydro had not adequately supported the proposal. You can read the Commission's decision (Order G-130-07) on BC Hydro's 2015 RDA website http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/regulatory-matters/bcuc-order-g-130-07-and-reasons-for-decision.pdf Refer to pages 133 to 136. BC Hydro is currently preparing to file another RDA with the BCUC. As part of this process, BC Hydro is consulting with customers and stakeholder groups to gather their feedback, and some stakeholders have raised concerns about the continuance of the E-Plus rate. BC Hydro is currently engaging with E-Plus customers about the E-Plus rate and will make a decision, after June 30, 2015, regarding whether phasing out the E-Plus rate will be proposed in the next RDA.

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Question 8

Does BC Hydro know what alternative heating fuels [are] available to users of the E-Plus plan?

Answer:

BC Hydro does not record information about which alternative fuels E-Plus customers use, however, natural gas, oil, propane, butane, wood or coal from a customer-owned or rented storage facility located on the premises, are potential fuels.
The rate has never been interrupted, and E-Plus customers have never been required to use an alternative heating source.

Question 9

Currently the E-Plus program is not transferable. This means that over the next decade or 2, the plan will fade away anyway. How many E-Plus users were there in 2007 compared to now?

Answer:

Please refer to the response to Question No. 2 above.

Question 10

What is the estimate of natural termination of the E-Plus program?

Answer:

A reasonable estimate of the natural termination of the E-Plus rate for Residential customers is about 20-25 years. Residential E-Plus accounts close for a variety of reasons. The table below sets out the annual attrition (reduction) in the number of E-Plus accounts between 2008 and 2014. From the table the average annual reduction (attrition) in the number of Residential E-Plus accounts since 2008 is 513 accounts. The number of Residential E-Plus accounts at the end of 2014 was 8,177, which divided by the average annual reduction of 513 accounts equals 16 years.

Year	Residential Accounts	Commercial & Industrial Accounts	Total
2008	645	31	676
2009	638	24	662
2010	519	21	540
2011	508	12	520
2012	458	14	472
2013	376	15	391
2014	444	7	451
Average Annual Attrition	513	18	530

Question 11

What will "the cost of providing electricity through the E-Plus service not covered by the revenue collected through the rate" be each year over the extinction period for all remaining E-Plus accounts combined? I am interested in the differential in the actual energy cost not simply the rate comparison that includes costs of transmission, capital and dividends paid to government.

Answer:

BC Hydro has not interrupted any E-Plus residential customers since the E-Plus residential rate was implemented in 1987. Given that there have been no interruptions, the energy cost to serve E-Plus residential customers is the same as for all BC Hydro residential customers.

BC hydro
FOR GENERATIONS

Question 12

If possible, could you tell me the areas of the province where E-Plus service was originally offered for the period, I believe it was 1987-1990? Is this correct?

Answer:

Yes, the period in question was 1987-1990. The rate was closed to new customers in 1990. The table below highlights the percentage distribution of E-Plus Residential and All Residential accounts by region.

Region	E-Plus Residential Percent By Region	All Residential Percent By Region
Lower Mainland	6.3	57.8
Vancouver Island	70.9	21.5
Southern BC	15.7	11.9
Northern BC	7.1	8.9
Total	100	100

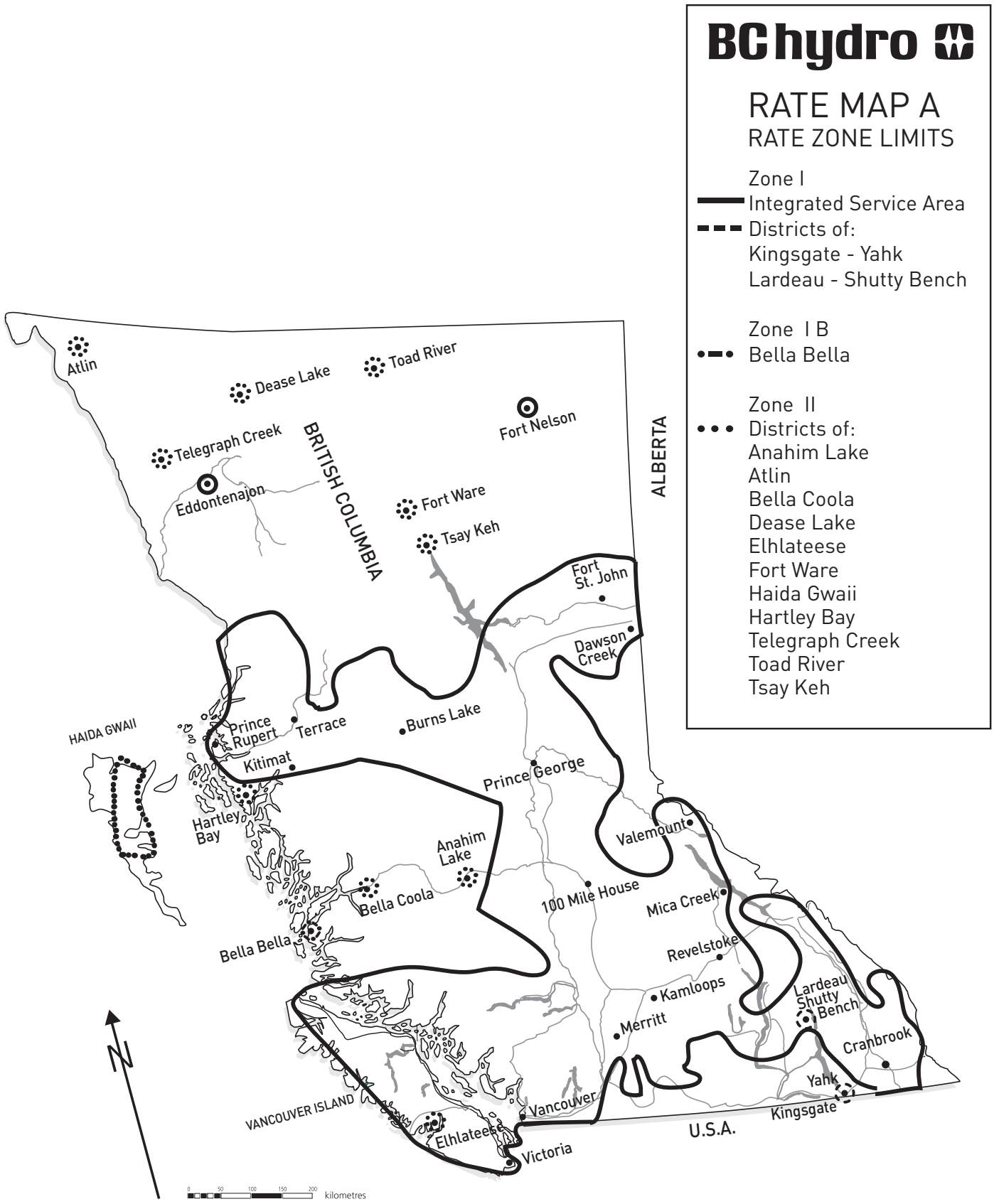
Question 13

Who are the Commercial and Industrial accounts, do they include the province of BC, and did they all receive a copy of the February 24, 2015 letter with the attached questionnaire?

Answer:

The following table reports the number of Commercial and Industrial E-Plus accounts by premise type. All E-Plus customers received a copy of the letter and questionnaire.

Commercial E-Plus Account Premise Type	Number of Accounts
Apartment Building	17
Boarding, Rooming, Lodging House	5
Church	11
Entertainment, Amusement, Recreation	41
Government	11
Hospital	5
Hotel, Motel, Resort	18
Irrigation Account or Bona Fide Farm	8
Manufacturing, Resources	14
Merchandising, Wholesale & Retail	31
Nursing, Retirement Home	2
Office Building, Business Block	41
Restaurant	7
School	15
Transp., Communication, Other Utilities	6



GDS09-154 Jan 2015

2015 Rate Design Application (RDA)
Residential Rate Workshop - May 21, 2015
RDA Workshop 9(b)