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March 26, 2020

Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

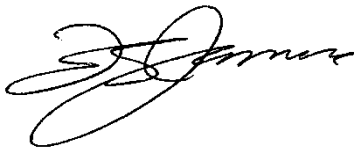
Dear Mr. Wruck:

RE: Project No. 1598990
British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Fiscal 2020 to Fiscal 2021 Revenue Requirements Application

BC Hydro writes to provide a supplemental response to Undertaking No. 62 (Exhibit B-58-2) resulting from a clarification request from British Columbia Old Age Pensioners' Organization et al. BC Hydro requests that the record for this proceeding be reopened for the sole purpose of filing this supplemental response.

For further information, please contact Chris Sandve at 604-974-4641 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Fred James
Chief Regulatory Officer

df/rh

Enclosure

BC Hydro Fiscal 2020 to Fiscal 2021 Revenue Requirements Application

BC HYDRO SUPPLEMENTAL UNDERTAKING NO. 62

HEARING DATE: March 3, 2020

REQUESTOR: BCOAPO, Ms. L. Worth

TRANSCRIPT REFERENCE: Volume 14, Page 2709, line 22 to Page 2739, line 13

ORIGINAL QUESTION:

- a. Confirm if fiscal 2019 actuals for low income DSM programs are already on the record. If not, update the table provided in BC Hydro's response to BCOAPO IR 1.79.1 with fiscal 2019 actuals.
- b. What is the number of billing samples used to evaluate the effectiveness of the Energy Savings Kit program?
- c. What is the sample size for the low income evaluation survey?
- d. What is the response rate for the Energy Savings Kits customer satisfaction survey?
- e. Provide the number of Energy Savings Kits distributed from fiscal 2011 (beginning of the program) to fiscal 2015 (end of the evaluation period).
- f. What percentage of Energy Savings Kits survey respondents successfully installed an Energy Savings Kit?
- g. What languages is the Energy Savings Kits customer satisfaction survey provided in?
- h. Are alternative language surveys provided initially or does the customer who receives a survey need to contact BC Hydro to request a survey in another language?
- i. Does BC Hydro collect contact or billing information from Energy Savings Kit program participants at community events?
- j. How many Energy Savings Kits were distributed at pre-qualified events and how many kits is BC Hydro planning to distribute at pre-qualified events during the Test Period?
- k. What determines the sample group of customer accounts used for the Energy Savings Kits recipient bill analysis?
- l. What are the specific characteristics of the control group correlated to Energy Savings Kits recipients?

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- m. Provide the actual number of customers who received an Energy Savings Kit and engaged with the Energy Conservation Assistance Program in fiscal 2019.
- n. Provide the bill savings per household from full participation in the Energy Savings Kits program.
- o. Provide the average annual household bill savings for participants in the Energy Savings Kits program.
- p. Provide the average annual KWh savings for participants in the Energy Savings Kit program.

ORIGINAL RESPONSE:

Part A

The table below updates the information in BC Hydro’s response to BCOAPO IR 1.79.1 to include actuals for fiscal 2019.

	Total Costs (\$ Million)		New Incremental Energy Savings (GWh/yr)	
	Plan	Actual	Plan	Actual ^(Note 1)
F2017	2.5	2.9	2.5	4.5
F2018	2.6	3.5	2.5	5.7
F2019	2.7	3.6	2.5	7.4

Note 1: A contributing factor to actual savings being much higher than the plan amount, while actual spend against budget is not as high, is a result of findings from the Codes and Standards General Service Lighting Evaluation. This evaluation found that compliance with the regulation was lower than expected in the early years, leading to a lower baseline from which to calculate lighting savings within the Low Income program. This led to an increase in savings relative to what was planned, without a corresponding increase in costs.

Part B

The analysis of Energy Savings Kit (ESK) energy savings carried out for the evaluation did not rely on sampling.

For this analysis, all participation records were obtained from the Low Income program tracking database, for a total of 71,187 records between fiscal 2011 and fiscal 2016.

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Some records had to be excluded from the analysis for a variety of reasons, such as:

- Approximately 700 ESK records could not be associated with an account in the billing system due to, for example, data entry errors and test records;
- 7,379 participants did not have individual BC Hydro accounts but were associated with a building-level master account ID in the BC Hydro billing system;
- 884 participants closed their accounts in the fiscal year of program participation;
- Approximately 40 per cent of program participants did not have three years of consecutive consumption data available in the billing system, which was required for the analysis; and
- 1,342 participants were identified as having participated in one or more of the Refrigerator Buy Back, Appliance Rebate, or Residential Behaviour programs. To avoid double counting of savings and to estimate savings purely attributable to the ESK, homes with a record of having participated in other energy conservation programs were excluded from the estimation of average savings per participant.

In total, 38,327 participants were included in the estimation of average savings per participant. The average savings per participant were applied to all 70,475 valid participant records to estimate total savings from the ESK offer. This is a valid approach since all relevant parameters were controlled for in the regression analysis. For further information, please refer to Part L of this response.

Part C

The sample size of the low income evaluation survey was 1004. The low income evaluation surveys were included in the kits distributed to participants. The results of these print surveys were collected on an ongoing basis between March 2014 and November 2015.

Filling out the survey was optional. Respondents mailed in the completed surveys to BC Hydro and the responses were manually entered into a database over time. A total of 460 apartment and 544 house survey responses were collected and used for the evaluation.

Part D

The survey response rate was not reported in the evaluation report but can be estimated. Program participation averaged approximately 9,600 kits per year from

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fiscal 2014 to fiscal 2016. The survey responses cover a period of 21 months, during which approximately 16,860 kits would have been distributed, yielding an approximate response rate of 6 per cent.

The survey methodology for ESKs changed in January 2018. Currently, customers receiving a kit are emailed a survey 30 days after their kit has shipped. The email reminds them to install the kit items and invites them to fill out a survey. A review of responses received shows that between January 2018 and December 31, 2019 27,378 kits were distributed and 3,597 surveys have been completed, yielding a response rate of 13 per cent.

Survey research for the low income program was conducted to understand the program market, assess the participant experience, and gather basic data on installation rate of measures in the kit. The evaluation of net energy savings achieved by the program did not rely on survey data. The survey response rates are adequate for the intended purposes, since they yield sample sizes that ensure low sampling error.

Part E

ESK participation by fiscal year for the period covered by the evaluation (fiscal 2011 to fiscal 2016) is provided in the table below.

Fiscal Year	Participation
F2011	20,305
F2012	13,180
F2013	8,086
F2014	8,921
F2015	9,493
F2016	10,490
Total	70,475

Part F

Installation rates of ESK products were reported in various tables in the evaluation report and based on survey responses received between March 2014 and November 2015. The tables are reproduced below.

In fiscal 2015 and fiscal 2016, the ESKs were customizable. Depending on whether a participant lived in an apartment or a house, they could request a different number of items per kit component. For example, participants living in apartments

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could receive up to three light bulb while those living in a house could receive up to four.

Reported installation rates were similar between apartments and houses, with a few exceptions. The following two tables summarize the average installation rate per product for ESK participants living in houses and in apartments. A third table lists installation rates for draft-proofing measures that were included in both apartment and house kits.

**Average Installation Rates Among ESK House
Participants: March 2014 to November 2015**

Product	1 (%)	2 (%)	3 (%)	4 (%)	None (%)	Don't Know (%)
CFL light bulbs	1	7	16	75	1	1
Window insulator film	10	11	11	23	41	4
Bathroom tap aerator	46	37	N/A	N/A	11	3
Water-saving showerhead	50	36	N/A	N/A	12	2
Kitchen tap aerator	78	N/A	N/A	N/A	17	4
LED night light	96	N/A	N/A	N/A	3	1
Refrigerator thermometer	92	N/A	N/A	N/A	7	2
Foam pipe wrap	9	25	50	2	11	3

**Average Installation Rates Among ESK Apartment
Participants: March 2014 to November 2015**

Product	1	2	3	None	Don't Know
CFL light bulbs	9	11	77	4	1
Window insulator film	15	34	N/A	45	6
Bathroom tap aerator	69	13	N/A	16	2
Water-saving showerhead	62	14	N/A	23	2
Kitchen tap aerator	79	N/A	N/A	18	3
LED night light	95	N/A	N/A	5	1
Refrigerator thermometer	93	N/A	N/A	7	2

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**Average Installation Rates for ESK Draft-proofing
Products: March 2014 to November 2015**

Product	None	Some	All	Don't Know
Foam weather strip	23	37	38	4
V-Seal weather strip	24	39	33	5
Outlet sealers	10	33	56	1
Light switch sealers	13	34	53	1

Draft-proofing products such as foam and v-seal weather strips were included in both apartment and house kits. Electrical outlet and light switch sealers were only included in the house kits. For draft-proofing products, the survey asked respondents to indicate whether they installed none, some or all of the products.

Part G

The ESK participant surveys were distributed in English and were not translated into any other languages.

Part H

The ESK participant surveys were not available in any language other than English.

Part I

BC Hydro's Outreach Team distributes kits at pre-qualified community events. To receive a kit, the customer provides the following information:

- First Name;
- Last Name;
- Phone;
- Email address;
- Dwelling type;
- Rent or own;
- Mailing address; and

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- **Whether they consent to be contacted about the program or other conservation-related programs by BC Hydro (opt-in).**

Individuals do not need to provide their BC Hydro account number or declare their income to receive an ESK.

Part J

Targets for ESK distribution at pre-qualified events over the Test Period are as follows:

- **Fiscal 2020: 2,200; and**
- **Fiscal 2021: 2,750.**

In fiscal 2020 (to the end of February 2020), 1,520 ESKs were distributed through pre-qualified events. This includes ESKs distributed at pre-qualified community events by BC Hydro's Outreach team as well as ESKs distributed directly by community partners. Please note that if the kits are distributed by community partners, individual contact information is not collected.

The targets originally included distribution to Indigenous communities in the integrated service areas. However, Indigenous communities are now receiving a customized kit along with salary support for installers, and we have now planned to track the distribution of these kits separately. To date, while there have been no completed installations reported in Integrated indigenous communities, three communities have signed agreements to install kits in a total of 143 homes. Installations are in progress.

Part K

As indicated in the response to Part B, the methodology for energy savings analysis did not rely on sampling of participants.

Part L

To ensure that the comparison group used in the analysis of ESK energy savings matched the important characteristics of the participant group, the evaluation used a variation in adoption (VIA) approach, meaning that the comparison group was comprised of future program participants that had not yet participated in the program in the fiscal year being analyzed.

The comparison group was roughly equivalent to the treatment group on a range of observable factors that were thought to influence the outcome of program

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participation, including income level and electricity consumption prior to participation. Any remaining observable differences between the treatment and comparison groups were controlled for in the modelling process by including variables in the statistical model to account for the differences in:

- Region;
- Owner / renter status;
- Space heating type;
- Water heating type;
- Weather;
- Number of household occupants; and
- Building age.

VIA is a well-known and appropriate method of designing a comparison group that is similar to program participants. Later participants used in the comparison group are known to be low income because they were deemed eligible for the program.

Part M

The table below updates BC Hydro's response to BCSEA IR 1.44.1 to provide the actual number of participants in the ESK Program and the Energy Conservation Assistance Program (ECAP) in fiscal 2019.

	Plan	Actual
Energy Savings Kits	16,000	17,277
Energy Conservation Savings Program	3,040	3,842
Total	19,040	21,119

Part N

Modelling estimates show that a fully installed ESK in an electrically space heated and electric hot water heated single family home could save up to \$131 per year.

Electricity bill savings would be lower in homes that do not have electric space and water heating or if not all measures in the kit are needed and installed.

These figures are based on BC Hydro's Residential Inclining Block Step 2 electricity rate of \$0.1417\$/kWh in Rate Schedules 1101 and 1121.

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Part O

Average bill savings for installing an ESK are estimated based on the evaluation findings that average household energy savings range from 262 kWh to 316 kWh per year. Applying the current Step 2 rate of 0.1417 \$/kWh, average bill savings are estimated at \$37.12 to \$44.78 per year. This is an average estimate across all household types, and includes both electrically heated, and non-electrically heated homes.

Part P

Average annual kWh savings per household for ESK participants are provided in the table below, by fiscal year.

Fiscal Year	Participation	Evaluated Unit Savings (kWh/yr)
F2011	20,305	262
F2012	13,180	263
F2013	8,086	309
F2014	8,921	316
F2015	9,493	277
F2016	10,490	284
Total	70,475	-

SUPPLEMENTAL RESPONSE:

In response to a follow-up from BCOAPO, BC Hydro provides, in the table below, the average annual consumption of the ESK participants, whose savings are shown in Part P above.

Fiscal Year	Average annual consumption of ESK Participants (kWh)
F2011	8,773
F2012	8,757
F2013	8,916
F2014	8,732
F2015	8,616
F2016	9,381

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Please note that the data in this table represents the consumption of the participants after they have participated in the ESK offer.