



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

Log No. 40806

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

**VIA EMAIL**

electricity.regulatory.affairs@fortisbc.com

November 23, 2012

**FORTISBC INC. – CPCN FOR THE  
ADVANCED METERING INFRASTRUCTURE PROJECT EXHIBIT A-15**

Mr. Dennis Swanson  
Director, Regulatory Affairs  
Regulatory Affairs Department  
FortisBC Inc.  
Suite 100, 1975 Springfield Road  
Kelowna, BC V17 7V7

Dear Mr. Swanson:

Re: FortisBC Inc.  
Application for a Certificate of Public Convenience and Necessity  
for the Advanced Metering Infrastructure (AMI) Project  
Procedural Conference Proposed Agenda and Regulatory Timetable

Further to Commission Order G-124-12, which amended the Regulatory Timetable with respect to the above noted Application, enclosed please find Commission Information Request No. 2. In accordance with the Regulatory Timetable, please file your responses electronically with the Commission by Friday, December 14, 2011 in accordance with the Commission's Document Filing Protocols, effective May 16, 2005.

Yours truly,

Erica Hamilton

cms  
Enclosure

cc: Registered Interveners

**FortisBC Inc.**  
**Application for a Certificate of Public Convenience and Necessity  
for the Advanced Metering Infrastructure Project**

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**1.0 Reference: Description of Existing System**  
**Exhibit B-6, BCUC IR 1.5.1**  
**Failure of existing electromechanical meters**

“The following describes how the model used simulates the lifespan of the meter:

- Each year a lot came up for compliance testing, **a random number from 1-10 was generated**. This random number was used to determine the outcome of the testing process. For example, if targeting level 3, a random number of 1-4 meant the lot was assigned to level 3, a random number of 5-7 corresponded to a level 4 and if the random number was between 8-10 then the lot was assumed to fail testing;
- Based on this predicted level, an extension period was assigned to the compliance group, and used to calculate a new seal date;
- A meter was replaced either when it was predicted to fail compliance testing by the model, or at the expiry of its seal date after reaching level 4;
- This procedure was repeated sufficiently to simulate the entire life of the meter.

Based on the model used by FortisBC, all electro-mechanical meters are expected to have failed statistical testing and therefore will need replacement by 2034. It should be noted that more than half of these replacements are predicted to occur in the first 6 years as evidenced by the following table.” [Ref: Exhibit B-6, p. 10] [emphasis added]

- 1.1 Please explain if the model was run once, with one set of random numbers, or a number of times to produce a range of results. If a range was calculated, are the results presented the average of these results?
- 1.2 Please explain at what future date all the existing 35,000 digital meters will have failed statistical testing and require replacement.
- 1.3 Please show how the potential integration of the Kelowna 15,000 meters affects the results for both the electro-mechanical and the digital replacements.
- 1.4 Please explain the concepts of “replacements”, “exchanges”, and how they interrelate.
- 1.5 Please explain how the 11,131 meters in the “exchanges” column of the response to BCUC IR 1.5.1 relate to the 18,055 meter exchanges in the Status Quo section of the response to BCUC IR 1.48.3. Please provide the relevant numbers of electro-mechanical and digital meters being exchanged.

**2.0 Reference: Project Need  
Exhibit B-6, BCUC IR 1.13.1  
Order C-11-07  
Historical perspective - Distribution Substation Automation Program (DSAP)**

“referenced page 11 of Appendix A to Order C-11-07, which states: ‘The Commission Panel therefore concludes that replacing the existing legacy technology with new electronic technology is appropriate.’”  
[Ref: Exhibit B-6, p. 28]

2.1 Please confirm whether the reference relates to substation automation or customer metering.

**3.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.15.2  
Financial Benefits to FortisBC**

3.1 Please explain and quantify any non-ratepayer financial benefits of the proposed AMI project that will accrue to FortisBC.

**4.0 Reference: Project Need  
Exhibit B-6, BCUC IR 1.16.2  
Conservation Rate Structures**

“If the CIP savings were included in the AMI project analysis, there would be no change in project costs and the NPV of the project would improve to an estimated \$20.9 million.” [Ref: Exhibit B-6, p. 31]

4.1 Please confirm, or otherwise explain, that if the Customer Information Portal (CIP) savings were included in the Net AMI project analysis, the NPV of the project would improve by \$3.3 million.

**5.0 Reference: Project Description  
Exhibit B-6, BCUC IRs 1.33.1, 1.48.3, 1.105  
Exhibit B-1, Table 5.1a, p. 70  
Exhibit B-11, CEC IR 1.50.7  
Continued Manual Meter Reads**

“Response: FortisBC would need to install a meter without RF radios or a meter with RF radios that are inactive.” [Ref: Exhibit B-11, CEC 1.50.7, p. 864 of 946]

5.1 Please confirm, or otherwise explain, that using 2016 for comparison the cost for manual meter reads, primarily due to the locations involved, will increase approximately 8.5 times from \$22.55 to \$192.69 per year per customer meter, a differential of \$170.14 per year.

5.2 Please confirm, or otherwise explain, that 1 percent of the anticipated 123,293 meters in 2016 would be 1,233 meters.

5.3 Please confirm, or otherwise explain, the cost of changing out a meter is projected to be \$198.36 in 2016 as indicated in the response to BCUC IR 1.48.3, and the cost of a digital meter is \$30.11 in 2012 as indicated in BCUC IR 1.105.2.

- 5.4 Please also confirm, or otherwise explain, that the cost of acquisition and deployment of the AMI meters will be \$20.323 million as indicated in Table 5.1a on page 70 of Exhibit B-1, and for the 116,410 AMI meters in 2013/2014 would be an average cost of approximately \$209.50 per meter.
- 5.5 Please confirm, or otherwise explain, that it is more cost effective to install an AMI meter than to install a digital meter and later change it out to an AMI meter.
- 5.6 Please confirm, or otherwise explain, that an AMI meter can be installed with the RF transmission capability disabled, and the RF transmission capability can be enabled remotely should a new customer at that location request it. Please provide the incremental costs involved.
- 5.7 Please confirm, or otherwise explain, that if a customer requested a meter without RF transmission enabled, a charge of \$170.14 per year, for 2016, would keep the other ratepayers whole.

**6.0 Reference: Project Description  
Exhibit B-6, BCUC IR 1.47.3  
Meter Deployment and Customer Safety**

“FortisBC performed **54,640 meter installations, removals or replacements in the period from 2006 through 2011. During this period there were 13 reported meter incidents where some form of meter base damage occurred or was identified.** Further, FortisBC has checked its records and has found no evidence of any damage to customer property (other than the meter base) that has occurred as a result of a meter installation, removal or replacement.

FortisBC has conservatively **budgeted for over 1,000 meter base replacements as part of the AMI project** budget to help ensure that any identified issues with customers’ meter bases can be repaired with minimal customer inconvenience.” [Ref: Exhibit B-6, BCUC IR 1.47.3, p. 88] [emphasis added]

- 6.1 Please provide the amount budgeted for the over 1,000 meter base replacements as part of the AMI project.

**7.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IRs 1.54.0, 1.82.4  
Exhibit B-11, CEC IRs 1.18.1, 1.22.0, 1.66.1, and 1.77.2  
Theft Analytics**

“FortisBC has previously tested a manual approach to energy balancing at the **feeder** level as a means of theft detection and has concluded that the installation of **feeder** meters without the accompanying advanced meters as an effective tool to identify electric theft is not practical for the following reasons.

- It is not possible to accurately synchronize the meter readings on the **feeder** meters with the cumulative consumption recorded by the current meter system as the readings cannot be collected simultaneously, (it takes a meter reader several hours to read a route and each feeder may have several routes which are read on different days depending on the geography and customer population).

- If one accepts inaccuracies introduced by a manual meter reading approach to energy balancing at the **feeder** level, specific theft identification would still require repeated manual re-reading of meters downstream of primary metering to begin locating the source of unusual losses.

The repeated and non-standard nature of the manual meter readings required for this type of energy balancing would alert electricity thieves to the theft detection activities of the Company.”

[Ref: Exhibit B-6, BCUC IR 1.82.4, pp. 184-185] [emphasis added]

“The geographic area will vary depending on customer density on the **feeder**. Initial investigation on urban **feeders** will target approximately groups of 150 sites. For rural **feeders** the proposed target is groups of 50 sites.” [Ref: Exhibit B-11, CEC 1.22.1.2, p. 825 of 946] [emphasis added]

“The deployment of the proposed distribution metering to assist in identifying energy theft is not effective in the absence of advanced meter deployment at the customer premise. Energy balancing requires the simultaneous reading of **feeder** and customer meters to identify losses. This is not possible with the current meter technology which is manually read on a 60 day cycle.”

[Ref: Exhibit B-11, CEC 1.22.1.3, p. 825 of 946] [emphasis added]

“FortisBC has readers working out of 7 different offices throughout its territory. Due to the different headquarters which present diverse challenges in each region, **on average a meter reader reads approximately 160 meters per day**. The maximum number a reader could read in a day would be 1,100 meters.” [Ref: Exhibit B-11, CEC IR 1.66.1, p. 886 of 946] [emphasis added]

“The **feeder** will then continue to be divided into more granular sections using **feeder** metering until the source of loss is precisely identified at a particular meter.”

[Ref: Exhibit B-11, CEC 1.77.2, p. 903 of 946] [emphasis added]

- 7.1 Please confirm, or otherwise explain, that if electricity thieves were deterred by sight of the Revenue Protection activities this would likely result in decreased or reduced theft which would be a positive result.
- 7.2 Please confirm, or otherwise explain, the response to CEC IR 1.18.1 lists the 129 distribution feeders and the 146,583 customer endpoints for an average of 1,136 customer endpoints per feeder.
- 7.3 Please provide an estimate of the average number of customer endpoints per transformer on a feeder, and compare this number to the average meter reader reads per day, and to the 50-150 sites limit identified in the response to CEC IR 1.22.1.2.
- 7.4 Please explain why the same theft analytics concepts as proposed under the AMI project cannot be implemented in a Status Quo scenario using the portable Meters on the transformation in an area; tagging the customer data by transformer in the customer system all meters downstream of each transformer; collecting the meter reads for the area downstream of a specific transformer on a single meter read day; reading the transformer meter on the same day; and comparing the results over a period of 1-3 months.

**8.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.55.3  
Non-Project Capital**

“The Measurement Canada compliance capital line item refers to the cost to replace FortisBC’s electro-mechanical and small-batch digital meter fleet, based on an accelerated end of life resulting from the new Measurement Canada SS-06 regulations. These numbers do not include the cost of the compliance sampling activities. The costs in each year are directly correlated to the number of meters having their seals expire in a given year. The quantity of expirations in each year was estimated by a model that is described in the response to BCUC IR 1.5.1. In practice, it is possible that FortisBC would have applied to replace the meters more quickly than the model indicates if customer concerns arose about the accuracy of electromechanical meters.

More pronounced peaks are due to increased meter seal expirations in a given year due to large lot sizes or several large groups expiring together.

The following table outlines the predicted number of electro-mechanical and small-batch digital meter replacements between 2014 and 2034.” [Ref: Exhibit B-6, BCUC IR 1.55.3, pp. 126-127]

- 8.1 Please explain why the table provided in the response to BCUC IR 1.55.3 is exactly the same as the table provided in the response to BCUC IR 1.5.1 for the years 2026 through 2031. Does this indicate there would be no small batch digital meters requiring replacement in that period, but there would be a large number of small batch digital meters to be replaced in 2032?

**9.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.58.1  
Exhibit B-1-1, Excel Document: “FortisBC – AMI Excel NPV Analysis – 05Oct12”  
New Operating Costs**

- 9.1 Please explain why the labour costs drop \$20 thousand in 2019 as indicated in the table provided in the response to BCUC IR 1.58.1. Table BCUC IR 1.58.1.3 appears to indicate the business analyst salary begins decreasing in 2019.

- 9.2 Please explain why the new operating expenses as indicated on line 46 (row 57) of the Gross AMI tab of the NPV spreadsheet are not the same as those in the table provided in the response to BCUC IR 1.58.1.

**10.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.60.2  
New staffing – Business Analysts**

“With the Itron system there are a variety of event types, including power loss/restore, tamper, tilt, low battery alarms, and voltage alarms, that would be handled by the two additional resources.

Itron does not have documentation detailing anticipated number of expected events and time to process/correct these events. These numbers will be dependent on many factors, notably FortisBC’s decisions regarding configuration of events and alarms, automation of various processes, and the proficiency of the analysts. Configuration of the events and alarms and automation of various processes will be determined during the design phase of the project.” [Ref: Exhibit B-6, BCUC IR 1.60.2, p. 146]

10.1 Please confirm, or otherwise explain, that the types of events described in the response to BCUC IR 1.60.2 would indicate a very small number of actual events; power loss/restore would be the highest, but this will be part of an automated system installed for the PLTs; tamper, tilt, low battery and voltage would appear to be a very small number; of these, tamper and tilt would be theft items and handled by the Revenue Protection staff; and low battery and voltage events would be system maintenance/PLT related and handled by those staff.

**11.0 Reference: Project Costs and Benefits  
Exhibit B-1, BCUC IR 1.62.1  
New staffing – System Analysts**

11.1 Please explain why 2 new systems analysts would be required to support the AMI systems when there are only 2 systems analysts supporting the CIS. Note: The database administrators are separate from these positions.

**12.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IRs 1.1.63, 1.1.64  
New staffing – part-time Telecom Engineer**

12.1 Please confirm, or otherwise explain, that a Communications Technician troubleshoots, fixes, replaces and installs network devices and a Telecom Engineer plans, coordinates and optimizes the telecommunications field network of devices. Please advise if the engineer position is union exempt.

**13.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.66.1  
Exhibit B-11, CEC IR 1.70.0, pp. 101-104 [pages 892-895 of 946 pages]  
AMI 2012-11-08 Procedural Conference Transcript, p.33  
Probable integration of Kelowna – significance**

- “ • Meter Growth and Replacement Sustaining Capital increases \$0.655 million, or **15%**;
- Total Sustaining Capital (including avoided Measurement Canada compliance costs) reduces \$1.182 million, or **45%**;
- Operating Expenses reduces \$8.4 million, or **20%**. And
- Theft Reduction benefit increases \$11.7 million, or **12.5%**.

In summary, the Company anticipates that the addition of the City of Kelowna improves the overall customer benefit to approximately \$23 million.” [Ref: Exhibit B-11, CEC IR 1.70.1, p. 102] [emphasis added]

“I simply use this opportunity to flag, **although it's not a significant issue** in the sense of, it wouldn't have a significant impact on the AMI application, just for completeness, FortisBC will be submitting an application shortly to the Utilities Commission to acquire the city of Kelowna's electrical utility. And as part of that, or derived from that, FortisBC will be filing some additional written evidence that will show the impact of the AMI project if it occurred that both the AMI project and the city of Kelowna acquisition were approved. So **it's not an issue that has a significant impact**, but I just didn't want to pass by this without raising it as something that will be coming forward.” [Ref: 2012-11-08 Procedural Conference,

p. 33] [emphasis added]

- 13.1 Please confirm, or otherwise explain, the probable integration of Kelowna into the AMI Project will increase the overall customer benefit by \$5.8 million, from a NPV of \$17.6 million to \$23.4 million.
- 13.2 Please explain what magnitude of change to the AMI project benefits NPV would be viewed by FortisBC as a significant change.
- 13.3 Please confirm, or otherwise explain, the amounts in Table 4.1.a of Exhibit B-1-2 for meter growth and replacement, total sustaining capital and theft detection contain typographical errors and do not affect the integrity of the financial model presented in Exhibit B-1-3.

**14.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.91.1  
Exhibit B-1, Section 5.1, pp. 90-91  
Exhibit B-11, BCPSO IR 1.47.1  
Disconnect/reconnect**

“The management of vacant premises can involve multiple vehicle trips to each identified vacant site. An initial trip is required to confirm vacant site status or to leave notification for the occupants of the requirement to contact the Company to establish an account. A second trip is often required to either disconnect the premises, or to leave another tag advising the occupant to contact the Company to avoid any interruption in service. The process is time consuming, labour intensive, and thus expensive, particularly as multiple vehicle trips are required before resolution occurs (1 - 2 for disconnect and 1 for reconnect).” [Ref: Exhibit B-1, p. 90]

“FortisBC assumed that a CSP will still require one visit to 50 percent of vacant premises and 100 percent of premises scheduled for disconnection due to non-payment.” [Ref: Exhibit B-1, p. 91]

“Site visits will continue to be performed in advanced of disconnections in many cases (to assess the premise for risks and to hang a door tag), as referenced in the preamble to this question, so there will continue to be costs related to disconnections. Savings related to the actual disconnection and reconnection of service are expected to be roughly equal.” [Ref: Exhibit B-6, BCUC IR 1.91.1, p. 219]

“What portion of FortisBC’s annual disconnects (e.g. 7,700 in 2011) are for non-payment as opposed to for vacant premises? Response: Approximately 40 percent of disconnects are for non-payment.” [Ref: Exhibit B-11, BCPSO IR 1.47.1, p. 30 [page 31 of 946]

Remote Disconnect/Reconnect	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17
Total Meters in Service [IR 48.3]	116,410	118,734	121,059	123,293	125,502
Meters Increase [calc]		1,020	1,020	1,018	1,018
Status Quo service calls [calc from 2013]	7,935	8,093	8,252	8,404	8,555
AMI service calls [IR 48.3]	7,935	6,066	2,062	420	428
Reduction by AMI [calc]	(0)	(2,027)	(6,190)	(7,984)	(8,127)
Reduction % by AMI [calc]	0%	25%	75%	<b>95%</b>	<b>95%</b>
Vacant - Status Quo - visits [B-1, p. 90]	2.5	2.5	2.5	2.5	2.5
Vacant - 60% of service calls [BPSCO 47.1]	4,761	4,856	4,951	5,043	5,133
ST Visits [calc]	11,903	12,140	12,378	12,606	12,832
Non-payment - Status Quo - visits [B-1, p. 90]	3	3	3	3	3
Non-payment - 40% of calls [calc]	3,174	3,237	3,301	3,362	3,422
ST Visits [calc]	9,522	9,712	9,902	10,085	10,266
Status Quo Total Visits [calc]	21,425	21,852	22,280	22,691	23,098
Vacant - AMI - visits [B-1, p. 91]	5.0	4.5	1.1	1.0	1.0
Vacant - 30% of service calls [calc]	2,381	2,428	2,476	2,521	2,566
ST Visits [calc]	11,903	10,926	2,723	2,521	2,566
Non-payment - AMI - visits [B-1, p. 91]	3	2.5	1.5	1	1
Non-payment - 40% of calls [calc]	3,174	3,237	3,301	3,362	3,422
ST Visits [calc]	9,522	8,093	4,951	3,362	3,422
AMI Total Visits [calc]	21,425	19,019	7,674	5,883	5,988
Reduction in visits by AMI [calc]	0%	13%	66%	<b>74%</b>	<b>74%</b>

- 14.1 Please explain how the savings related to the disconnection and reconnections under AMI can be roughly equal since there will be no service calls for the remote “reconnections”.
- 14.2 Please confirm, or otherwise explain, that the reductions in site visits (service calls) will produce savings of 74% under the AMI scenario (not the 95% savings reported), and this will reduce the \$13.267 million savings to about \$10.334 million.

**15.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.93.1  
Exhibit B-1, Sec. 5.3.5, p. 94  
Meter exchange costs post-AMI**

“The AMI Project will result in the replacement of nearly all existing meters with new AMI enabled meters. This will avoid operating costs that would have been incurred sampling and retesting meters for six years after meter deployment. After year six, the cost of meter exchanges is expected to begin returning to the pre-AMI deployment levels.” [Ref: Exhibit B-1, Sec 5.3.5, p. 94]

Meter Exchanges	Dec-22	Dec-23	Dec-24	Dec-25	Dec-26	Dec-27	Dec-28	Dec-29	Dec-30	Dec-31	Dec-32	Total
Status Quo exchanges [IR 1.5.1]	409	803	259	136	172	271	61	26	43	29	62	2,271
Status Quo exchanges [IR 1.48.3]	942	823	707	478	399	556	460	468	639	256	159	5,887
AMI meters exchanged [IR 1.48.3]	1,872	1,872	1,872	1,872	156	156	156	156	156	156	1,872	10,296
Status Quo exchange cost [IR 1.48.3]	\$256	\$239	\$222	\$183	\$171	\$204	\$189	\$194	\$233	\$157	\$139	\$2,186
AMI exchange cost [IR 1.48.3]	\$421	\$429	\$437	\$444	\$124	\$127	\$129	\$131	\$134	\$136	\$504	\$3,015

- 15.1 Please explain why the meter exchanges reported in BCUC IR 1.5.1 are significantly different from the Status Quo meter exchanges reported in BCUC IR 1.48.3.
- 15.2 Please confirm, or otherwise explain, that the number, and cost, of meter exchanges in the 11 years of the AMI scenario, following the 6 (8?) year hiatus, is significantly higher than in the Status Quo scenario, and how this changes the AMI scenario.

**16.0 Reference: Project Alternatives Considered**  
**Exhibit B-6, BCUC IR 1.105.1**  
**Exhibit B-2, FortisBC 2008 AMI CPCN, Q17.3.5, p.53**  
**New Alternative – phased implementation of advanced meters**

“Changes to National Policy (E-26), “Reverification Periods for Electricity Meters and Metering Installations”, issued September 15, 2004 by Measurement Canada, will result in increased frequency of mechanical demand meter exchanges. The proposed regulation will require that 100 percent of mechanical demand meters be exchanged every four years.”  
 [Ref: Exhibit B-2, FortisBC 2008 AMI, Q17.3.5, p.53]

- 16.1 Please explain what has changed from the time of the FortisBC 2008 AMI Application that has caused the replacement requirement for 100 percent of the electromechanical meters, under the Measurement Canada policy issued in 2004, to go from 4 years to 21 years.

**17.0 Reference: Project Alternatives Considered**  
**Exhibit B-6, BCUC IR 1.105.3**  
**New Alternative – phased implementation of advanced meters**

“Results: NPV of net customer benefit becomes a cost of \$10.830 million.”  
 [Ref: Exhibit B-6, BCUC IR 1.105.3, p. 245]

- 17.1 Please confirm, or otherwise explain, the NPV of the Status Quo with Kelowna integration is a cost of \$7.089 million compared to the scenario in BCUC IR 1.105.3 referenced above.
- 17.2 Please provide a working spreadsheet with the project NPV for a scenario that changes the assumptions used in the response to BCUC IR 1.105.3 to have:
  - > inclusion of the Kelowna integration;
  - > labour costs increasing at 3% per year, vehicle costs increasing at 5% per year, and general inflation increasing at 2% per year;
  - > depreciation of the AMI meters over 25 years instead of 20 years;
  - > the meter fleet converted to AMI meters:
    - i. 25% by 2016
    - ii. 50% by 2019
    - i. 100% by 2024 (instead of only 75%);
  - > inclusion of the CIP benefit referenced in BCUC IR 1.16.2; and

- > inclusion of a \$4.9 million cost in the Status Quo for the recovery of the 2008 and 2012 AMI application costs.

17.3 Please provide the NPV of the scenario described immediately above with no theft related benefits in either the Status Quo with Kelowna or the phased AMI implementation with Kelowna.

17.4 Please advise if FortisBC would undertake, as a condition of approval of the AMI Application, to guarantee the impact to the Revenue Requirement of the minimum “Theft” benefits included in a final, approved base AMI scenario required to have a project NPV of zero.

**18.0 Reference: Project Environment  
Exhibit B-6, BCUC IR 1.114.1  
Use of another companies installed MDMS (Meter Data Management System)**

18.1 Please confirm, or otherwise explain, that FortisBC would technically be able to utilize a MDMS installed at another company since the data from the AMI meters is collected using the internet.

18.2 Assuming use of the MDMS of a company the size of BC Hydro, please explain the change in the AMI project with Kelowna NPV if the capital cost and depreciation related to the IT systems was only 6.5% of the amount included in the AMI with Kelowna scenario.

**19.0 Reference: Project Description  
Exhibit B-6, BCUC IR 1.37.1  
Itron Contract**

“FortisBC has one procurement contract for the proposed AMI project, with Itron, dated March 19, 2012 for approximately \$21 million.” [Exhibit B-6, BCUC IR 1.37.1]

19.1 Please provide a copy of the complete March 19, 2012 contract between FortisBC and Itron for the proposed AMI project.

- 19.1.1 If there is a separate contract between Itron and Fortis BC related to the disposal of the existing meters, please provide a complete copy of this contract.

**20.0 Reference: Project Costs and Benefits  
Exhibit B-1, Tab 4.0, Section 4.2.2, p. 55-56; Order G-50-10; Exhibit B-6, BCUC IR 1.37.1  
Accounting Treatment of Existing Meters**

“The AMI solution proposed by Itron will provide ... [for the] deployment of customer meters including removal and disposal of existing meters in an environmentally safe and efficient way.” [Exhibit B-1, Tab 4.0, Section 4.2.2, p. 55]

“Meter disposal is included in the Itron-managed deployment activities. FortisBC will conduct random audits of the recycling / disposal process to ensure compliance with all applicable environmental regulations.” [Exhibit B-1, Tab 4.0, Section 4.2.2, p. 56]

“FortisBC has one procurement contract for the proposed AMI project, with Itron, dated March 19, 2012 for approximately \$21 million.” [Exhibit B-6, BCUC IR 1.37.1, p. 66]

The 2010 CPCN Guidelines outlined in Commission Order G-50-10 include the following Application Requirement:

“A schedule and supporting discussion comparing the project and feasible alternatives in terms of social and environmental factors, and the applicant’s assessment regarding the overall social and environmental impact of the project relative to the overall impact of the feasible alternatives.” [Appendix A to Order G-50-10, p. 6]

- 20.1 Please list the environmental regulations applicable to Itron’s disposal of the existing meters.
- 20.2 Please describe the process that will be undertaken by Itron in order to collect, remove and dispose of the existing meters “in an environmentally safe and efficient way” and specifically address whether the removal and disposal includes recycling, disposal and/or sale of the existing meters.
- 20.3 Please discuss the overall environmental impact of the removal and disposal of the existing meters under the proposed AMI project.
  - 20.3.1 In Fortis BC’s opinion, is the environmental impact of disposing of the existing meters outweighed by the potential future conservation rate structures made possible with AMI implementation? Please discuss.

**21.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IRs 1.37.1, 1.39.1, 1.72.1 -1.72.2  
Accounting Treatment of Existing Meters**

“The existing meters are to be removed from service under the terms of the deployment contract for the smart meters. The Company assumed the cost of removal would be offset by any scrap value as they were disposed of.” [Exhibit B-6, BCUC IR 1.72.1]

“The cost of disposal [of the existing meters] is included in the contracted deployment cost and has not been separately estimated.” [Exhibit B-6, BCUC IR 1.72.2]

“Itron is required to apply any potential value from the digital meters against the cost of recycling / disposing of the meters [Exhibit B-6, BCUC IR 1.39.1]

“FortisBC has one procurement contract for the proposed AMI project, with Itron, dated March 19, 2012 for approximately \$21 million.” [Exhibit B-6, BCUC IR 1. 37.1]

- 21.1 Please estimate the total salvage value of the complete existing meter population to be disposed of under the proposed AMI project. Please provide the estimate on both a per unit basis and a total basis.
- 21.2 Please estimate the total costs to remove and dispose of the complete existing meter population to be disposed of under the proposed AMI project.

- 21.3 The Fortis BC response to BCUC IR 1.72.1 notes that Fortis BC has ‘assumed’ that the salvage value will be offset by the cost of removal. Please discuss the process undertaken and the specific information considered by Fortis BC in order to conclude that this is a sound assumption.
- 21.4 The Fortis BC response to BCUC IR 1.72.2 notes that the “the cost of disposal is included in the contracted deployment cost and has not been separately estimated.” Does this statement mean that the estimated cost of disposal is included in the \$21 million Itron contract cost? If not confirmed, please explain otherwise. If confirmed, please provide the monetary value assigned to the cost of disposal in the Itron contract.
- 21.4.1 Is the cost of disposal included in the Itron contract a fixed contract cost? If confirmed, please provide the amount. If not confirmed, please explain how the variable cost will be accounted for.
- 21.5 Please confirm if the estimated salvage value of the existing meters is included as an offset to the \$21 million cost of the Itron contract. If not confirmed, please explain otherwise. If confirmed, please provide the monetary value assigned to the cost of disposal by Itron.
- 21.5.1 Is the salvage value included in the Itron contract a fixed amount? If confirmed, please provide the amount. If not confirmed, please explain how the variable cost will be accounted for.
- 21.6 Does Fortis BC or Itron (or both) bear the responsibility of ensuring that an appropriate salvage value is received for the existing meters? Please explain.
- 21.6.1 In the event that the salvage value of the existing meters exceeds the removal and disposal costs, is Itron required to credit Fortis BC with the difference? Please discuss.
- 21.6.2 In the event that the removal and disposal costs exceed the salvage value of the existing meters, is Fortis BC required to pay Itron the difference? Please discuss.
- 21.7 Please discuss how Fortis BC plans on accounting for the disposal costs of the existing meters. Specifically, please discuss if such costs are will be treated as operating or capital costs, and provide an explanation as to why the accounting treatment was selected.
- 21.8 Please discuss how Fortis BC plans on accounting for the salvage value of the existing meters. Specifically, please discuss if such costs are will be treated as operating or capital costs, and provide an explanation as to why the accounting treatment was selected.

**22.0 Reference: Project Costs and Benefits  
Order G-50-10; “Regulated Utilities Manual: A Service for Regulated Utilities”<sup>1</sup>  
Revenue Requirement Impact**

According to p. 7 of the “Regulated Utilities Manual: A Service for Regulated Utilities” published by Deloitte., the calculation of a utility’s “revenue requirement” and the calculation of “customer rates” form two separate steps in the ratemaking process:

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<sup>1</sup>[http://www.ipu.msu.edu/library/pdfs/Deloitte%20Regulated%20Utilities%20Manual%20rebranded%20042012%20\(1\).pdf](http://www.ipu.msu.edu/library/pdfs/Deloitte%20Regulated%20Utilities%20Manual%20rebranded%20042012%20(1).pdf)

“Ratemaking ordinarily occurs in two steps: (1) the determination of total allowable revenues for the utility [the revenue requirement] and (2) the establishment of individual rates or rate schedules for various classifications of customers that will yield this amount. Individual rates are in theory based on an individual utility’s specific cost of service, including cost allocations.”

According to p. 8 of the “Regulated Utilities Manual: A Service for Regulated Utilities” published by Deloitte, the cost-of-service ratemaking methodology is one process used to determine the total allowable revenues for a utility. The cost-of-service ratemaking methodology is described as follows:

“[the] method [that] equates “revenue requirements” or “cost of service” with the total of: operating expenses, depreciation, taxes, and a rate-of-return allowance on the utility’s investment in rate base.”

Commission Order G-50-10 outlines the CPCN Application Guidelines for utilities filing for CPCN approval with the BCUC. Appendix A, Section 2 of Order G-50-10 outlines the CPCN “Application Requirements”, including the following requirements to support the “Project Need, Alternatives and Justification”:

“(iii) A schedule calculating the revenue requirements of the project and feasible alternatives, and the resulting impact on customer rates;

(iv) A schedule calculating the net present values of the incremental cost and benefit cash flows of the project and feasible alternatives, and justification of the length of the term and discount rate used for the calculation.”

Exhibit B-1 of the 2012-2013 Revenue Requirement and Review of ISP proceeding notes the following in Tab 3, p. 11<sup>2</sup>:

“System losses consist of:

1. Losses in the transmission and distribution system;
2. Company use;
3. Losses due to wheeling through the BC Hydro system; and
4. Unaccounted-for energy (meter inaccuracies and theft)

Losses are calculated by using a two year rolling average. The actual gross loss rate for 2012 is the average of the 2009 rate of 9.23 percent and the 2010 rate of 8.42 percent, which is 8.82 percent. The loss rate for 2013 is further reduced to 8.76 percent due to the AMI-based loss reduction program.”

Commission Order G-112-12 concerning the 2012-2013 Revenue Requirements and Review of 2012 Integrated System Plan notes the following in directive 1.c.:

“The proposed Deferral Account for Power Purchase Expense variances from forecast is approved and is to be amortized in rates in 2014.”

- 22.1 Does Fortis BC agree with the Deloitte manual quoted in the preamble to this IR that ratemaking occurs in two steps, including “(1) the determination of total allowable revenues for the utility [the revenue requirement] and (2) the establishment of individual rates or rate schedules for

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<sup>2</sup> [http://www.bcuc.com/Documents/Proceedings/2011/DOC\\_28031\\_B-1\\_FBC-Revenue-Requirements-Application.pdf](http://www.bcuc.com/Documents/Proceedings/2011/DOC_28031_B-1_FBC-Revenue-Requirements-Application.pdf)

various classifications of customers that will yield this amount.”? If Fortis does not agree, please discuss Fortis’ alternative position on the ratemaking process.

22.1.1 Does Fortis BC agree that the following CPCN Application Requirement per Order G-50-10 is also a two-step process, given the distinction between the “revenue requirement” and “customer rates”? If not, please explain why not.

“(iii) A schedule calculating the revenue requirements of the project and feasible alternatives, and the resulting impact on customer rates;”

22.2 Please confirm if Fortis BC agrees with the following definition of a “revenue requirement” provided by Deloitte:

“[the] method [that] equates “revenue requirements” or “cost of service” with the total of: operating expenses, depreciation, taxes, and a rate-of-return allowance on the utility’s investment in rate base.” [“Regulated Utilities Manual: A Service for Regulated Utilities”, p. 8]

If not confirmed, please provide Fortis BC’s opinion on what the appropriate definition of a revenue requirement should be.

**23.0 Reference: Project Costs and Benefits  
Exhibit B-6-5, BCUC IR 1.97.2.1; Exhibit B-1-1, Excel Attachment, Tab “Theft Reduction”  
Revenue Requirement Impact, Theft Benefit**

“The Company submits that the forecast theft reduction benefits results in both a reduction of FortisBC’s annual revenue requirement and an increase in net billable load. The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being deterred from operating in FortisBC’s service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity.” [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

“The Company has not prepared the financial analysis of the AMI Project based on the impact of the theft reduction benefit on net billable load, but rather has treated the incremental revenue resulting from theft reduction as an offset to the revenue requirement, which produces a reasonable approximation of the impact to customer rates. For example, if it is assumed that revenue requirements were \$327M and the net billable load were 3,100 GWh, the average rate would be approximately \$105 per MWh. If theft reduction increased the net billable load to 3,150 GWh the same revenue requirement would yield a rate of \$104 per MWh ( $\$327\text{M} / 3,150\text{ GWh}$ ). The AMI CPCN model assumes that the value of the theft reduction is \$3.8M (50 GWh \* \$76 per MWh), reducing the revenue requirement to \$323.2M and resulting in the same average rate of \$104 ( $\$323.2\text{M} / 3,100\text{ GWh} = \$104$ ).” [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

23.1 The Fortis BC revised response to BCUC IR 1.97.2.1 provides an example to demonstrate that the impact of the incremental net billable load expected from an increase in paying, illegal marijuana grow sites under the proposed AMI project on customer rates. Please confirm that the example provided by Fortis BC assumes an increase in net billable load from paying, illegal, marijuana grow sites of 50 GWh (i.e. 3,150 GWh net billable load after theft reduction benefit versus 3,100 GWh net billable load before theft reduction benefit).

23.2 Exhibit B-1-1, Excel Attachment, Tab “Theft Reduction” calculates the theft reduction benefit of the proposed AMI project. The calculation includes the estimated number of illegal, paying marijuana grow sites under the proposed AMI project versus the Status Quo. Commission staff has used this information in order to calculate the incremental net billable load due to an increase in illegal, paying marijuana grow sites under the proposed AMI project, as estimated by Fortis BC. Please confirm that the calculation performed by Commission staff below is correct. If not confirmed, please provide a revised calculation in a working excel document and provide an explanation for each change made.

Illegal, Paying Marijuana Grow Sites - Status Quo	618	622	627	631	635	640	653	666	679	692	706	720	735	750	765	780	795	811	828	844	861	879	897	915	933	951	969	987	1005	1023	1041	1059	1077	1095	1113	1131	1149	1167	1185	1203	1221	1239	1257	1275	1293	1311	1329	1347	1365	1383	1401	1419	1437	1455	1473	1491	1509	1527	1545	1563	1581	1599	1617	1635	1653	1671	1689	1707	1725	1743	1761	1779	1797	1815	1833	1851	1869	1887	1905	1923	1941	1959	1977	1995	2013	2031	2049	2067	2085	2103	2121	2139	2157	2175	2193	2211	2229	2247	2265	2283	2301	2319	2337	2355	2373	2391	2409	2427	2445	2463	2481	2499	2517	2535	2553	2571	2589	2607	2625	2643	2661	2679	2697	2715	2733	2751	2769	2787	2805	2823	2841	2859	2877	2895	2913	2931	2949	2967	2985	3003	3021	3039	3057	3075	3093	3111	3129	3147	3165	3183	3201	3219	3237	3255	3273	3291	3309	3327	3345	3363	3381	3399	3417	3435	3453	3471	3489	3507	3525	3543	3561	3579	3597	3615	3633	3651	3669	3687	3705	3723	3741	3759	3777	3795	3813	3831	3849	3867	3885	3903	3921	3939	3957	3975	3993	4011	4029	4047	4065	4083	4101	4119	4137	4155	4173	4191	4209	4227	4245	4263	4281	4299	4317	4335	4353	4371	4389	4407	4425	4443	4461	4479	4497	4515	4533	4551	4569	4587	4605	4623	4641	4659	4677	4695	4713	4731	4749	4767	4785	4803	4821	4839	4857	4875	4893	4911	4929	4947	4965	4983	5001	5019	5037	5055	5073	5091	5109	5127	5145	5163	5181	5199	5217	5235	5253	5271	5289	5307	5325	5343	5361	5379	5397	5415	5433	5451	5469	5487	5505	5523	5541	5559	5577	5595	5613	5631	5649	5667	5685	5703	5721	5739	5757	5775	5793	5811	5829	5847	5865	5883	5901	5919	5937	5955	5973	5991	6009	6027	6045	6063	6081	6099	6117	6135	6153	6171	6189	6207	6225	6243	6261	6279	6297	6315	6333	6351	6369	6387	6405	6423	6441	6459	6477	6495	6513	6531	6549	6567	6585	6603	6621	6639	6657	6675	6693	6711	6729	6747	6765	6783	6801	6819	6837	6855	6873	6891	6909	6927	6945	6963	6981	6999	7017	7035	7053	7071	7089	7107	7125	7143	7161	7179	7197	7215	7233	7251	7269	7287	7305	7323	7341	7359	7377	7395	7413	7431	7449	7467	7485	7503	7521	7539	7557	7575	7593	7611	7629	7647	7665	7683	7701	7719	7737	7755	7773	7791	7809	7827	7845	7863	7881	7899	7917	7935	7953	7971	7989	8007	8025	8043	8061	8079	8097	8115	8133	8151	8169	8187	8205	8223	8241	8259	8277	8295	8313	8331	8349	8367	8385	8403	8421	8439	8457	8475	8493	8511	8529	8547	8565	8583	8601	8619	8637	8655	8673	8691	8709	8727	8745	8763	8781	8799	8817	8835	8853	8871	8889	8907	8925	8943	8961	8979	8997	9015	9033	9051	9069	9087	9105	9123	9141	9159	9177	9195	9213	9231	9249	9267	9285	9303	9321	9339	9357	9375	9393	9411	9429	9447	9465	9483	9501	9519	9537	9555	9573	9591	9609	9627	9645	9663	9681	9699	9717	9735	9753	9771	9789	9807	9825	9843	9861	9879	9897	9915	9933	9951	9969	9987	10005	10023	10041	10059	10077	10095	10113	10131	10149	10167	10185	10203	10221	10239	10257	10275	10293	10311	10329	10347	10365	10383	10401	10419	10437	10455	10473	10491	10509	10527	10545	10563	10581	10599	10617	10635	10653	10671	10689	10707	10725	10743	10761	10779	10797	10815	10833	10851	10869	10887	10905	10923	10941	10959	10977	10995	11013	11031	11049	11067	11085	11103	11121	11139	11157	11175	11193	11211	11229	11247	11265	11283	11301	11319	11337	11355	11373	11391	11409	11427	11445	11463	11481	11499	11517	11535	11553	11571	11589	11607	11625	11643	11661	11679	11697	11715	11733	11751	11769	11787	11805	11823	11841	11859	11877	11895	11913	11931	11949	11967	11985	12003	12021	12039	12057	12075	12093	12111	12129	12147	12165	12183	12201	12219	12237	12255	12273	12291	12309	12327	12345	12363	12381	12399	12417	12435	12453	12471	12489	12507	12525	12543	12561	12579	12597	12615	12633	12651	12669	12687	12705	12723	12741	12759	12777	12795	12813	12831	12849	12867	12885	12903	12921	12939	12957	12975	12993	13011	13029	13047	13065	13083	13101	13119	13137	13155	13173	13191	13209	13227	13245	13263	13281	13299	13317	13335	13353	13371	13389	13407	13425	13443	13461	13479	13497	13515	13533	13551	13569	13587	13605	13623	13641	13659	13677	13695	13713	13731	13749	13767	13785	13803	13821	13839	13857	13875	13893	13911	13929	13947	13965	13983	14001	14019	14037	14055	14073	14091	14109	14127	14145	14163	14181	14199	14217	14235	14253	14271	14289	14307	14325	14343	14361	14379	14397	14415	14433	14451	14469	14487	14505	14523	14541	14559	14577	14595	14613	14631	14649	14667	14685	14703	14721	14739	14757	14775	14793	14811	14829	14847	14865	14883	14901	14919	14937	14955	14973	14991	15009	15027	15045	15063	15081	15099	15117	15135	15153	15171	15189	15207	15225	15243	15261	15279	15297	15315	15333	15351	15369	15387	15405	15423	15441	15459	15477	15495	15513	15531	15549	15567	15585	15603	15621	15639	15657	15675	15693	15711	15729	15747	15765	15783	15801	15819	15837	15855	15873	15891	15909	15927	15945	15963	15981	16000	16018	16036	16054	16072	16090	16108	16126	16144	16162	16180	16198	16216	16234	16252	16270	16288	16306	16324	16342	16360	16378	16396	16414	16432	16450	16468	16486	16504	16522	16540	16558	16576	16594	16612	16630	16648	16666	16684	16702	16720	16738	16756	16774	16792	16810	16828	16846	16864	16882	16900	16918	16936	16954	16972	16990	17008	17026	17044	17062	17080	17098	17116	17134	17152	17170	17188	17206	17224	17242	17260	17278	17296	17314	17332	17350	17368	17386	17404	17422	17440	17458	17476	17494	17512	17530	17548	17566	17584	17602	17620	17638	17656	17674	17692	17710	17728	17746	17764	17782	17800	17818	17836	17854	17872	17890	17908	17926	17944	17962	17980	18000	18018	18036	18054	18072	18090	18108	18126	18144	18162	18180	18198	18216	18234	18252	18270	18288	18306	18324	18342	18360	18378	18396	18414	18432	18450	18468	18486	18504	18522	18540	18558	18576	18594	18612	18630	18648	18666	18684	18702	18720	18738	18756	18774	18792	18810	18828	18846	18864	18882	18900	18918	18936	18954	18972	18990	19008	19026	19044	19062	19080	19098	19116	19134	19152	19170	19188	19206	19224	19242	19260	19278	19296	19314	19332	19350	19368	19386	19404	19422	19440	19458	19476	19494	19512	19530	19548	19566	19584	19602	19620	19638	19656	19674	19692	19710	19728	19746	19764	19782	19800	19818	19836	19854	19872	19890	19908	19926	19944	19962	19980	20000	20018	20036	20054	20072	20090	20108	20126	20144	20162	20180	20198	20216	20234	20252	20270	20288	20306	20324	20342	20360	20378	20396	20414	20432	20450	20468	20486	20504	20522	20540	20558	20576	20594	20612	20630	20648	20666	20684	20702	20720	20738	20756	20774	20792	20810	20828	20846	20864	20882	20900	20918	20936	20954	20972	20990	21008	21026	21044	21062	21080	21098	21116	21134	21152	21170	21188	21206	21224	21242	21260	21278	21296	21314	21332	21350	21368	21386	21404	21422	21440	21458	21476	21494	21512	21530	21548	21566	21584	21602	21620	21638	21656	21674	21692	21710	21728	21746	21764	21782	21800	21818	21836	21854	21872	21890	21908	21926	21944	21962	21980	22000	22018	22036	22054	22072	22090	22108	22126	22144	22162	22180	22198	22216	22234	22252	22270	22288	22306	22324	22342	22360	22378	22396	22414	22432	22450	22468	22486	22504	22522	22540	22558	22576	22594	22612	22630	22648	22666	22684	22702	22720	22738	22756	22774	22792	22810	22828	22846	22864	22882	22900	22918	22936	22954	22972	22990	23008	23026	23044	23062	23080	23098	23116	23134	23152	23170	23188	23206	23224	23242	23260	23278	23296	23314	23332	23350	23368	23386
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(iv) A schedule calculating the net present values of the incremental cost and benefit cash flows of the project and feasible alternatives, and justification of the length of the term and discount rate used for the calculation.”

“It is expected that with an AMI-enabled theft detection program, marijuana grow operators may chose to switch to alternate energy sources rather than pay for electricity. This reduction in gross load is accounted for by assuming a 1 percent growth in grow sites in the probably AMI forecast as opposed to the 2 percent assumed in the status quo model.” [Exhibit B-1, Tab 5.0, p. 84]

“... AMI enabled revenue protection is expected to increase theft detection from 8 to 25 percent by 2016, and gradually increase deterrence from 75 to 95 percent by 2021.” [Exhibit B-1, Tab 5.0, p. 84]

Commission staff has prepared Schedule 1 (Part 1) in Appendix 1 (located on Attachment Panel) to BCUC IR 2 in order to demonstrate the revenue requirement impact of the proposed AMI project, using only the portion of the theft reduction benefit that impacts the revenue requirement i.e. excluding the portion of the theft reduction benefit related to an increase in net billable load. The Comments and Notes to Schedule 1 include explanations for any adjustments made by Commission staff to the analysis provided by Fortis in Exhibit B-1-1 Excel Attachment, Tab “Net AMI” and any calculations performed by Commission staff.

#### **Comment 1**

The theft reduction benefit of the AMI project, as calculated by Fortis BC in Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”, has been removed from the revenue requirement impact calculation of the proposed AMI project, for the following reasons:

- Fortis BC submits that “The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being deterred from operating in FortisBC’s service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity.” [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response] As the increase in net billable load from paying, illegal marijuana grow sites does not impact the Company’s revenue requirement, Commission staff has removed the theft benefit of the proposed AMI project, as calculated by Fortis BC, from the revenue requirement impact calculation.
- The Fortis BC response to BCUC IR 1.97.2 confirms that Exhibit B-1-1 Excel Attachment Tab “Net AMI” Line 5.0 represents the “...the cumulative percentage decrease in the revenue requirement over 20 years, as opposed to a one percent reduction in rates.”

#### **Comment 2**

The theft reduction benefit of the AMI project, as calculated by Fortis in Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”, assumes that the deterrence factor applied to the estimated total illegal, marijuana grow sites will increase to 95% by 2032 under the proposed AMI project, versus 70% under the Status Quo. Meaning, 95% of illegal, marijuana grow sites using electricity (as opposed to alternative energy sources) will pay for electricity under the proposed AMI project (as opposed to stealing electricity) versus only 70% for the Status Quo. Commission staff has included the incremental fixed bi-monthly customer charge from the incremental paying, illegal marijuana grow sites under AMI as an offset to the revenue requirement impact calculation. Refer to the calculation performed by Commission staff in **Note 1** of Schedule 1 in Appendix 1 to BCUC IR 2.

### Comment 3

In Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”, Fortis calculates the estimated revenue that will be collected from illegal marijuana grow sites under AMI versus the Status Quo. Fortis BC assumes that there will be more theft sites under the Status Quo option and therefore a higher number of theft sites identified by Fortis BC, resulting in a greater amount of revenue from identified theft sites collected under the Status Quo option versus the proposed AMI project. Commission staff has included this incremental revenue collected from identified theft sites under the Status Quo option in the revenue requirement impact calculation. Refer to calculation performed by Commission staff in Note 2 of Schedule 1 in Appendix 1 to BCUC IR 2.

### Comment 4

The theft reduction benefit of the proposed AMI project, as calculated by Fortis in Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”, assumes that the total number of illegal, marijuana grow sites will increase annually by 1% under the proposed AMI project, versus 2% under the Status Quo. The *revenue requirement* impact of this assumption is that the smaller increase in the total number of illegal, marijuana grow sites will result in lower overall consumption and load and therefore lower power purchase costs under the proposed AMI project versus the Status Quo. The revenue requirement impact is calculated by Commission staff in Note 3 of Schedule 1 in Appendix 1 to BCUC IR 2.

### Comment 5

The Fortis BC response to BCUC IR 1.97.2 confirms that Exhibit B-1-1 Excel Attachment Tab “Net AMI” Line 5.0 represents the “...the cumulative percentage decrease in the revenue requirement over 20 years, as opposed to a one percent reduction in rates.” For the reasons outlined in Comments 1-4 above, Commission staff has recalculated the revenue requirement impact of the proposed AMI project, excluding the theft reduction benefit related to an increase in net billable load from illegal, paying marijuana grow sites. Refer to calculation by Commission staff in Note 4 of Schedule 1 in Appendix 1 to BCUC IR 2.

Commission staff notes the following with respect to the Comments and Notes provided above:

- In this specific analysis, Commission staff has not assessed, nor have they supported, any assumptions made by Fortis BC in relation to the theft reduction benefit. The analysis is intended to demonstrate the mechanics by which Commission staff consider appropriate to calculate the theft reduction benefit of the AMI project on the revenue requirement over twenty years, using the assumptions made by Fortis in Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”.
- In this specific analysis, Commission staff has not assessed, nor have they supported, any other calculations or assumptions made by Fortis BC in calculating the revenue requirement impact of the AMI project in Exhibit B-1-1 Excel Attachment Tab “Net AMI” Line No. 5.

24.1 Please confirm that **Comment 1** made by Commission staff above is accurate, or explain otherwise.

24.2 Please confirm that **Comment 2** made by Commission staff above is accurate, or explain otherwise.

- 24.3 Please confirm that the calculation provided in **Note 1** of Schedule 1 in Appendix 1 to BCUC IR 2 is correct. If not confirmed, please provide an updated calculation and give a detailed rationale for each individual adjustment made by Fortis BC.
- 24.4 Please confirm that **Comment 3** made by Commission staff above is accurate, or explain otherwise.
- 24.5 Please confirm that the calculation provided in **Note 2** of Schedule 1 in Appendix 1 to BCUC IR 2 is correct. If not confirmed, please provide an updated calculation and give a detailed rationale for each individual adjustment made by Fortis BC.
- 24.6 Please confirm that **Comment 3** made by Commission staff above is accurate, or explain otherwise.
- 24.7 Please confirm that the calculation provided in **Note 3** of Schedule 1 in Appendix 1 to BCUC IR 2 is correct. If not confirmed, please provide an updated calculation and give a detailed rationale for each individual adjustment made by Fortis BC.
- 24.8 Please confirm that the calculation provided in **Note 4** of Schedule 1 in Appendix 1 to BCUC IR 2 is correct. If not confirmed, please provide an updated calculation and give a detailed rationale for each individual adjustment made by Fortis BC.
- 24.8.1 Specifically, please confirm that the NPV of the theft reduction benefit of the proposed AMI project on the revenue requirement over twenty years of \$9,857 thousand is correct. If not confirmed please provide an updated calculation in a working excel document and give a detailed rational for each change made.
- 24.8.2 Specifically, please confirm that the NPV of the revenue requirement increase resulting from the proposed AMI project over twenty years of \$10,900 thousand is correct. If not confirmed please provide an updated calculation in a working excel document and give a detailed rational for each change made.
- 24.9 Does Fortis BC agree that the calculation provided in **Note 4** of Schedule 1 in Appendix 1 to BCUC IR 2 demonstrates the appropriate mechanics by which to calculate the *revenue requirement* impact only (i.e. excluding the customer rates impact of changes to billable load) of the of the proposed AMI project? If not confirmed, please provide a detailed explanation as to why Fortis BC disagrees and propose what Fortis BC considers to be the appropriate mechanics.

**25.0 Reference: Project Costs and Benefits  
Order G-50-10; Exhibit B-1, Tab 5.0, p. 82-84; Exhibit B-1-1, Excel Attachment, Tab “Net AMI”; Exhibit B-6, BCUC IRs 1.97.2, 1.118.1.1; Exhibit B-6-5, BCUC IR 1.97.2.1  
Customer Rates Impact, Theft Benefit**

The Fortis BC response to BCUC IR 1.97.2 confirms that Exhibit B-1-1 Excel Attachment Tab “Net AMI” Line 5.0 represents the “...the cumulative percentage decrease in the revenue requirement over 20 years, as opposed to a one percent reduction in rates.”

“The Company submits that the forecast theft reduction benefits results in both a reduction of FortisBC’s annual revenue requirement and an increase in net billable load. The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being

deterred from operating in FortisBC's service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity." [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

"The Company has not prepared the financial analysis of the AMI Project based on the impact of the theft reduction benefit on net billable load, but rather has treated the incremental revenue resulting from theft reduction as an offset to the revenue requirement, which produces a reasonable approximation of the impact to customer rates." [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

"FortisBC believes the financial analysis for the Project provided as part of the Application avoids adding undue complexity and variability not related to the Project, while still providing a reasonable approximation of the expected impact of the AMI Project to average customer rates." [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

Commission Order G-50-10 outlines the CPCN Application Guidelines for utilities filing for CPCN approval with the BCUC. Appendix A, Section 2 of Order G-50-10 outlines the CPCN "Application Requirements", including the following to support the "Project Need, Alternatives and Justification":

"(iii) A schedule calculating the revenue requirements of the project and feasible alternatives, and the resulting impact on customer rates;

(iv) A schedule calculating the net present values of the incremental cost and benefit cash flows of the project and feasible alternatives, and justification of the length of the term and discount rate used for the calculation."

Commission staff has prepared Schedule 1 (Part 2) in Appendix 1 to BCUC IR 2 in order to demonstrate the *customer rates* impact of the proposed AMI project. The Comments and Notes to the schedule include explanations for any adjustments made by Commission staff to the analysis provided by Fortis BC in Exhibit B-1-1 Excel Attachment, Tab "Net AMI" and any calculations performed by Commission staff.

### **Comment 1.2**

The forecast sales volume for Fortis BC is taken directly from the 2012-2013 Revenue Requirement Application (Exhibit B-1, Appendix 3A - Long-Term Energy Forecast After DSM (Net Load)) The *net* load, as opposed to gross load, is considered appropriate as losses should be excluded from billable load / sales volume.

Fortis states the following in the response to BCUC IR 1.118.1.1:

"Consistent with all capital expenditures undertaken by the utility, the costs and benefits are included in the Company's Revenue Requirements and therefore are incorporated into all customer rates. In addition, the proposed FortisBC AMI project results in a net benefit to all customers as is evidenced by the financial analysis included as part of this Application." [Exhibit B-6, p. 287]

Based on the comments provided by Fortis BC in the response to BCUC IR 1.118.1.1, Commission staff considers it appropriate for the purposes of this analysis to use the net load for all customer classes (i.e. Residential, Commercial, Wholesale, industrial, Lighting and Irrigation).

## Comment 2.2

For the purposes of this analysis, Commission staff has used the average cost per kWh of billable load in order to demonstrate the impact of the proposed AMI project on customer rates. Commission staff considers this appropriate for the purposes of this analysis for several reasons:

- Fortis BC submits that their analysis provides “...a reasonable approximation of the expected impact of the AMI Project to average customer rates.” Considering this, Commission staff also consider it appropriate to use average cost per kWh of billable load in order to demonstrate the impact on the forecast increase in net billable load from illegal, paying marijuana grow sites on customer rates.
- Fortis BC submits that “The Company has not prepared the financial analysis of the AMI Project based on the impact of the theft reduction benefit on net billable load, but rather has treated the incremental revenue resulting from theft reduction as an offset to the revenue requirement, which produces a reasonable approximation of the impact to customer rates.” Fortis BC also submits that “Although revenue requirements do not in fact change as a result of theft reduction (aside from the reduction in power purchase expense related to deterrence as previously discussed), there clearly is benefit associated the impact of theft reduction resulting from AMI, which customers will see as a reduction in the average rate for electricity due to an increase in net billable load.” The incremental net billable load from illegal, paying marijuana grow sites does not impact the revenue requirement calculation. Commission staff therefore considers it more appropriate to demonstrate the impact of the incremental net billable load on customer rates by way of an analysis of the average cost per kWh of billable load.

## Comment 3.2

Fortis BC submits that “Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity.” [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

The theft reduction benefit of the AMI project, as calculated by Fortis in Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”, calculates the estimated number of paying illegal, marijuana grow sites under AMI versus the Status Quo. Fortis has also estimated the annual consumption per illegal, marijuana grow sites as follows:

“...FortisBC historical data indicates 30 lights per site. Although Fortis BC data indicates the number is trending upward, the more conservative 30 has been used in the theft benefit calculation. Each light consumes an average 14kWhs per day based on a combination of 18 and 12 hour cycles which translates into **151,200 kWhs** annually per site.” [Exhibit B-1, Tab 5.0, p. 82]

Commission staff has calculated the increase in net billable load resulting from an increase in paying, illegal marijuana grow sites under AMI versus the Status Quo in **Note 5** of Schedule 1 in Appendix 1 to BCUC IR 2.

## Comment 4.2

The difference between the average cost per kWh of billable load with and without the incremental net billable load from illegal, paying marijuana grow sites, as calculated by Commission staff, demonstrates the impact on the average cost per kWh of billable load.

## Comment 5.2

The difference between the average cost per kWh of billable load without AMI and with AMI (i.e. including the revenue requirement impact of AMI and the incremental net billable load from illegal, paying marijuana grow sites), multiplied by the forecast billable load, demonstrates the total benefit to customers over a twenty year period. Commission staff has calculated this benefit, based on Fortis BCs assumptions in **Note 6** of Schedule 1 in Appendix 1 to BCUC IR 2.

Commission staff notes the following with respect to the Comments and Notes provided above:

- In this specific analysis, Commission staff has not assessed, nor have they supported, any assumptions made by Fortis BC in relation to the theft reduction benefit. The analysis is intended to demonstrate the mechanics by which Commission staff consider appropriate to calculate the theft reduction benefit of the AMI project on customer rates over twenty years, using the assumptions made by Fortis in Exhibit B-1-1 Excel Attachment Tab “Theft Reduction”.
- In this specific analysis, Commission staff has not assessed, nor have they supported, any other calculations or assumptions made by Fortis in calculating the revenue requirement impact of the AMI project in Exhibit B-1-1 Excel Attachment Tab “Net AMI” Line No. 5.

25.1 Please confirm that **Comment 1.2** made by Commission staff above is accurate, or explain otherwise.

25.2 Please confirm that **Comment 2.2** made by Commission staff above is accurate, or explain otherwise.

25.3 Please confirm that **Comment 3.2** made by Commission staff above is accurate, or explain otherwise.

25.4 Please confirm that the calculation provided in **Note 5** of Schedule 1 in Appendix 1 to BCUC IR 2 is correct. If not confirmed, please provide an updated calculation and give a detailed rationale for each individual adjustment made by Fortis.

25.5 Please confirm that **Comment 4.2** made by Commission staff above is accurate, or explain otherwise.

25.6 Please confirm that **Comment 5.2** made by Commission staff above is accurate, or explain otherwise.

25.7 Please confirm that the calculation provided in **Note 6** of Schedule 1 in Appendix 1 to BCUC IR 2 is correct. If not confirmed, please provide an updated calculation and give a detailed rationale for each change made by Fortis BC.

**26.0 Reference: Project Costs and Benefits  
Exhibit B-6-5, BCUC IR 1.97.2.1  
Customer Rates Impact, Theft Benefit**

“The Company submits that the forecast theft reduction benefits results in both a reduction of FortisBC’s annual revenue requirement and an increase in net billable load. The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being

deterred from operating in FortisBC's service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity." [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

26.1 Please provide a break-even analysis to demonstrate the number of incremental units of net billable load that are required from illegal, paying marijuana grow sites in order for the proposed AMI project to result in lower customer rates. Please provide the calculation in a working excel document and provide a detailed listing of all assumptions used in the analysis.

**27.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.86.1; Exhibit B-6-5 BCUC IR 1.97.2.1; Exhibit B-1-1, Excel Attachment, Tab "Theft Reduction"  
Theft Reduction Benefit, Boyd Report**

The response from BCUC IR 1.86.1 includes a report by Professor Neil Boyd. In the report, Boyd notes the following:

"I [Boyd] would say that the Plecas Report calculations of 90 days in the grow cycle and 4 grow cycles per year likely assume a degree of organization that does not exist with most grow operations – that is, most growers are unlikely to be so organized as to consistently generated this annual energy per light, dependent, as it is, upon continuing operations for 360 of 365 days in a calendar year...

... If we take a more conservative approach we might reset the equation for annual energy expended per light to  $90 \times 14 \times 3 = 3,780$  kWh. Accordingly, the annual use of energy for marijuana production in the area served by FortisBC is [113,400] kWh per site ( $3,780 \times 30$  lights)."

Fortis BC explains the calculation of the "Theft Reduction" benefit in the Revised Response to BCUC IR 1.97.2.1 as follows:

"The Company submits that the forecast theft reduction benefit results in both a reduction in Fortis BC's annual revenue requirement and an increase in net billable load. The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being deterred from operating in FortisBC's service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity." [Exhibit B-6-5 BCUC IR 1.97.2.1]

27.1 Please comment on Boyd's estimate of 113,400 kWh annual energy consumption per site, as opposed to the Fortis estimate of 151,200 kWh annual energy consumption per site.

27.2 In calculating the Theft Reduction benefit of the "higher net billable load" resulting from an increase in marijuana grow operations starting to pay for electricity rather than steal under the proposed AMI project, please confirm that Fortis BC used an estimated average annual consumption per site of 151,200 kWh. If not confirmed, please explain otherwise.

27.3 Commission staff has prepared an analysis of the impact of the proposed AMI project on both the revenue requirement and customer rates, using Boyd's estimate of 113,400 kWh annual energy consumption per illegal, marijuana grow site. Please refer to calculation in Schedule 2 of Appendix 1 to BCUC IR 2. The calculations in Schedule 2 are consistent with those provided by Commission staff in Schedule 1, with the exception of the estimated annual energy consumption per illegal, marijuana grow site. Please confirm that the calculations are correct, based on an estimate of 113,400 kWh annual energy consumption per illegal, marijuana grow site. If not

confirmed, please provide an updated calculation in a working excel document, a listing of all assumptions used and a detailed explanation for each change made to the calculations performed by Commission staff.

**28.0 Reference: Theft  
Exhibit A2-1; Exhibit B-6-5, BCUC IR 1.97.2.1, p. 14  
Theft Reduction, Diplock and Plecas Report**

Exhibit A2-1 is a report by Jordan Diplock and Darryl Plecas entitled: “The Increasing Problem of Electrical Consumption in Indoor Marihuana Grow Operations in British Columbia.” Page 2 of the report notes the following with respect to illegal marijuana grow operations that are *not* stealing electricity (i.e. they are paying for electricity):

“What must also be taken into account is the amount of electricity consumed by operators of marihuana growing operations not stealing electricity. This would include another 6,339 cases per year. Again, using the findings of Chaisson and Plecas (2011a) and Chaisson and Plecas (2011 b), each of these operations, on average, would use 21.8 lights or 109,872 kWh of electricity per year. The annual consumption then, which is, in effect, wasted consumption, on account that it is put toward an illegal enterprise, is nearly 696.5 GWh. At 0.0627/kWh, this equates to another \$43.7 million worth of electricity per year. Priced out at the higher rate, the cost would actually be \$61.2 million. That said, BC Hydro would not peg the cost this high, as its investigators have estimated that the average growing operation not involving theft uses just 10 lights. BC Hydro’s estimate would be particularly accurate in those locations that currently employ electrical and fire safety inspection (EFSI) initiatives, as growing operations with 10 or more lights would consume more electricity than the 93kWh per day threshold for over-consumption, and would come to the attention of EFSI inspection teams, rather than BC Hydro’s own inspectors. According to the BC Hydro estimates, at the higher rate (\$0.0878), we should expect their estimate to be substantially lower at \$28.1 million.”

Fortis BC explains the calculation of the theft reduction benefit in the Revised Response to BCUC IR 1.97.2.1 as follows:

“The Company submits that the forecast theft reduction benefit results in both a reduction in Fortis BC’s annual revenue requirement and an increase in net billable load. The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being deterred from operating in FortisBC’s service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity.” [Exhibit B-6-5 BCUC IR 1.97.2.1, p. 14]

28.1 Please comment on Diplock and Plecas’ estimate that operators of marihuana growing operations not stealing electricity (i.e. sites that pay for electricity) consume on average 109,872 kWh annually per site, as opposed to the Fortis BC estimate of 151,200 kWh annual energy site.

28.1.1 Did Fortis BC consider calculating the Theft Reduction benefit resulting from an increase in net billable load from marijuana grow sites under the proposed AMI project using the Diplock and Plecas’ estimate that operators of marihuana growing operations not stealing electricity (i.e. sites that pay for electricity) consume on average 109,872 kWh annually per site? If confirmed, please discuss why this estimate was not considered appropriate.

28.2 Commission staff has prepared an analysis of the impact of the proposed AMI project on the revenue requirement calculation and customer rates, using Diplock and Plecas' estimate of 109,872 kWh annual energy consumption per paying illegal, marijuana grow site. Please refer to calculation in Schedule 3 of Appendix 1 to BCUC IR 2. The calculation is consistent with those provided by Commission staff in Schedule 1, with the exception of the estimated annual energy consumption per paying illegal, marijuana grow site. Please confirm that the calculation, based on an estimate of 109,872 kWh annual energy consumption per paying illegal, marijuana grow site is correct. If not confirmed, please provide an updated calculation in a working excel document, a listing of all assumptions used and a detailed explanation for each change made to the calculation performed by Commission staff.

**29.0 Reference: Project Costs and Benefits  
Order G-50-10; Exhibit B-6-5, BCUC IR 1.96.1 Revised Response;  
Exhibit B-1-1, Tab 5.0, Table 5.1.1.a, Updated p. 73]  
Cost and Benefit Cash Flows**

Commission Order G-50-10 outlines CPCN application guidelines. The CPCN "Application Requirements" per Order G-50-10 include the following item that must be provided to support "Project Need, Alternatives and Justification" (Section 2 of the Application Requirements):

(iv) A schedule calculating the net present values of the incremental cost and benefit cash flows of the project and feasible alternatives, and justification of the length of the term and discount rate used for the calculation;" [Appendix A to Order G-50-10, page 6 of 12]

29.1 Please confirm that the net present value of the incremental cost and benefit cash flows provided by Fortis BC in BCUC IR 1.96.1 is a cash outflow of \$8,884 thousand.

29.1.1 Please confirm that the net present value of the incremental cost and benefit cash flows provided by Fortis BC in BCUC IR 1.96.1 excludes all CPCN development and regulatory costs. If the answer is yes, please explain why 100 percent of these costs have been excluded.

29.1.2 Please provide the net present value of the incremental cost and benefit cash flows of the proposed AMI project, including the CPCN development and regulatory costs associated with the 2012 Application of \$4,640 thousand (i.e. excluding the 2007 AMI application costs of \$275 thousand as sunk costs). [Exhibit B-1-1, Tab 5.0, Table 5.1.1.a, Updated p. 73]

29.1.2.1 Please provide the net present value of the incremental cost and benefit cash flows each alternative (i.e. PLC and AMR), including the CPCN development and regulatory costs associated with the 2012 Application of \$4,640 thousand (i.e. excluding the 2007 AMI application costs of \$275 thousand as sunk costs). [Exhibit B-1-1, Tab 5.0, Table 5.1.1.a, Updated p. 73]

**30.0 Reference: Project Costs and Benefits  
Exhibit B-11, CEC IR 1.40.1, p. 53  
Capital Costs**

“It is difficult to predict whether RF systems will evolve by enhancing networking capabilities, reducing costs or both. However, the pace of change is likely to be higher with RF systems (including mesh) than it is with PLC or AMR technologies.

The difference in the pace of changes in the technologies is due to a higher level of investment in RF AMI installations than other technologies, and from the standardization of the mesh technologies.”  
[Exhibit B-11, CEC IR 1.40.1, p. 53]

30.1 In the response to CEC IR 1.40.1, Fortis BC indicates that “...the pace of change is likely to be higher with RF systems (including mesh) than it is with PLC or AMR technologies.” Please confirm if Fortis BC considered delaying the proposed AMI project in order to realize any benefits associated with the pace of technological change related to RF systems, and explain why or why not.

**31.0 Reference: Project Costs and Benefits  
Exhibit B-11, CEC IR 1.44.2, p. 62  
Capital Costs, PLC Alternative**

“While the business needs defined the needed functionality of the system, FortisBC’s unique service territory was also important. Compared with other utilities, FortisBC has a significant proportion of long rural distribution feeders and a lower number of customers per feeder. This was expected to have an impact on which technologies might be proposed by respondents to the RFP. For example, some technologies such as PLC require equipment to be installed on each feeder and require additional infrastructure to propagate the communications signal along a long feeder. For FortisBC, the costs to deploy this technology would likely not be as economical as it would be for other utilities.” [Exhibit B-11, CEC IR 1.44.2, p. 62]

“FortisBC cannot definitively say why FortisAlberta received PLC system proposals. However two factors likely contributed: 1) PLC technology is best suited for utilities with low meter density per square kilometer, and 2) FortisAlberta required daily (rather than hourly) reads.

Lower meter density negatively impacts the economics of an RF mesh solution relative to a PLC solution since RF mesh technologies rely on meter-to-meter communication. FortisAlberta customer density is approximately 11.2 meters per square kilometre vs. FortisBC density of 38.6 meters per square kilometre.” [Exhibit B-6, BCUC IR 1.113.1.2]

31.1 Fortis BC submits that “Lower meter density negatively impacts the economics of an RF mesh solution relative to a PLC solution since RF mesh technologies rely on meter-to-meter communication. “ Please provide any reasons why PLC meters would not be suitable to high-density customer service areas.

31.2 In the response to CEC IR 1.44.2, Fortis BC submits that “Compared with other utilities, FortisBC has a significant proportion of long rural distribution feeders and a lower number of customers per feeder. This was expected to have an impact on which technologies might be proposed by respondents to the RFP. For example, some technologies such as PLC require equipment to be

installed on each feeder and require additional infrastructure to propagate the communications signal along a long feeder. For FortisBC, the costs to deploy this technology would likely not be as economical as it would be for other utilities.” Fortis BC also submits that “Lower meter density negatively impacts the economics of an RF mesh solution relative to a PLC solution since RF mesh technologies rely on meter-to-meter communication.” Please discuss the operational and financial obstacles to deploying RF meters in areas with a low number of customers per feeder, given that the lower meter density “...negatively impacts the economics of an RF mesh solution relative to a PLC solution.”

**32.0 Reference: Project Costs and Benefits  
Exhibit B-1, Tab 7.0, p. 112; Exhibit B-6, BCUC IRs 1.106.4-1.106.5 Responses  
Capital Costs, PLC Alternative**

“As mentioned in Section 4.2.2, no PLC proposals were received from any vendors during the RFP process. However, Itron was able to provide an estimate of PLC capital costs of approximately \$66 million for a system with nearly equivalent functionality to their RF technology.” [Exhibit B-1, Tab 7.0, p. 112]

In the response to BCUC IR 1.106.4, FortisBC notes that “... the [Itron PLC] estimate was provided to Fortis BC has a written estimate.”

The FortisBC response to BCUC IR 1.106.3 notes the following:

“Itron provided a written estimate for a 100% OpenWay PLC solution. The Itron OpenWay system upon which the proposed AMI system is based is designed to consist primarily of RF equipped meters. Alternative meter communications options include direct-cellular and PLC equipped meters to address situations that cannot economically be accommodated by RF. PLC equipped OpenWay meters are currently not commercially available from Itron, but are expected to provide similar capabilities to the RF and cellular-equipped meters. These enhanced capabilities require a more expensive PLC infrastructure than typical PLC-equipped meters generally available on the market.”

32.1 Please provide a copy of the written estimate of the PLC capital costs of \$66 million provided to Fortis BC by Itron.

32.2 Fortis BC notes in the response to BCUC IR 1.106.3 that “...PLC equipped OpenWay meters are currently not commercially available from Itron.” Does Itron currently manufacture PLC equipped meters?

32.2.1 Given that Itron PLC meters are not currently commercially available, please discuss why Itron was considered the most appropriate source from which to obtain estimated PLC capital costs.

**33.0 Reference: Project Costs and Benefits**  
**Exhibit B-1, Tab 7.0, p. 112; Exhibit B-1, Tab 5.0, p. 70, Table 5.1.a;**  
**Exhibit B-6, BCUC IRs 1.106.4-1.106.5 Responses**  
**Capital Costs, PLC Alternative**

“As mentioned in Section 4.2.2, no PLC proposals were received from any vendors during the RFP process. However, Itron was able to provide an estimate of PLC capital costs of approximately \$66 million for a system with nearly equivalent functionality to their RF technology.” [Exhibit B-1, Tab 7.0, p. 112]

The response to BCUC IR 1.106.3 notes the following:

“Itron provided a written estimate for a 100% OpenWay PLC solution. The Itron OpenWay system upon which the proposed AMI system is based is designed to consist primarily of RF equipped meters. Alternative meter communications options include direct-cellular and PLC equipped meters to address situations that cannot economically be accommodated by RF. PLC equipped OpenWay meters are currently not commercially available from Itron, but are expected to provide similar capabilities to the RF and cellular-equipped meters. These enhanced capabilities require a more expensive PLC infrastructure than typical PLC-equipped meters generally available on the market.

Line Item	Difference Between PLC and RF (positive numbers indicate higher PLC cost) (\$000s)
Meters	\$4,861
Network Infrastructure and Installation	\$16,258
Head End System	\$216
Security Appliances	\$0
Professional Services	\$698
<b>Total</b>	<b>\$22,000</b>

33.1 Does the table prepared by Fortis BC in the response to BCUC IR 1.106.3 compare the total AMI project capital costs of \$47,689 thousand to the Itron estimate of the PLC capital costs of \$66 million?

33.1.1 If not confirmed, please list each individual line item that was added / deducted from the PLC capital costs of \$66 million for the purposes of preparing the table in BCUC IR 1.106.3. Please also explain why each line item was added / deducted.

33.1.2 If not confirmed, please list each individual line item that was added / deducted from the PLC capital costs of \$66 million for the purposes of preparing the table in BCUC IR 1.106.3. Please also explain why each line item was added / deducted.

33.2 Please complete Column B and C of the table below. Column C less Column B should equal Column A. Column A should agree to the table provided by Fortis BC in the response to BC IR 1.106.3. If any changes are made Column A, please provide an explanation for each change made.

	Line Item	Difference Between PLC and RF (positive numbers indicate higher PLC cost) (\$000s)	AMI Project Capital Costs	PLC Capital Costs
	Meters	4,861		
	Network Infrastructure and Installation	16,258		
	Head End System	216		
	Security Appliances	-		
	Professional Services	698		
	<b>Total</b>	<b>22,000</b>		
	<b>A</b>	<b>A</b>	<b>B</b>	<b>C</b>
<b>References:</b>				
<b>A</b>	Agreed to FortisBC response to BCUC IR 1 Q 106.3			

**34.0 Reference: Project Costs and Benefits**  
**Exhibit B-1, Tab 7.0, p.112; Exhibit B-1, Tab 5.0, p. 70, Table 5.1.a;**  
**Exhibit B-6, BCUC IRs 1.106.4-1.106.5 Responses**  
**Capital Costs, PLC Alternative**

“As mentioned in Section 4.2.2, no PLC proposals were received from any vendors during the RFP process. However, Itron was able to provide an estimate of PLC capital costs of approximately \$66 million for a system with nearly equivalent functionality to their RF technology.” [Exhibit B-1, Tab 7.0, p. 112]

34.1 Does the Itron estimate of the PLC capital costs of \$66 million include all of the following cost categories? For any cost categories listed above that are excluded from the Itron estimate of the PLC capital costs of \$66 million, please list the cost categories that is excluded.

- Third party software and services
- Meters (including deployment)
- Network infrastructure
- System integration
- Theft detection
- Project management
- CPCN development / Approval costs
- Capitalized overhead, AFUDC, PST

34.1.1 Please provide a separate cost estimate for each cost category identified in the aforementioned IR as being excluded from the Itron estimate of PLC capital costs of \$66 million.

34.2 Please complete the following table. Column 5 should agree to the Itron estimate of the PLC capital costs of \$66 million. If there are any additional line items that are excluded from the table below, and specifically pertain to the PLC capital cost estimate, please update the table with any additional line items and provide an explanation for each one.

Column:	1	2	3	4	5
	<b>Line Item</b>	<b>AMI Project Capital Costs</b>		<b>PLC Capital Costs - Total</b>	<b>PLC Capital Costs Included in the Itron Estimate</b>
	Meters	20,323	A		
	Network Infrastructure and Installation	4,449	A		
	Head End System	-			
	Security Appliances	-			
	Professional Services	-			
	Third Party Software and Services	5,830	A		
	System Integration	2,349	A		
	Theft Detection	1,100	A		
	Project Management	3,130	A		
	CPCN Development / Approval Costs	4,915	A		
	Capitalized Overhead, AFUDC, PST	5,592	A		
	<b>Total</b>	<b>47,689</b>	<b>A</b>		<b>66,000</b>
<b>References:</b>					
A	Agreed to Exhibit B-1, Tab 5.0, p. 70, Table 5.1.a				

**35.0 Reference: Project Costs  
Exhibit B-1, Tab 7.0, p. 112; Exhibit B-6, BCUC IRs 1.106.4-1.106.5 Responses  
Capital Costs, PLC Alternative**

BCUC IR 1.106.5 requests the following: “How does [the Itron PLC] estimate compare on a unit costs basis with the actual costs experienced by Fortis Alberta in its roll-out of PLC based meters?”

In the response to BCUC IR 1.106.5, Fortis BC notes the following:

“The 126 million dollar FortisAlberta AMI expenditure that covers 470,000 customers results in a cost of approximately \$268 per customer.

This compares to the \$47.7 million expense proposed by Fortis BC covering 115,000 customer, or approximately \$415 per customer.

This cost is not directly comparable to the FortisBC expenditure for several reasons, including the fact that no costs related to HES or MDMS servers or software, provincial sales tax, regulatory process, contingency allowance, remote disconnects, theft detection metering or customer portal were incurred by FortisAlberta. These costs total approximately \$11.4 million in the Fortis BC AMI project.

If FortisBC excludes those costs from its AMI project, the capital costs drops to approximately \$36.3 million of \$316 per customer. The bandwidth available with the FortisBC RF system at this expenditure level exceeds that available with the FortisAlberta PLC system. This allows hourly consumption data to be collected system-wide, for example, which challenges the FortisAlberta PLC system as described in the response to BCUC IR 1.113.1.1.”

- 35.1 Please confirm that the FortisAlberta \$126 million dollar expenditure referenced in the response to BCUC IR 1.106.5 relates to *PLC* meters, as opposed to *RF* meters. If not confirmed, please explain otherwise.
- 35.2 The Fortis BC response to BCUC IR 1.106.5 compares the FortisAlberta PLC expenditures to the Fortis BC AMI project capital costs; however, BCUC IR 1.106.5 requests a comparison between the FortisAlberta PLC expenditures and the *Itron PLC* estimate of \$66 million. Please compare the *Itron PLC* estimate of \$66 million to the FortisAlberta PLC expenditure on a unit costs basis, as requested in BCUC IR 10106.5.
- 35.3 Please confirm if the following table prepared by Commission staff is correct. If not confirmed, please provide an updated table with an explanation for each individual change made.

	PLC Capital Costs (as Estimated by Itron) (\$000s)		Fortis Alberta PLC Expenditures (\$000s)	
PLC Capital Costs	66,351	A	126,000	B
Number of Meters	115,000	B	470,000	B
Cost per Unit	\$ 577		\$ 268	
<b>References:</b>				
A	Agreed to Exhibit B-1, Tab 7.0, Table 7.3a, p. 113 (Updated)			
B	Agreed to Fortis BC Response to BCUC IR 1 Q 106.5			

**36.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.113.1.2  
Capital Costs, PLC Alternative under Fortis Alberta**

The FortisBC response to BCUC IR 1.113.1.2 notes the following:

“FortisBC cannot definitively say why FortisAlberta received PLC system proposals. However two factors likely contributed: 1) PLC technology is best suited for utilities with low meter density per square kilometer, and 2) FortisAlberta required daily (rather than hourly) reads.

Lower meter density negatively impacts the economics of an RF mesh solution relative to a PLC solution since RF mesh technologies rely on meter-to-meter communication. FortisAlberta customer density is approximately 11.2 meters per square kilometre vs. FortisBC density of 38.6 meters per square kilometre.”

36.1 Even though FortisAlberta uses daily, as opposed to hourly, meter reading, are the FortisAlberta PLC meters equipped to allow hourly meter reading?

36.1.1 If the answer to the preceding IR is no, please comment on whether the current FortisAlberta PLC meters can be upgraded to allow hourly meter reading.

36.1.1.1 If the answer to the preceding IR is yes, please discuss the process that would be required in order to upgrade the current FortisAlberta PLC meters to allow hourly meter reading.

- 36.2 At present, does FortisBC require meter functionality that allows for hourly meter reading? Please explain.
- 36.2.1 If the answer to the preceding IR is no, please discuss when Fortis BC anticipates that it will require hourly meter reading functionality.
- 36.3 Does the Fortis Alberta PLC system allow for hourly Time of Use billing? If not, please explain otherwise.
- 36.4 Please list the main functional inadequacies of the Fortis Alberta PLC system as compared to the proposed Fortis BC requirements?

**37.0 Reference: Project Costs and Benefits  
Exhibit B-6-5, BCUC IR 1.89.2 Revised Response  
Depreciation Rate, Manufacturer’s Recommendations**

In response to the BCUC IR requesting evidence of the manufacturer’s recommendations supporting a useful life of 20 years for the Itron OpenWay CENTRON meters, Fortis BC provided an email from Itron dated November 8, 2012 that states: “In response to your query regarding the expected life of the OpenWay CENTRON meters, the expected life is 20 years.” [Exhibit B-5-6, p. 8]

In the original Application dated July 26, 2012 Fortis BC notes the following with respect the expected useful life of the OpenWay CENTRON meters:

“Meters - Assumptions regarding depreciation rates for the AMI meters have been determined based on the observed useful lives as established through industry experience, as well as through the manufacturer’s recommendations. This has resulted in a 5 percent depreciation rate based on an estimated economic life of 20 years”; [Exhibit B-1, Tab 5.0, p. 76]

- 37.1 Please provide any evidence to support the manufacturer’s recommendations of the 20 year expected life of the AMI meters provided to Fortis before the original application date of July 26, 2012.

**38.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.89.6  
Depreciation Rate**

“If the depreciation period was set at 10 years for the new AMI meters, the NPV of the Net AMI benefit is approximately \$13.5 million (assuming an 8 percent discount rate) and the cumulative incremental benefit to rates in year 2025 is approximately 0.58 percent.

If the depreciation period was set at 15 years for the new AMI meters, the NPV of the Net AMI benefit is approximately \$14.5 million (assuming an 8 percent discount rate) and the cumulative incremental benefit to rates in year 2030 is approximately 0.87 percent.

If the depreciation period was set at 25 years for the new AMI meters, the NPV of the Net AMI benefit increases to approximately \$19.9 million (assuming an 8 percent discount rate) and the cumulative incremental benefit to rates in year 2032 decreases to approximately 0.87 percent.” [Exhibit B-6, BCUC IR 1.89.6 Response]

- 38.1 Please confirm that the NPV of the Net AMI benefit will decrease by \$4.1 million (i.e. \$13.5 million versus \$17.6 million in Exhibit B-1-1, Excel Attachment, Tab “Net AMI”) if the depreciation period is set at 10 years for the new AMI meters. If not confirmed, please explain otherwise.
- 38.2 Please confirm that the NPV of the Net AMI benefit will decrease by \$3.1 million (i.e. \$14.5 million versus \$17.6 million in Exhibit B-1-1, Excel Attachment, Tab “Net AMI”) if the depreciation period is set at 15 years for the new AMI meters. If not confirmed, please explain otherwise.
- 38.3 Please recalculate the revenue requirement impact of the depreciation of the new AMI meters (i.e. Line No. 63 Exhibit B-1-1, Excel Attachment, Tab “Gross AMI”, Line No. 63) for each year between 2013 and 2032, assuming the following individual scenarios. Please provide the calculations in a working excel document.
- Useful life of 10 years
  - Useful life of 15 years

**39.0 Reference: Project Need  
Exhibit B-1, Tab 3.0, p. 22  
Clean Energy Act**

“The Provincial Government has demonstrated its support for advanced metering for utilities other than BC Hydro. Section 17 (6) of the CEA provides:

(6) If a public utility, other than the authority, makes an application under the Utilities Commission Act in relation to smart meters, other advanced meters or a smart grid, the commission, in considering the application, must consider the government’s goal of having smart meters, other advanced meters and a smart grid in use with respect to customers other than those of the authority.” [Exhibit B-1, Tab 3.0, p. 22]

The Clean Energy Act defines “smart meter” in Section 17 (1) as follows: “smart meter” means a meter that meets the prescribed requirements, and includes related components, equipment and metering and communication infrastructure that meet the prescribed requirements.’

- 39.1 Does Fortis BC consider that PLC meters would be considered “smart meters” within the context of Section 17 (6) of the Clean Energy Act? Please discuss.
- 39.2 Does Fortis BC consider that PLC meters would be considered “other advanced meters” within the context of Section 17 (6) of the Clean Energy Act? Please discuss.

**40.0 Reference: Project Costs and Benefits  
Exhibit B-6, IR 1.81.2 Response  
Theft Reduction Benefit, Marginal Revenue and Cost**

“Marginal revenue is incremental revenue received per MWh at the residential tariff rate which is billed to FortisBC customers (\$120.04.04 per MWh in 2012).

Marginal cost is the incremental power purchase expense per MWh based on the BC Wholesale Market Energy Price Forecast (\$54.68 per MWh in 2012).” [Exhibit B-6, IR 1.81.2]

40.1 Please provide the detailed calculation of the \$120.04 per MWh marginal revenue figure, with reference to the actual residential tariff rate used.

**41.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.56.3 Response  
Theft Reduction Benefit, Tracking Benefits**

Fortis BC submits that the “Monitoring Plan” for the “Theft Reduction” benefit of the proposed AMI project is:

“Compare actual number of theft sites identified to the number of theft sites *forecast* on Row 26 of *Theft Reduction* worksheet filed as part of Exhibit B-3.

Compare actual revenue recovered from theft sites to the revenue forecast on Row 29 of the *Theft Reduction* worksheet filed as part of Exhibit B-3.” [Exhibit B-6, BCUC IR 1.56.3]

41.1 Please confirm that Row 26 of the “Theft Reduction” worksheet relates to the “Number of Identified Theft Sites” under AMI. If not confirmed, please explain otherwise.

41.2 Please confirm that Row 29 of the “Theft Reduction” worksheet relates to the “Recovered Revenue from Theft Identification” under AMI. If not confirmed, please explain otherwise.

41.3 Please confirm that the “Monitoring Plan” discussed in BCUC IR 1.56.3Response relates to tracking the “Theft Reduction” benefit associated with an increase in identified theft sites and consequently an increase in revenue recovered from theft sites. If not confirmed, please explain otherwise.

41.4 Please discuss what the “Monitoring Plan” is for tracking the theft reduction benefits associated with the AMI project for the following:

- The decrease in the total number of marijuana grow sites under the proposed AMI project, versus the Status Quo.
- The increase in the number of paying, illegal marijuana grow sites under the proposed AMI project versus the status quo.

**42.0 Reference: Project Costs and Benefits  
Exhibit B-1-1, Excel Attachment, Tab “Theft Reduction”  
Theft Reduction Benefit, Recovered Revenue from Theft Sites**

42.1 Please discuss the treatment of recovered revenue from theft sites in Fortis BC’s revenue requirement calculation. Specifically, please address the following:

- Does Fortis BC estimate the amount of revenue that will be recovered from theft sites and include the estimate as an offset to the Company’s revenue requirement calculation?
- How does Fortis BC estimate the amount of revenue that will be recovered from theft sites?

- Is any variance between actual and forecast revenue recovered from theft sites captured in a variance account and credited to the ratepayer? If yes, please provide the name of the variance account. If not, please confirm if the variance flows to the shareholder as opposed to the ratepayer.
- Is revenue recovered from theft sites a monetary benefit to the shareholder or the ratepayer? Please discuss.

**43.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.33.1, p. 59  
Meter Reading**

BC Hydro estimated the average cost to read the five per cent of customers that would continue to be manual reads would be three times higher than the pre-Smart Meter costs. [Exhibit B-1, Appendix C-4, p. 27]

The FortisBC response to BCUC IR 1.33.1 includes Table BCUC IR 1.33.1.b which provides a comparison of the Status Quo meter reading costs, the Post-AMI meter reading costs for 1% manual meter reads and the Post-AMI meter reading costs for 5% manual meter reads, for each year until 2032.

Commission staff has prepared an analysis in Schedule 4 of Appendix 1 to BCUC IR 2 in order to compare the NPV of the incremental meter-reading benefit of the AMI-project with 1% manual meter-reads versus 5% manual meter-reads.

- 43.1 Please confirm that the calculation prepared by Commission staff in Schedule 4 is correct. If not confirmed, please provide an updated calculation in a working excel document and provide an explanation for each change made.
- 43.2 Please discuss how Fortis BC arrived at the assumption that only 1% of meters will require manual reads under the proposed AMI project.

**44.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.70.1 Response, p. 159  
Carrying Costs, Debt Return**

“At the time of preparing the AMI application, reference was made to the Company’s 2012-2013 RRA Evidentiary Update which had forecast weighted average cost of debt (WACD) of approximately 6.0 percent for 2012 and approximately 5.9 percent for 2013...the Company has forecast the same WACD for 2012 and a rate of 5.8 percent for 2013. The Company believes this is appropriate for the Project as this is the period in which the project would be financed. Once the debt associated with the project is issued, and the project is funded, future debt rates do not impact the economics of the project.” [Exhibit B-6, BCUC IR 1.70.1]

- 44.1 FortisBC submits in the response to BCUC IR 1.70.1 that “...future debt rates to not impact the economics of the project.” Please confirm if the cost of debt included in Fortis BC’s revenue requirement is based on the cost of debt for individual capital projects (i.e. the cost of debt for an individual capital project multiplied by the project capital costs for the same project) or the weighted average cost of debt for the Company as a whole.

- 44.1.1 If the cost of debt included in Fortis BC's revenue requirement is based on the weighted average cost of debt for the Company as a whole, please explain further how the Company's future debt rates "do not impact the economics of the [AMI] project."
- 44.2 Does Fortis BC forecast the Company's long-term cost of debt? If confirmed, please provide Fortis BC's estimated weighted average cost of debt for each year between 2012 and 2032.
- 44.2.1 If the answer to the preceding IR is yes, please provide an updated cost of debt for the Status Quo and Gross AMI options, for each year between 2012 and 2032. Please provide calculations in a working excel document.

**45.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.70.1 Response, p. 159  
New Operating Costs – Baselines from Long Term Resource Plan**

- 45.1 Please provide the forecast operating and maintenance expenditures for FortisBC as a whole, excluding the forecast new operating costs associated with the AMI project, for each individual year between 2013 and 2032, by the following categories:
- Power purchase management expense
  - Generation
  - Utility operations
  - Mandatory reliability standards
  - Cominco facility charge
  - Brilliant Terminal Station
  - Internal Audit
  - Legal & Regulatory
  - Customer Service
  - Community & Aboriginal Affairs
  - Communications
  - Human Resources
  - Information Technology
  - Health, Safety & Environment
  - Facilities Management
  - Finance & Accounting
  - Transportation Services
  - Supply Chain Management
  - Corporate & Executive Management
- 45.1.1 Please provide the AMI project New Operating Costs per Exhibit B-1-1, Excel Attachment, Tab "Gross AMI" Line No 46, broken out into the categories above, for each year between 2013 and 2032.

**46.0 Reference: Project Costs and Benefits  
Exhibit B-1-1, Chapter 5, p. 72 & Table 5.1.1.a, Updated p. 73; Exhibit B-6  
AMI Development and Regulatory Costs**

“Fortis BC has been developing [the] CPCN Application over the past several years, capturing the costs in a non-rate base deferral account, and reporting the details to the Commission in the relevant revenue requirement filings. These deferred expenditures have been included in [the] Application as part of the Project and for Commission approval as part of the CPCN Application, and, following Project approval, will be amortized over the life of the Project.” [Exhibit B-1-1, Chapter 5, p. 72]

Table 5.1.1.a summarizes the total AMI development and regulatory costs of \$4,915 thousand. [Exhibit B-1-1, Chapter 5, p. 72]

- 46.1 Is the non-rate base deferral account for the AMI development and regulatory costs approved by Commission Order? If yes, please provide the reference for the relevant Order.
  - 46.1.1 Please comment on whether the Commission has approved the *recovery* of the AMI development and regulatory costs in rates.
- 46.2 Please confirm if the development and regulatory costs of \$4,915 thousand are all costs that would normally be capitalized under US GAAP. If yes, please provide an explanation as to why these costs are considered capital costs, with reference to the applicable FASB ASC US GAAP Section.
  - 46.2.1 If the answer to the preceding IR is yes, and the development and regulatory costs of \$4,915 thousand are all costs that would normally be capitalized under US GAAP, please comment on why a non-rate base deferral account is required.
- 46.3 Does Fortis BC consider that all US GAAP criteria under ASC 980 have been met for the AMI development and regulatory costs to be included in a non-rate base deferral account? Please explain.
- 46.4 Please provide the revised NPV of the proposed AMI project (i.e. Line No. 5 of Exhibit B-1-1, Excel Attachment, Tab “Net AMI”) if the AMI development and regulatory costs are amortized over a period of 2, 5 and 10 years. Please provide the calculation in a working excel document.
- 46.5 Please confirm if the AFUDC applied to the AMI development and regulatory costs is approved by Commission Order. If confirmed, please provide a reference to the Commission Order.

**47.0 Reference: Project Costs and Benefits  
Exhibit B-1, Chapter 5, pp. 92-95; Exhibit B-6, BCUC IR 1.48.2 Response  
Measurement Canada Compliance**

“[Table 5.3.4.a] outlines the costs to replace the Fortis BC electro-mechanical fleet under the new S-S-06 regulations, assuming the population is managed to the end of its life. Because this expenditure will be required if an AMI Project does not replace these meters, the benefit is an avoided cost that would no longer be required by another project. The costs include the meters, deployment and disposal for the approximately 88,000 electro-mechanical meters that would require replacement.” [Exhibit B-1, Chapter 5, p. 94]

“The avoidance of capital costs related to the revised Measurement Canada sampling plans represents a benefit to FortisBC customers of \$9.8 million as evaluated on a net present value basis.” [Exhibit B-1, Chapter 5, p. 94]

“The AMI Project will result in the replacement of nearly all existing meters with new AMI enabled meters. This will avoid operating costs that would have been incurred sampling and retesting meters for six years after meter deployment. After year six, the cost of meter exchanges is expected to begin returning to the pre-AMI deployment levels.” [Exhibit B-1, Chapter 5, p. 94]

“The avoidance of costs related to the ongoing meter exchanges represents a benefit to FortisBC customers of \$0.8million as evaluated on a net present value basis.” [Exhibit B-1, Chapter 5, p. 95]

The following table was provided by Fortis BC in response to BCUC IR 1.48.3:

Status Quo	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22	Dec-23	Dec-24	Dec-25	Dec-26	Dec-27	Dec-28	Dec-29	Dec-30	Dec-31	Dec-32
	<b>Sustaining Capital</b>																			
Meter Growth (\$000)	\$119	\$126	\$122	\$126	\$125	\$128	\$131	\$129	\$132	\$134	\$136	\$139	\$140	\$141	\$142	\$145	\$147	\$147	\$148	\$151
Total New Meters Installed year	2,252	2,326	2,356	2,356	2,210	2,237	2,226	2,164	2,169	2,161	2,132	2,162	2,143	2,123	2,103	2,099	2,097	2,053	2,028	2,033
Cost per Meter	\$52.78	\$53.73	\$54.70	\$55.69	\$56.69	\$57.71	\$58.73	\$59.81	\$60.88	\$61.98	\$63.09	\$64.23	\$65.38	\$66.56	\$67.76	\$68.98	\$70.22	\$71.48	\$72.77	\$74.08
Meter Replacement (\$000)	\$41	\$67	\$60	\$91	\$56	\$110	\$53	\$25	\$31	\$41	\$36	\$32	\$22	\$19	\$26	\$22	\$23	\$32	\$13	\$8
Total Meters Replaced	1117	1768	1612	2059	1411	2707	1296	696	720	842	823	707	478	399	556	460	488	639	256	159
Cost per Meter	\$37.09	\$37.76	\$38.44	\$39.13	\$39.83	\$40.55	\$41.28	\$42.02	\$42.78	\$43.55	\$44.33	\$45.13	\$45.94	\$46.77	\$47.61	\$48.47	\$49.34	\$50.23	\$51.13	\$52.06
MC Compliance - Testing (\$000)	\$146	\$909	\$903	\$1,478	\$976	\$2,310	\$1,072	\$1,645	\$1,229	\$1,070	\$1,452	\$820	\$1,324	\$486	\$501	\$293	\$306	\$302	\$432	\$901
Total Meters Tested	0	4295	4169	7325	4419	11592	4741	7653	5350	4429	6241	3018	5368	1296	1327	338	372	329	866	2821
Cost per Meter	\$211.54	\$216.60	\$201.79	\$220.90	\$199.28	\$226.08	\$214.95	\$229.68	\$241.48	\$232.70	\$271.81	\$246.58	\$374.84	\$377.71	\$868.18	\$823.43	\$918.47	\$499.48	\$319.27	\$191.27
MC Compliance - Testing (\$000)	\$146	\$909	\$903	\$1,478	\$976	\$2,310	\$1,072	\$1,645	\$1,229	\$1,070	\$1,452	\$820	\$1,324	\$486	\$501	\$293	\$306	\$302	\$432	\$901
Total Compliance Groups Tested	0	18	17	20	9	29	11	5	6	10	15	7	2	3	8	5	4	5	2	2
Cost per Compliance Group	\$50,474.84	\$53,116.83	\$73,906.67	\$108,462.10	\$79,655.25	\$97,442.59	\$328,998.89	\$204,799.31	\$106,952.51	\$96,818.65	\$117,189.92	\$661,825.16	\$161,932.63	\$62,652.64	\$58,688.91	\$76,579.45	\$60,435.32	\$216,026.00	\$450,333.96	
Total MC Compliance plus Meter Replacement (\$000)	\$188	\$975	\$965	\$1,559	\$1,032	\$2,420	\$1,125	\$1,670	\$1,260	\$1,111	\$1,489	\$852	\$1,346	\$504	\$528	\$316	\$329	\$334	\$445	\$909
Total Meters Replaced	1117	6053	5781	9384	5830	14299	6037	8248	6070	5371	7064	3725	5846	1695	1883	798	840	968	1121	2980
Cost per Meter	\$168.23	\$90.16	\$90.11	\$90.17	\$90.18	\$90.17	\$90.19	\$90.20	\$90.21	\$90.21	\$90.21	\$90.23	\$90.23	\$90.30	\$90.28	\$90.40	\$90.39	\$90.35	\$90.40	\$90.31
IT Hardware, Licencing, and Support Costs (\$000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Meters Installed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cost per Meter	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

47.1 Please confirm that the Cost per Meter for “Total MC Compliance plus Meter Replacement” in the table provided by Fortis BC in response to BCUC IR 1.48.3 is in thousands. For example, the cost per meter in 2014 is \$0.16.

47.2 Commission staff has prepared Schedule 5 in Appendix 1 to BCUC IR 2 as a comparison of the cost per meter due to (F) Meter Growth (G) Meter Replacement and (C) Meter Replacement due to Measurement Canada Compliance. Please confirm if the calculations in Schedule 5 are correct. If not confirmed, please provide an updated table and provide an explanation for each change made.

47.2.1 Based on the table prepared by Commission staff in Schedule 5, in each year between 2013 and 2032 the cost per meter of meter replacement due to Measurement Canada Compliance significantly exceeds the cost per meter of both Meter Replacement and Meter Growth. For example, in 2013, the cost per meter for each scenario is as follows:

Cost per meter – Measurement Canada compliance = \$211.54

Cost per meter – Meter Growth = \$53.73

Cost per meter – Meter Replacement = \$37.76

Please explain why the capital cost per meter for Measurement Canada Compliance significantly exceeds the capital cost per meter due to Meter Growth and Meter Replacement.

47.2.2 Please provide a schedule calculating the Measurement Canada Compliance capital costs under the Status Quo for each year between 2013 and 2032, using the cost per meter for Meter Growth, as calculated by Fortis BC in the response to BCUC IR 1.48.2. Please provide the calculation in a working excel document.

**48.0 Reference: Project Costs and Benefits  
Exhibit B-1-1, Excel Attachment, Line No. 31; Exhibit B-11, BCPSO IR 1.38.4, p. 25;  
Measurement Canada Compliance**

According to the NPV analysis in Exhibit B-1-1, the Measurement Canada Compliance capital costs are zero between 2012 and 2032 under the proposed AMI project, the PLC alternative and the AMR alternative. [Exhibit B-1-1, Excel Attachment, Line No. 31 of Tab "Gross AMI", "Gross PLC" and "Gross AMR", respectively]

According to the NPV analysis in Exhibit B-1-1, the Measurement Canada Compliance capital costs are \$18,555 thousand between 2012 and 2032 under the Status Quo option. [Exhibit B-1-1, Excel Attachment, Tab "Status Quo", Line No. 31]

BCPSO IR 1.38.4 requests the following information: "Are there Measurement Canada compliance costs associated with the new AMI enabled meters? If yes, are they included in the New Operating Costs?" [Exhibit B-11, BCPSO IR 1 Q38.4, p. 25] In response to BCPSO IR 1 Q 38.4, Fortis BC submits that "The net Measurement Canada compliance costs (the difference between compliance costs for Status Quo and AMI meters) are included in the Meter Exchanges row." [Exhibit B-11, BCPSO IR 1.38.4, p. 25]

"[Table 5.3.4.a] outlines the costs to replace the Fortis BC electro-mechanical fleet under the new S-S-06 regulations, assuming the population is managed to the end of its life. Because this expenditure will be required if an AMI Project does not replace these meters, the benefit is an avoided cost that would no longer be required by another project. The costs include the meters, deployment and disposal for the approximately 88,000 electro-mechanical meters that would require replacement." [Exhibit B-1, Chapter 5, p. 94]

48.1 Please discuss why there is no capital cost associated with meter replacements due to Measurement Canada Compliance under the proposed AMI project. [Exhibit B-1-1, Excel Attachment, Line No. 31, Tab "Gross AMI"]

48.1.1 Does Fortis BC consider that meter replacements due to Measurement Canada Compliance will be zero under the proposed AMI project? Please discuss this, taking into consideration that the Measurement Canada Compliance capital costs are estimated to be zero over a twenty year period under the proposed AMI project. [Exhibit B-1-1, Excel Attachment, Line No. 31, Tab "Gross AMI"]

48.1.1.1 If the answer to the preceding IR is no, please provide separate schedules for both the proposed AMI project and Status Quo with a) the total estimated capital costs of Meter Replacement due to Measurement Canada Compliance for each year between 2013 and 2032 and b) the number of meters that are expected to be replaced each year.

48.2 Please discuss why there is no capital cost associated with meter replacements due to Measurement Canada Compliance under the PLC alternative [Exhibit B-1-1, Excel Attachment, Line No. 31, Tab "Gross PLC"]

48.3 Please discuss why there is no capital cost associated with meter replacements due to Measurement Canada Compliance under the AMR alternative. [Exhibit B-1-1, Excel Attachment, Line No. 31, Tab "Gross AMR"]

48.4 Please provide the detailed supporting calculations in a working excel document used by Fortis BC to calculate the Measurement Canada Compliance meter replacement costs in Exhibit B-1-1, Excel Attachment, Tab “Status Quo”, Line No. 31.

**49.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.49.1 Response, p. 100; Exhibit B-6, BCUC IR 1.37.1  
Capital Costs**

“FortisBC has one procurement contract for the proposed AMI project, with Itron, dated March 19, 2012 for approximately \$21 million.” [Exhibit B-6, BCUC IR 1.37.1]

The response to BCUC IR 1.49.1 provides a breakdown of the Project Contingency, Costs Subject to Fixed-Price or Fixed Unit-Price Basis and Costs Not Subject to Fixed-Price or Fixed Unit-Price Basis. The following is an excerpt from Table BCUC IR 1.49.1.

<b>AMI Project Capital Cost Summary</b>					
	<b>Item</b>	<b>Project Contingency</b>	<b>Costs Subject to Fixed-Price or Fixed-Unit price Basis</b>	<b>Costs Not Subject to Fixed-Price or Fixed-Unit Price Basis</b>	<b>Total Costs</b>
<b>\$ thousands</b>					
<b>Total 2013 - 2015</b>					
1	Third Party Software and Services	\$452	\$5,378	\$0	\$ 5,830
2	Meters (Including Deployment)	\$925	\$18,812	\$587	\$ 20,323
3	Network Infrastructure	\$660	\$1,830	\$1,959	\$ 4,449
4	System Integration	\$214	\$0	\$2,136	\$ 2,349
5	Theft Detection	\$100	\$0	\$1,000	\$ 1,100
6	Project Management	\$167	\$0	\$2,963	\$ 3,130
7	CPCN Approval Costs	\$0	\$0	\$4,915	\$ 4,915
8	Capitalized OH, AFUDC, PST	\$0	\$0	\$5,592	\$ 5,592
9	<b>Total</b>	<b>\$2,516</b>	<b>\$26,021</b>	<b>\$19,152</b>	<b>\$ 47,689</b>
10	<b>Percentage of Total Cost</b>	<b>5.3%</b>	<b>54.6%</b>	<b>40.2%</b>	<b>100.0%</b>

49.1 Please provide the Project Contingency costs of \$2,516 thousand as a percentage of Costs Not Subject to Fixed-Price or Fixed-Unit Price Basis, excluding CPCN Approval Costs and Capitalized Overhead, AFUDC and PST. Please provide a copy of the calculation in a working excel document.

49.2 Please discuss why the “Costs Not Subject to Fixed-Price or Fixed-Unit Price Basis” of \$26,021 thousand exceeds the Itron contract cost of \$21 million.

49.2.1 Please provide a break-down of the \$26,021 thousand “Costs Not Subject to Fixed-Price or Fixed-Unit Price Basis” by vendor.

**50.0 Reference: Project Description  
Exhibit B-11, BCPSO IR 1.55.1, BCSEA IR 1.68.1; Exhibit B-6-5, BCUC IR 1.97.2.1;  
Exhibit B-1-1, Excel Attachment, Tab “Theft Reduction”  
Opt-Out Provision**

“Fortis BC understands that Central Marine Power, which has one of the more established opt-out programs, has an opt-out rate of just over 1 percent of customers and that the rate is declining.” [Exhibit B-11, BCPSO IR 1.55.1]

“Fortis BC believes that the “opt-out” customers should pay for the incremental costs and lost benefits related to their choice.” [Exhibit B-11, BCSEA IR 1.68.1]

“The Company submits that the forecast theft reduction benefits results in both a reduction of FortisBC’s annual revenue requirement and an increase in net billable load. The revenue requirement decrease is due to reduced power purchase expense related to marijuana grow operations being deterred from operating in FortisBC’s service territory. Higher net billable load is due to more growers paying for their electricity as opposed to stealing electricity.” [Exhibit B-6-5, BCUC IR 1.97.2.1, Revised Response]

- 50.1 Please provided a detailed schedule of forecast incremental costs and lost benefits of the proposed AMI project, assuming a 1 percent opt-out rate, for each year between 2013 and 2032. Please provide the detailed schedule in a working excel document.
- 50.2 Would Fortis BC consider pursuing the proposed AMI project with an opt-out provision? If yes, please discuss under what conditions Fortis BC would consider an opt-out provision acceptable, including, but not limited to:
- The maximum number of opt-outs that would be acceptable to Fortis BC.
  - The conditions that would be required for a customer to opt-out.
  - A detailed listing of the costs and lost benefits that “...customers should pay for.”
  - If customers electing to opt-out would require a new electro-mechanical, digital or other type of meter.
- 50.2.1 If the answer to the preceding IR is no, please explain why not.
- 50.3 In Fortis BC’s opinion, would an opt-out provision reduce the “Theft Reduction” benefit of the proposed AMI project? Please discuss this in the context of the following individual elements of the Theft Reduction benefit:
- The reduction in the revenue requirement due to a decrease power purchase expenses related to marijuana grow operations under the proposed AMI project, as estimated by Fortis BC.
  - An increase in net billable load under the proposed AMI project, due to more growers paying for their electricity as opposed to stealing electricity.
- 50.4 Please provide a revised “Theft Reduction” benefit calculation, assuming that 50 percent of total illegal, marijuana grow sites are able to “opt-out” of the proposed AMI project. Please provide the calculation in a working excel document, consistent with calculations provided in Exhibit B-1-1, Excel Attachment, Tab “Theft Reduction”.
- 50.4.1 Based on the calculations provided in the preceding IR, please provide the revised NPV of the “Theft Reduction” benefit under the proposed AMI project.

**51.0 Reference: Project Costs and Benefits  
Exhibit B-1 of the 2012-2013 Revenue Requirement and Review of ISP proceeding;  
Exhibit B-1-1, Excel Attachment, Tab “Net AMI” Line No. 5;  
Exhibit B-6, BCUC IR 1.53.14.2  
System Losses**

Fortis BC submits in the response to BCUC IR 1.53.14.2 that “The Company has forecast loss reductions of 2 GWh associated with theft reduction due to AMI in its 2012 – 2013 Revenue Requirements Application.” [Exhibit B-6, BCUC IR 1.53.14.2]

Exhibit B-1 of the 2012-2013 Revenue Requirement and Review of ISP proceeding notes the following in Tab 3, p. 11<sup>3</sup>:

“System losses consist of:

1. Losses in the transmission and distribution system;
2. Company use;
3. Losses due to wheeling through the BC Hydro system; and
4. Unaccounted-for energy (meter inaccuracies and theft)

Losses are calculated by using a two year rolling average. The actual gross loss rate for 2012 is the average of the 2009 rate of 9.23 percent and the 2010 rate of 8.42 percent, which is 8.82 percent. The loss rate for 2013 is further reduced to 8.76 percent due to the AMI-based loss reduction program.”

Exhibit B-1-1 of the 2012-2013 Revenue Requirement and Review of ISP proceeding includes an ISP Consultation Report in Appendix K. Attachment 10 of Appendix K notes the following:<sup>4</sup>:

12.	<ul style="list-style-type: none"> <li>• Will AMI cause a rate reduction?</li> </ul>
13.	<ul style="list-style-type: none"> <li>• <i>No, the cost for the program offsets the savings for a net sum zero</i></li> <li>• <i>We are doing this not just for economic reasons but also to provide customers with more energy use information.</i></li> </ul>

51.1 Please provide a breakdown of the estimated system losses for each year between 2013 and 2032, by the following individual categories:

1. Losses in the transmission and distribution system;
2. Company use;
3. Losses due to wheeling through the BC Hydro system; and
4. Unaccounted-for energy (meter inaccuracies and theft)

<sup>3</sup> [http://www.bcuc.com/Documents/Proceedings/2011/DOC\\_28031\\_B-1\\_FBC-Revenue-Requirements-Application.pdf](http://www.bcuc.com/Documents/Proceedings/2011/DOC_28031_B-1_FBC-Revenue-Requirements-Application.pdf)

<sup>4</sup> [http://www.bcuc.com/Documents/Proceedings/2011/DOC\\_28031\\_B-1\\_FBC-Revenue-Requirements-Application.pdf](http://www.bcuc.com/Documents/Proceedings/2011/DOC_28031_B-1_FBC-Revenue-Requirements-Application.pdf)

- 51.2 The excerpt from the 2012-2013 revenue requirement and ISP proceeding notes that “The loss rate for 2013 is further reduced to 8.76 percent due to the AMI-based loss reduction program.” Please comment on whether or not the forecast revenue requirement, before the proposed AMI project, in Exhibit B-1-1, Excel Attachment, Tab “Net AMI” Line No. 5 includes system loss reductions due to the AMI project.
- 51.3 Please confirm if the forecast Revenue Requirement in Line No. 12 of Exhibit B-1-1, Excel Attachment, Tab “Net AMI” includes forecast loss reductions associated with theft reduction due to AMI.
- 51.3.1 If the answer is yes, please discuss if the Forecast Revenue Requirement on Line No. 12 of Exhibit B-1-1, Excel Attachment, Tab “Net AMI” already includes some of the Theft Reduction benefits calculated in Exhibit B-1-1, Excel Attachment, Tab “Theft Reduction”.
- 51.3.2 If the answer is no, please confirm if the value of forecast loss reductions of 2 GWh in Fortis BC’s 2012-2013 Revenue Requirement Application were added back to arrive at the forecast 2012 and 2013 Revenue Requirement per Line No. 12 of Exhibit B-1-1, Excel Attachment, Tab “Net AMI”.
- 51.4 Please discuss the comment made Attachment 10 of Appendix K of the 2012 Integrated System Plan that AMI will not result in a rate reduction and “...the cost for the program offsets the savings for a net sum of zero.”

**52.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.51.1  
AFUDC**

“AFUDC for the project was calculated by applying the AFUDC rate to the average work-in-progress balance in each quarter from Q3 2013 up to and including Q3 2014.” [Exhibit B-6, BCUC IR 1.51.1]

- 52.1 Please provide the detailed calculation of the forecast AFUDC of the proposed AMI project in a working excel document. Please include the average work-in-progress balance and the AFUDC rate used to calculate the AFUDC balance in each quarter from Q3 2013 up to and including Q3 2014.
- 52.2 Please confirm if the AFUDC rate for 2013 and 2014 is approved by Commission Order. If confirmed, please provide the reference for the Order. If not confirmed, please explain otherwise.

**53.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.51.1  
Capitalized Overhead**

“Capitalized overhead was calculated by applying a capitalized overhead rate of 7 percent on the average capital expenditure in the year...” [Exhibit B-6, BCUC IR 1.51.3]

- 53.1 Please confirm if the Capitalized Overhead rate of 7 percent is approved by Commission Order. If confirmed, please provide the reference for the Order. If not confirmed, please explain otherwise.

**54.0 Reference: Project Costs and Benefits  
Exhibit B-6, BCUC IR 1.51.1  
PST**

54.1 For each of 2013, 2014 and 2015, please provide the total costs under the proposed AMI project that are subject to PST.

**55.0 Reference: Health and Safety – EMR-Related Health Concerns**

FortisBC states on page 7 of its application, “Health – some stakeholders have expressed concerns regarding the health effects associated with a wireless RF AMI network. FortisBC submits that the proposed AMI technology complies with Health Canada’s Safety Code 6 as further detailed in Section 8.4.2. As such, FortisBC submits that its proposed AMI Project does not present any risk to customers’ health or safety.”

In addition, on Page 32 of the Exponent report (Appendix C-5), Fortis states, “Knowledge about the existence of RF energy sources such as a base station facility is a source of reporting bias, particularly if a person holds the opinion that such exposures contribute to his or her symptoms.”

55.1 Does FortisBC consider the ‘nocebo effect’, as referenced in the Exponent report and in other academic studies of the potential link between RF/EMF radiation and human health, to be a significant source of negative effects for some of these concerned stakeholders? If not, please explain why not.

55.1.1 Has FortisBC weighed the costs of providing some level of simple EMF shielding or other mitigation methods for its customers as a way of dealing with perception-based negative health effects?

**56.0 Reference: Privacy  
Exhibit B-9, Attachment 2  
FortisBC Privacy Policy**

“When we wish to use or disclose the Personal Information for a new purpose, we will identify the new purpose prior to such use or disclosure and obtain consent at that time, unless such use or disclosure without consent is permitted or required by law.” (p. 2 of 6, FortisBC Privacy Policy)

56.1 Does FortisBC receive written acceptance from customers for the use of personal information? If not, why not.

“From time to time, we may store your Personal Information outside of Canada, where it may be subject to the lawful access requirements of the jurisdiction in which it is being held.” (p. 5 of 6, FortisBC Privacy Policy)

56.2 For what purpose and under what circumstances would FortisBC store Personal Information of its British Columbia customers outside of Canada?

56.3 What would the business implications be to FortisBC if this provision were removed from the FortisBC Privacy Policy in order to maintain British Columbia resident Personal Information within British Columbia or Canadian jurisdiction?

**57.0 Reference: Project Alternatives  
Exhibit B-6, BCUC IR 1.106.1  
Communications**

The FortisBC response to BCUC IR 1.106.1 notes the following:

“In fact, the negotiated AMI contract allows Itron to propose and/or substitute alternative, functionally-similar LAN solutions (such as PLC or direct cellular connection) where they are more economic than the main RF solution.”

57.1 Has FortisBC reserved the right to approve any “functionally similar” substitutions?

57.2 In the event of a “more economic” substitution, are all savings to the benefit of FortisBC customers or would some or any of the economic savings be retained by Itron?

57.3 Please confirm whether Itron has PLC or direct cellular connection meter technologies commercially available.

**58.0 Reference: Health and Safety – Marijuana Grow Operations  
CPCN Guidelines, Appendix A; Clean Energy Act, Section 2; Exhibit B-6, BCUC IR 1.78.2  
Evaluation framework**

Appendix A of the 2010 Certificates of Public Convenience and Necessity Application Guidelines<sup>5</sup> states that an application under sections 45 and 46 of the UCA should contain:

“2 (ii) A comparison of the costs, benefits and associated risks of the project and feasible alternatives, including estimates of the value of all of the costs and benefits of each option or, where these costs and benefits are not quantifiable, identification of the cost or benefit that cannot be quantified.”

Section 2 of the *Clean Energy Act* includes as a British Columbia energy objective “to encourage economic development and the creation and retention of jobs.”

FortisBC stated in BCUC IR 1.78.2 “FortisBC customers financially benefit from marijuana grow operations that do not engage in the theft of service due to the increased number of billed kWh over which fixed utility costs are divided.”

58.1 Does FortisBC consider that Section 2 of the CEA considered illegal activities as the type of economic development that should be encouraged in BC? If yes, please explain why.

58.2 Does FortisBC consider that it is legal and/or ethical for a company to knowingly profit (or allow its customers to profit) from the illegal activities of other customers? Please explain why/why not.

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<sup>5</sup> [http://www.bcuc.com/Documents/Guidelines/2010/DOC\\_25326\\_G-50-10\\_2010-CPCN-Application-Guidelines.pdf](http://www.bcuc.com/Documents/Guidelines/2010/DOC_25326_G-50-10_2010-CPCN-Application-Guidelines.pdf)

58.2.1 Does FortisBC consider that no financial benefit (in terms of lower bills to ratepayers) should be included in CPCN net benefits calculation where this benefit only occurs as a result of an increase in sales to illegal activities? Please explain why/why not.

58.3 Does FortisBC consider that negative financial effects on illegal marijuana grow operators (whether paying or not paying) should not be a consideration in the AMI evaluation, however, negative health and safety effects on these consumers can be a consideration? Please explain why/why not.

58.4 Does FortisBC consider that broader BC social impacts related to the AMI option (for example, any expected affect on organized crime) can be a consideration in the evaluation, even if they affect residents who are not FortisBC customers? Please explain why/why not.

58.5 Does FortisBC consider that effects outside of BC (such as a shift of illegal activities to other Provinces) should be considered out of the scope of an AMI evaluation? Please explain why/why not.

58.6 Does FortisBC consider that, for the purposes of the AMI cost/benefit evaluation, the key considerations related to marijuana grow-operations are listed below? Please explain why/why not:

- **Health and safety:** community health and safety issues associated with a higher number of illegal grow-ops under the status quo than under the AMI proposal.
- **Financial:** financial benefits resulting from a reduction in network losses through better identification of electricity theft. Any negative financial impacts on rates resulting from a reduction in electricity sales to illegal activities would be excluded from the evaluation.

**59.0 Reference:** **Health and Safety – Marijuana Grow Operations Exhibit B-1, Tab 5, Section 5.3.2, pp. 80, 81; Exhibit B-6, BCUC IR 1.86.1, Appendix 1, p. 8; City of Abbotsford, A Community Public Safety Initiative – Removing Marijuana Grow Op Hazards in the City of Abbotsford, 2005, p. 4; Plecas, Diplock & Garis, Commercially viable indoor marihuana growing operations: what makes them such a serious issue; pp 8-26**  
**Problem description**

FortisBC states on page 80 and 81 of its Application:

“Energy theft is a serious concern for FortisBC and its customers for safety and financial reasons. Premises where theft is occurring have been altered without the certification required under the *Safety Standards Act*. Many of these service alterations impose fire hazards and other risks on unknowing neighbours, first responders and electric utility workers.”

In the Appendix to BCUC IR 1.86.1, page 8, Professor Boyd states:

“Finally, I note that the material provided to me by Fortis does not quantify the potential public safety benefit of AMI (in relation to the dangers inherent in theft of electricity). More specifically, the avoidance and/or limitation of fatalities and serious injuries to citizens have economic costs that should be considered.”

Appendix 2 to this IR (see Attachment Panel) is an October 2005 report by the City of Abbotsford titled 'A Community Public Safety Initiative – Removing Marijuana Grow Op Hazards in the City of Abbotsford'.<sup>6</sup> Page 4 of this report states:

### ***Community Public Safety Concerns***

Two public forums were held to allow the citizens of Abbotsford to voice their concerns about Grow Ops in their neighbourhoods and how they were affected. It was clear the citizens of Abbotsford were concerned for their safety, the safety of their children, and the safety of their neighbourhoods. In particular, citizens identified the following concerns:

- there is potential for fire to spread to neighbouring properties due to electrical bypasses or over-stress on electrical systems;
- growers often have children living with them in houses with Grow Ops;
- mould and carbon monoxide poisoning can be present in Grow Op houses;
- the electrical work is generally not done by a qualified electrician and not in compliance with the *Provincial Safety Standards Act*;
- Building Code infractions are present within Grow Op houses;
- Grow Rips occur in otherwise crime-free neighbourhoods; this can result in neighbourhood children and innocent citizens being harmed;
- there is a real fear that houses are sold to purchasers without their knowledge that safety issues exist;
- there is general neglect of a house that contains a Grow Op, which affects the overall neighbourhood.

Appendix 3 to this IR (see Attachment Panel) is a Plecas, Diplock & Garis report titled 'Commercially viable indoor marihuana growing operations in British Columbia: what makes them such a serious issue?'<sup>7</sup> This report states:

"Because indoor marihuana grow ops require a great deal of electricity to power the typically 1000 watt bulbs used to provide the plants with light, these operations are susceptible to serious electrical hazards including fire. ... Of particular concern is that the previously discussed dangers such as high humidity, increased CO<sub>2</sub> levels, high energy light systems, and improper and unregulated construction and electrical work make marihuana grow sites much more hazardous to children than a typical home."  
(Page 8)

"These dangers are not limited to only the grow operators, but pose a serious threat to neighbours and first responders. Contamination from the chemicals used in the growing process is a major health concern for people in neighbouring properties. According to the focus group (Surrey Fire Service focus group, July 10, 2009), there is a real risk of drinking water contamination in the neighbourhood as a result of back flushing. Also, the spilling and dumping of chemicals can result in the migration of substances into neighbouring properties, which would require remediation to eliminate the danger."  
(Pages 8, 9)

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<sup>6</sup> <http://www.abbotsford.ca/Assets/Abbotsford/Public+Safety+Inspection+Team/Community+Public+Safety+Initiative+-+Report.pdf>

<sup>7</sup> [http://www.surrey.ca/files/Commercially\\_Viable\\_Indoor\\_Marihuana\\_Growing\\_Operations\\_in\\_British\\_Columbia.pdf](http://www.surrey.ca/files/Commercially_Viable_Indoor_Marihuana_Growing_Operations_in_British_Columbia.pdf)

“In addition to the health risks identified above, there is also the potential for marihuana production to cause social problems to communities. These problems include attracting and supporting criminal activity, lowering property values, increasing living costs, and impacting the environment. These problems may be of most concern for those living within close proximity to marihuana growing operations, but the negative effects of marihuana production influence all British Columbians.” (Page 9)

“In addition to the potential for home invasions and other violence to increase as a result of the drug trade, the presence of marihuana growing operations also offers an avenue for young people to become involved in criminal activity. This is especially true for children who are raised in residences housing grow ops, since they are exposed to a lifestyle that includes illegal activities.” (Page 10)

“If the large majority of grow ops go on undetected, this implies that there may be many contaminated residences that used to be former growing operations. ... Even for those who do manage to avoid living near or buying a home that used to house an indoor marihuana growing operation, there are economic and environmental costs that affect everyone. One such example may be in the housing market, where home buyers are competing with prospective marihuana growers to purchase property. Not only are drug producers damaging and devaluing homes for future owners, but they may also be driving up the costs with the demand for new drug production sites.” (Page 11)

“[Commercially viable indoor marihuana growing operations] are harmful operations intended to generate on-going tax free profits for those who own them. Collectively across the province of British Columbia commercial marihuana growers take money out of the pockets of every taxpayer and worse and increasingly so, facilitate the ability of organized crime to become richer, stronger, and more pervasive.” (Page 26)

59.1 Does FortisBC consider that illegal grow operations have the following negative health and safety impacts on its customers and for BC in general? If no, please explain why not.

- Attracting and supporting criminal activities
- Increased fire risk
- Property damage which may not be disclosed to home purchasers
- Drinking water contamination
- Health and safety concerns for occupiers of grow-op buildings, which may include children.

59.2 Has FortisBC consulted with its customers and the broader community in order to better understand both the size of the illegal marijuana grow-operation on its network, and the health and safety implications of these illegal operations on its customers and the broader BC community? If no, please explain why not. If yes, please explain the consultation undertaken and the result.

**60.0 Reference: Health and Safety - Marijuana Grow Operations  
Exhibit B-6, BCUC IR 1.86.1, Appendix 1, pp. 3-7  
AMI impact**

In Appendix to BCUC IR 1.86.1, Professor Boyd states:

“If no more than 5 per cent of growers are stealing – because the risks of detection and arrest are simply overwhelming – then it follows that there may not be any increase in marijuana grows in the Fortis region, but perhaps even a decrease in the number of sites, contrary to the projections made by the company.” (Page 7)

“Public opinion polls in Canada demonstrate significant support for the decriminalization of possession, and for some degree of regulation of the industry.” (Pages 3, 4)

“If FortisBC was to resist AMI deployment and local governments in the region were to simultaneously embrace the [*Safety Standards Amendment*] Act of 2006, a worst case scenario seems likely to emerge. The number of growers in the region would increase, given knowledge of the lack of AMI deployment, and the majority would steal electricity, knowing that their high levels of consumption would be reported by Fortis to local governments, and, in turn, to police.” (Page 6)

60.1 Please confirm the following:

- under the Probable AMI forecast, FortisBC conservatively projects that the number of illegal marijuana sites will increase at 1 percent annually, compared to the status quo of 2 percent annually
- under the Potential AMI forecast, FortisBC projects that the number of illegal marijuana sites will increase at 1 percent annually, compared to the status quo of 3 percent for the first five years (2 percent annually thereafter).

60.2 Please respond to Professor Boyd’s comments that AMI may result in a more significant decrease in the number of illegal marijuana sites (rather than just a smaller annual increase).

60.3 Please describe the health and safety impacts on BC residents related to a projected reduction in the number of illegal marijuana grow-operations from the FortisBC AMI proposal.

60.4 Does FortisBC consider that AMI could increase the ability of local governments to use the *Safety Standards Amendment Act* of 2006 to address illegal marijuana grow operation concerns in their areas? If yes, please describe and state if this could result in any additional health and safety benefits for BC residents.

60.4.1 Please describe whether, and to what extent, legalization of marijuana could reduce the expected health and safety benefits associated with a decrease in the number of illegal marijuana grow operations under the AMI proposal.

60.4.2 Does FortisBC consider that, in evaluating the AMI proposal, health and safety benefit estimates related to a reduction in the number of illegal marijuana grow operations should be (i) reduced to reflect the risk of legalization of marijuana at some point during the project term and/or (ii) increased to reflect an increase in ability by local governments to address illegal marijuana grow operations? If no, please explain why not. If yes, please explain to what extent estimated benefits should be reduced/increased to reflect these factors.

60.5 To what extent would allowing individual customers to opt out of AMI affect the ability of FortisBC to achieve health and safety benefits related to a reduction in the number of illegal marijuana grow operations? Please explain and quantify where possible.

**61.0 Reference: Electricity Theft – Marijuana Grow Operations  
Exhibit B-6, BCUC IR 1.81.2, 1.81.3; Order G-3-12, pp. 37-39  
Cost of Energy**

FortisBC, in BCUC IR 1.81.2, states “Marginal Cost [for Theft Reduction] is the incremental power purchase expense per MWh based on the BC Wholesale Market Energy Price (\$54.68 per MWh for 2012).

FortisBC, in BCUC IR 1.81.3 states “All power purchase costs are based on the BC Wholesale Market Energy Price Forecast. FortisBC considers these revenue and cost rate forecasts to be reasonable and as such did not consider other alternatives.”

Commission 2012 Order G-3-12 on FortisBC Inc. Residential Inclining Block Rate states on pages 37 to 39.<sup>8</sup>

“The following table summarizes FortisBC’s various marginal cost and LRMC values presented throughout this Application.

**Table 3: FortisBC’s Marginal Cost and Long-Run Marginal Cost of Energy**

Definition	Value	Reference
<b>Marginal Cost:</b> short-term avoided costs over the 2012 to 2015 period, based primarily on avoided 3808 Energy Purchases with minor amount of market purchases and surplus sales)	\$38.04 per MWh	Exhibit B-8, Commission Panel IR 7.1 Exhibit B-8, Commission Panel IR 7.2
<b>Long-Run Marginal Cost:</b> cost to acquire additional power through market purchases where existing resources are insufficient to meet load requirements	\$84.94 per MWh	Exhibit B-8, Commission Panel IR 7.1 Exhibit B-8, Commission Panel IR 7.2
<b>Long-Run Marginal Cost:</b> cost to acquire additional power from new resources	\$111.96 per MWh (30-year levelized value starting in 2011 using a nominal discount rate of 8 percent) \$125.80 per MWh (including 11 percent losses)	Exhibit B-11, p. 17

Source: Exhibit B-11, p. 17

... In the 2008 BC Hydro Residential Inclining Block (RIB) Decision, the Commission determined that the long-run cost of new supply is the appropriate referent for the Step-2 energy rate (BC Hydro 2008 RIB Decision, p. 107, Order G-124-08). The Panel finds that no new evidence has been provided in this proceeding to cause it to depart from those conclusions. **Accordingly, the Commission Panel determines that the long-run marginal cost of new supply continues to be the appropriate referent for the Block-2 energy rate. ...**

While the Panel considers the most appropriate referent to be the cost of acquiring energy through new resources, we note that all of the above marginal costs represent only the cost of acquiring the energy.

<sup>8</sup> [http://www.bcuc.com/Documents/Proceedings/2012/DOC\\_29557\\_FBC%20Inc-RIB\\_Decision-WEB.pdf](http://www.bcuc.com/Documents/Proceedings/2012/DOC_29557_FBC%20Inc-RIB_Decision-WEB.pdf)

Thus, there is ambiguity between the LMRC as defined by FortisBC and the true long-run marginal cost of new supply to the customer. The Block 2 rate is a delivered rate, while the LRMC is a cost of acquisition – it only relates to the cost of procuring energy but does not include the LRMC of transporting that energy to customers through transmission and distribution networks. FortisBC estimates the LRMC at \$125.80 per MWh, or 12.58 cents per kWh, which includes line losses of 11 percent, but does not include other delivery costs. ...

Because of the uncertainty of the actual LRMC, the Panel does not agree that the Block 2 rate be capped at this time. However, FortisBC is directed to provide an update of the full long-run marginal cost of acquiring energy from new resources, including the cost to transport and distribute that energy to the customer as part of the reporting to be submitted in 2014.”

- 61.1 Please provide FortisBC’s estimate of the long-run marginal cost of acquiring energy from new resources, including the cost to transport and distribute that energy to residential customers (consistent with that requested on page 41 of Commission Order G-3-12). Please state all assumptions used in arriving at this estimate, including those for transmission and distribution line losses, ancillary services, and incremental network costs.
- 61.2 Please explain why FortisBC has used a short-term avoided cost of energy in its analysis on Table 5.3.2.b and 5.3.2.c of the Application, rather than the long-run marginal cost of acquiring energy from new resources determined to be the appropriate referent price by the Commission for the residential Block-2 energy rate.
  - 61.2.1 Does FortisBC object to using the full long-run marginal cost of acquiring energy from new resources (determined to be the appropriate referent price by the Commission for the residential Block-2 energy rate) to estimate the cost of energy theft by marijuana grow operations and the revenue requirement impact of a change in the number of paying illegal marijuana grow-operations on its network? If yes, please explain why.

**62.0 Reference: Electricity Theft – Marijuana Grow Operations  
Exhibit B-6, BCUC IR 1.86.1, Appendix 1, BCUC IR 1.87.1, BCUC IR 1.85.4.1;  
Exhibit B-1, Tab 5, Section 5, p. 69, Section 5.3.2, pp. 81-87  
Benefit quantification**

FortisBC includes as an Appendix to BCUC IR 1.86.1 a June 24, 2012 letter by Neil Boyd, Professor School of Criminology, Simon Fraser University which provides a written opinion with respect to the potential and probable impacts of AMI deployment within the geographic area served by FortisBC.

FortisBC states on page 69 of the application “The summary table below displays the savings to FortisBC customers between 2015 and 2030 and calculates the net present value of those savings in 2012 dollars.”

FortisBC includes on page 81 to 87 of the Application, and in response to BCUC IR 1.87.1, its assumptions in calculating the NPV of net benefit to customers related to illegal marijuana grow operations for the Probable and Potential AMI forecast.

FortisBC includes a table in response to BCUC IR 1.85.4.1 which shows that, from 2006 to 2011, \$355,086 was collected as a result of back-billing for electricity theft out of a total invoiced amount of \$714,411. FortisBC states that approximately 98% of this amount is related to marijuana grow operations.

62.1 Please provide the resume of Professor Neil Boyd.

62.1.1 Please confirm that “11,400 kWh per site (3,780 X 30 lights)” on page 3 of Professor Boyd’s report should read “113,400 kWh per site (3,780 X 30 lights)”. If no, please explain why.

62.2 Does FortisBC consider that the table below is a reasonable summary of the key assumptions made by FortisBC in estimating electricity theft by illegal marijuana grow operations, and Professor Boyd’s expert opinion on that evidence. If no, please clarify.

	FortisBC Status Quo	FortisBC AMI Probable	FortisBC AMI Potential	Prof. Boyd
Number of illegal marijuana sites in Fortis BC service area	824	824	824	820
Annual energy use per site	151,200 kWh	151,200 kWh	181,440 kWh (20% increase as 36 lights/site assumed)	Conservative estimate of 3,780 kWh x 30 = 113,400 kWh
Annual change in total number of sites	2% increase each year (8% increase by 2016)	1% increase each year (4% increase by 2016)	<u>Status quo</u> : 3% annual increase per year for first 5 years (13% increase by 2016), then 2%/year. <u>AMI</u> : 1% annual increase.	<u>Status quo</u> : 10% increase by 2016 as a low estimate, 40% increase by 2016 unlikely. <u>AMI</u> : If no more than 5% stealing, reasonable to assume that there may not be any increase in the number of sites, and maybe even a decrease.
Percentage sites stealing electricity	25%, increasing to 30% by 2017	25% decreasing to 5% by 2021	25% decreasing to 5% by 2021, with further decreases post 2021	<u>Status quo</u> : same as current levels with some increase due to influx of growers. <u>AMI</u> : Virtually certain that theft will decrease markedly, but exact estimate cannot be made with precision. May not be as low as 5%.
Theft detection rate	8%	Increasing from 8% to 25% by 2016	Increasing from 8% to 25% by 2016	Not commented on
Recovered revenue from theft detection	Each theft site is billed for an average 1 year loss with collection success rate of 20%			Not commented on
Cost of Energy	BC Wholesale Market Energy Curve			Not commented on
LED penetration / legalization	None			Legalization/LED changes are entirely within the realm of possibility and could dramatically affect the validity of projections made.

62.3 Does FortisBC support the opinion provided by Professor Neil Boyd in his June 24, 2012 letter? If no, please identify which aspects of the opinion FortisBC disagrees with and why.

- 62.3.1 Please respond to Professor Boyd’s opinion that electricity theft under AMI, while virtually certain to decrease markedly, may not drop as low as 5%.
- 62.4 Please explain why FortisBC assumes each theft site is billed for an average 1 year loss with collection success rate of 20%, when its back-billing success rate associated with theft of electricity was \$355,086 out of a total of \$714,411.
- 62.4.1 How far back does FortisBC generally bill for electricity from non-paying illegal marijuana grow operations? Please explain why.
- 62.5 Please explain why, under the AMI scenario, the theft detection rate only increases from 8% to 25%. Please include in your response a description of the barriers which prevent an even greater increase in the theft detection rate, and how these barriers could be addressed.
- 62.6 Please determine the net benefit to ratepayers (i.e. NPV of the difference in electricity theft due to illegal marijuana grow operations under AMI compared to the status quo), over the project period under the following scenarios. Please exclude any financial impacts related to paying illegal grow-operations. Please describe all assumptions used and include a working excel spreadsheet showing the analysis.

For each scenario, please also explain to what extent FortisBC considers such a scenario appropriate for the purposes of evaluating the financial benefit to ratepayers of AMI as it relates to a reduction in electricity theft due to illegal marijuana grow operations.

	Scenario 1A	Scenario 1B	Scenario 2	Scenario 2B
Description	0% site increase under AMI, short-term avoided energy cost	0% site increase under AMI, LRMC energy cost of new resources	2% site decrease under AMI, short-term avoided energy cost	2% site decrease under AMI, LRMC energy cost of new resources
Number of illegal marijuana sites in Fortis BC service area (2012)	824	824	824	824
Annual energy use per site	113,400kWh	113,400kWh	113,400 kWh	113,400 kWh
Annual change in total number of sites	2% increase each year for status quo. 0% per year increase for AMI	2% increase each year for status quo. 0% per year increase for AMI	2% increase each year for status quo. 2% per year decrease for AMI	2% increase each year for status quo. 2% per year decrease for AMI
Percentage sites stealing electricity	25%, increasing to 30% by 2017 for status quo. 25% decreasing to 5% by 2021 for AMI	25%, increasing to 30% by 2017 for status quo. 25% decreasing to 5% by 2021 for AMI	25%, increasing to 30% by 2017 for status quo. 25% decreasing to 5% by 2021 for AMI	25%, increasing to 30% by 2017 for status quo. 25% decreasing to 5% by 2021 for AMI

	Scenario 1A	Scenario 1B	Scenario 2	Scenario 2B
Theft detection rate	8% for status quo.  Increasing from 8% to 25% by 2016 for AMI	8% for status quo.  Increasing from 8% to 25% by 2016 for AMI	8% for status quo.  Increasing from 8% to 25% by 2016 for AMI	8% for status quo.  Increasing from 8% to 25% by 2016 for AMI
Recovered revenue from theft detection	Set based on average actual results from 2006 to 2011	Set based on average actual results from 2006 to 2011	Set based on average actual results from 2006 to 2011	Set based on average actual results from 2006 to 2011
Cost of Energy (refer to Order G-3-12, pp. 37-39)	Short-term avoided cost (Midgard Consulting 2011 report, Table 5.1.3.3A)	LRMC of additional power from new resources, including the cost to transport/distribute that energy to residential customers.	Short-term avoided cost (Midgard Consulting 2011 report, Table 5.1.3.3A)	LRMC of additional power from new resources, including the cost to transport/distribute that energy to residential customers.
LED penetration / legalization	None	None	None	None

62.6.1 Please redo the analysis above, but assume the percentage of sites stealing electricity decreases from 25% to 10% by 2021 for AMI.

62.6.2 Please also determine the NPV using the same approach as above, but using assumptions made in the Application for (i) the FortisBC AMI Probable scenario, and (ii) the FortisBC AMI Potential scenario. In table form, please compare the key assumptions used by FortisBC for these two scenarios with the four scenarios modeled in the question above. Please describe all assumptions used and include a working excel spreadsheet showing the analysis.

62.7 Please explain why the NPV analysis presented by FortisBC on page 69 of the Application states that it is for the period between 2015 and 2030 (in 2012 dollars), and yet the NPV of net benefit on Table 5.3.2.b starts at 2012.

**63.0 Reference: Electricity Theft – Marijuana Grow Operations Exhibit B-6, BCUC IR 1.86.1, Appendix 1, 1.83.4.1, 1.86.2; CBC News Article, March 2012, Edmonton firefighter suspended after grow-op bust Sensitivity analysis**

Professor Boyd states in the Appendix to FortisBC response to BCUC IR 1.86.1:

“Public opinion polls in Canada demonstrate significant support for the decriminalization of possession, and for some degree of regulation of the industry. ... cannabis culture forums discuss the emerging efficacy of LED lighting ...” (Pages 3, 4)

“Changes within the industries of control and product could dramatically affect the validity of any projections made, whether by Fortis, myself, or other researchers – and these changes are entirely within the realm of possibility.” (Page 4)

“There are no local governments served by FortisBC that require Fortis to disclose account information of customers with high loads. ... Consider, alternatively, the approach taken by Mission BC. ... from 2000 to 2005 only 13% of indoor grows discovered in the city of Mission had stolen electricity. In the period 2006 to 2010 the incidence of theft of electricity in uncovered grows in the city was almost five times higher; 57 per cent of these operations had evidence of theft: the grows were larger, with more plants, and a higher average number of lights.” (Page 5)

“If FortisBC was to resist AMI deployment and local governments in the region were to simultaneously embrace the *[Safety Standards Amendment] Act* of 2006, a worst case scenario seems likely to emerge. The number of growers in the region would increase, given knowledge of the lack of AMI deployment, and the majority would steal electricity, knowing that their high levels of consumption would be reported by Fortis to local governments, and, in turn, to police.” (Page 6)

Appendix 4 to this IR (see Attachment Panel) is a CBC news report titled “Edmonton firefighter suspended after grow-op bust.”<sup>9</sup> The reports states:

“Police say they found 500 marijuana plants valued at more than \$500,000 at the home. Police say it was the first grow-op in Canada to have used LED (light-emitting diode) lights in the operation, which draw less electricity and are more difficult to detect.”

FortisBC states in BCUC IR 1.83.4.1 “It appears that there is considerable information available (much of it from LED suppliers) to suggest that LED lighting has a great deal of “future potential”, but there is little credible evidence to support a current trend towards LED use by marijuana grow operations.”

FortisBC states in BCUC IR 1.86.2 “FortisBC does not contemplate the conversion to LED lighting systems by producers during the life of the project. ... However, if it were possible that a marketable prototype were in use by up to two percent of growers beginning in 2017 ...”

A November 7, 2012 CNN report states:<sup>10</sup>

“Moments after President Barack Obama was declared elected Tuesday night ... Washington state was joining Colorado in declaring pot legal. ... Kirk Tousaw, a Vancouver Island lawyer [stated] "Canadian prohibitionists that used to claim that we can't legalize because of American reaction at the border have lost that argument”.”

63.1 Please describe whether, and to what extent, legalization of marijuana in BC could reduce the expected financial benefit associated with the AMI proposal as it relates to a reduction in electricity theft.

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<sup>9</sup> <http://www.cbc.ca/news/canada/edmonton/story/2012/03/13/edmonton-firefighter-marijuana-bust.html>

<sup>10</sup> <http://politicalticker.blogs.cnn.com/2012/11/07/colorado-washington-pass-marijuana-legalization-oregon-says-no/>

- 63.1.1 Does FortisBC consider that, in evaluating the AMI proposal, financial benefits related to a reduction in electricity theft by illegal marijuana grow operations should be shown as a range of reasonable benefits to reflect a risk of legalization in BC over the project term? If no, please explain why not. If yes, please explain what this range should be.
- 63.2 Please describe whether, and to what extent, recent legalization of marijuana in Washington and Colorado could reduce the expected financial benefit associated with the AMI proposal (for example, by reducing demand for BC grown marijuana or increasing the probability that marijuana will be legalized in BC).
- 63.2.1 Please update the FortisBC estimate of NPV of benefit from AMI as it relates to a reduction of theft related to illegal marijuana grow operations to reflect these recent developments.
- 63.3 Is FortisBC satisfied that there is no evidence to support a risk of a move towards LED lights by a significant number of illegal marijuana grow operations over the project term? Please include in the response consideration of the LED illegal grow operation in Edmonton.
- 63.3.1 Does FortisBC consider that, in evaluating the AMI proposal, financial benefits related to a reduction in electricity theft by illegal marijuana grow operations should be shown as a range of reasonable benefits to reflect a risk of a move to LED lights over the project term? If no, please explain why not. If yes, please explain what this range should be.
- 63.4 Has FortisBC consulted with local governments to identify if their use of the provisions of the *Safety Standards Amendment Act* of 2006 to identify illegal marijuana grow operations could change in the future under both the Status Quo and AMI scenario? If yes, please explain the results of consultation. If no, please explain why not.
- 63.4.1 Please describe whether, and to what extent, a request by local governments served by FortisBC to disclose account information of customers with high loads for the purpose of identifying illegal marijuana grow operations could affect the expected financial benefits associated with the AMI proposal as it relates to a reduction in electricity theft over the project term.
- 63.4.1.1 Does FortisBC consider that, in evaluating the AMI proposal, financial benefits related to a reduction in electricity theft by illegal marijuana grow operations should be shown as a range of reasonable benefits to reflect the risk of local government use of the provisions of the *Safety Standards Amendment Act of 2006* to identify illegal marijuana grow operations? If no, please explain why not. If yes, please explain what this range should be.

- 64.0 Reference: Marijuana Grow Operations – General**  
**CPCN Guidelines, Appendix A; RCMP, Drug Situation in Canada – 2007, p.3; Edmonton Police Service, Green Team, home page; Global News, Toronto Police see a dramatic rise in grow operation busts, April 2011; City of Surrey and University of the Fraser Valley, Community Response to Marijuana Grow Operations, 2009, p.14; Exhibit B-6, BCUC IR 1.85.5**  
**Alternative options**

Appendix A of the 2010 Certificates of Public Convenience and Necessity Application Guidelines states that the application under sections 45 and 46 of the UCA should contain the following:

“2 (i) ... The applicant should identify alternatives that it deemed to be not feasible at an early screening stage, and provide the reason(s) why it did not consider them further;

2 (ii) A comparison of the costs, benefits and associated risks of the project and feasible alternatives, including estimates of the value of all of the costs and benefits of each option or, where these costs and benefits are not quantifiable, identification of the cost or benefit that cannot be quantified. Cost estimates used in the economic comparison should have, at a minimum, a Class 4 degree of accuracy ...”

The Guidelines states on page 6:<sup>11</sup> “Cost estimates used in the economic comparison should have, at a minimum, a Class 4 degree of accuracy as defined in the Advancement of Cost Engineering (“EECA International”) Recommend Practice No. 10S-90”.

A RCMP report titled “Drug Situation in Canada – 2007”<sup>12</sup> states on Page 3 “Canadian law enforcement agencies have reported marihuana cultivation in all provinces, although British Columbia (B.C.), Ontario, and Quebec remain the primary producing regions, as demonstrated by smuggling patterns.”

The Edmonton Police Service Green Team website page included the following statement:<sup>13</sup>

“There has been an increase in the proliferation of marijuana grow operations in the City of Edmonton and the Province of Alberta. Marijuana grows have become highly organized and sophisticated. Marihuana production has become a multi-billion dollar industry in Canada and is the economic engine of organized crime!”

An April 2011 Global News report titled “Toronto Police see a dramatic rise in grow operation busts” states:<sup>14</sup>

“The number of marijuana grow operation busts by Toronto police has increased 77 % since 2008, documents show. 248 properties which Toronto police allege were current or former grow operations were found in 2010 – mostly in neighbourhoods in the inner suburbs – which compares with 199 in 2009 and 140 in 2008.”

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<sup>11</sup> [http://www.bcuc.com/Documents/Guidelines/2010/DOC\\_25326\\_G-50-10\\_2010-CPCN-Application-Guidelines.pdf](http://www.bcuc.com/Documents/Guidelines/2010/DOC_25326_G-50-10_2010-CPCN-Application-Guidelines.pdf)

<sup>12</sup> <http://www.rcmp-grc.gc.ca/drugs-drogues/pdf/drug-drogue-situation-2007-eng.pdf>

<sup>13</sup> <http://www.edmontonpolice.ca/communitypolicing/organizedcrime/drugs/greenteam.aspx>

<sup>14</sup> <http://www.globalnews.ca/toronto+police+see+dramatic+rise+grow+operation+busts/4567200/story.html>

A 2009 report by the City of Surrey and University of the Fraser Valley titled “Community Response to Marijuana Grow Operations: A Guide Towards Promising Practices” states:<sup>15</sup>

“Additionally, during the summer of 2009, STOP Grow Ops Calgary Coalition partnered with utility companies to investigate electricity theft. New methods and technologies are being considered and piloted to identify promising practices for theft detection. The STOP Grow Ops Calgary Coalition has targeted theft of power to help shift the response to grow operations from enforcement to prevention. Being able to detect electricity theft not only can result in faster and more cost-effective investigations, it would also act as a serious deterrent to grow operations and remove serious public safety hazards from neighbourhoods.” (Page 14)

FortisBC state in BCUC IR 1.85.5 “The alternative option described above [expansion of the role of the Revenue Protection Program (which could be coupled with advanced meters at the feeder level)] has not been considered by FortisBC since the deployment of advanced meters at the feeder level in the absence of advanced meters at customer premises is not an effective tool in identifying electric theft.”

- 64.1 Please describe the research/consultation FortisBC undertook (for example, discussions with other utilities, government agencies, community groups etc.) to identify alternative options address electricity theft and mitigate health/safety issues related to illegal marijuana grow operations.
  - 64.1.1 Does FortisBC consider that marijuana grow operations are also a problem in Alberta, Ontario and Quebec? Please explain why/why not.
  - 64.1.2 Has FortisBC investigated and considered alternative approaches used in Alberta, Ontario and Quebec by utilities to address (i) health and safety issues related to illegal marijuana grow operations and (ii) electricity theft by illegal marijuana grow operations? If yes, please describe the alternative approaches used. If no, please explain why not.
- 64.2 Does FortisBC agree that an estimate of financial benefit from a reduction in theft from marijuana grow operations is included within the general description of a ‘cost estimate used in the economic comparison’ of the BCUC CPCN guidelines? If no, please explain why not.
  - 64.2.1 Does FortisBC consider that the estimate of financial benefit from a reduction in theft from marijuana grow operations has a Class 4 degree of accuracy as defined in the Advancement of Cost Engineering (“EECA International”) Recommend Practice No. 10S-90. Please explain why/why not.
- 64.3 Does FortisBC consider that there could be a net benefit to BC from a delay in AMI rollout to allow time for additional investigation and analysis of alternative options to address electricity theft and health and safety issues from marijuana grow operations? Please explain why/why not.
  - 64.3.1 Does FortisBC consider that there could be a net benefit to BC from a pilot roll out of AMI in one or more areas in order to increase the level of accuracy of the net benefits projection of a network wide AMI roll out as related to electricity theft and health and safety issues from marijuana grow operations? Please explain why/why not.

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<sup>15</sup> <http://www.surrey.ca/files/DCT - Community Response to MGOs Guide Sept 2009.pdf>

- 64.4 Is FortisBC satisfied that the level of funding for investigation into electricity theft from illegal marijuana grow operations is at its optimum level for the Status Quo scenario (i.e., that there would not be a net benefit to ratepayers from an increased budget for these activities?). If yes, please explain how FortisBC arrived at this conclusion. If no, please explain what additional level of funding would be considered optimal, and how this would affect the assumptions made regarding electricity theft over the project term in the Status Quo scenario.
- 64.5 To what extent would allowing individual customers to opt out of AMI affect the ability of FortisBC to detect theft and/or achieve health and safety benefits associated with a lower number of illegal marijuana grow operations? Please explain and quantify where possible.

**65.0 Reference: Marijuana Grow Operations - General Order G-110-12, [Exhibit No.], pp. 22, 84; Ofgem, Strategy consultation for the RIIO-ED1 electricity distribution price control, 2012, pp. 5-6; FEU Common Rates, Amalgamation and Rate Design Application, Exhibit B-9, BCUC IR 1.10.2; Exhibit B-6, BCUC IR 1.56.3 Measurement/Verification and Regulatory Incentives**

The Commission stated in its 2012 Order on an Application by FortisBC Inc. for Approval of 2012-2013 Revenue Requirements and Review of 2012 Integrated System Plan (G-110-12):<sup>16</sup>

“The Commission Panel agrees that imposing some form of productivity factor is not a decision to be taken lightly. However, there may be cases where a utility has been unable to satisfy the Commission that it has taken the necessary steps to ensure productivity and efficiency levels within the organization have been optimized. In these instances, some form of productivity adjustment to the O&M budgets of a utility are warranted. One purpose of examining productivity in greater detail in recent proceedings has been to encourage utilities to formalize processes to help create a productivity improvement culture and, where appropriate, to make the sometimes difficult decision to bring about change. These are difficult times for many ratepayers and the Commission Panel believes this is the least they can expect.” (Page 22)

“The Commission Panel is of the view that the increase in the size of FortisBC’s rate base is an issue given that it is the main driver of rate increases which have been and are predicted to be well in excess of inflation. ... the Commission Panel is concerned with the magnitude of rate increases, which are forecast to continue beyond the test period, and is of the view that capital expenditures must be scrutinized carefully.” (Page 84)

The UK electricity and gas regulator (Ofgem), in its September 2012 Strategy consultation for the RIIO-ED1 electricity distribution price control stated on page 5 and 6:<sup>17</sup>

“Significant expenditure is needed in Britain’s gas and electricity networks over the next decade. This investment is needed to ensure consumers continue to receive safe, reliable network services and to meet environmental challenges. It is therefore more important than ever that network companies can show consumers that they are getting value for money and that charges are contained. ...

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<sup>16</sup> [http://www.bcuc.com/Documents/Proceedings/2012/DOC\\_31462\\_G-110-12\\_FBC-2012-13RRA\\_Decision-%20WEB.pdf](http://www.bcuc.com/Documents/Proceedings/2012/DOC_31462_G-110-12_FBC-2012-13RRA_Decision-%20WEB.pdf)

<sup>17</sup> <http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/riio-ed1/consultations/Documents1/RIIOED1SConOverview.pdf>

To drive this change, in 2010 we announced a new regulatory framework. The RIIO model (Revenue = Incentives + Innovation + Outputs) is designed to drive real benefits for consumers; providing companies with strong incentives to meet the challenges of delivering a sustainable energy sector at a lower cost. ...

We will attach incentives to the delivery of outputs, the strength of which will reflect the value consumers attach to delivery and DNOs' degree of control. We will put in place mechanisms to ensure efficient risk sharing between DNOs and consumers."

Fortis Energy Utilities (FEU) stated in BCUC IR 1.10.2 in the Common Rates, Amalgamation and Rate Design Application "The FEU agree that cost causation should be a foundation of rate setting ... "

FortisBC states in BCUC IR 1.56.3 that its benefit realization monitoring plan as related to theft reduction is as follows:

"Compare actual number of theft sites identified to the number of theft sites forecast on Row 26 of the Theft Reduction worksheet filed as part of Exhibit B-3.

Compare actual revenue recovered from theft sites to the revenue forecast on Row 29 of the Theft Reduction worksheet filed as part of Exhibit B-3."

65.1 Does FortisBC consider that an alternative regulatory framework could provide a better sharing of risks/rewards between ratepayers and the FortisBC shareholder? If no, please explain why not. If yes, please describe an alternative framework(s) for sharing of risks/rewards between the FortisBC shareholder and the ratepayer.

Please include in this response consideration of a performance based regulatory mechanism designed specifically for the AMI project, which links shareholder returns to realization of project benefits rather than the amount of invested capital.

65.1.1 Please describe a measurement and verification approach FortisBC could use to identify (i) the decreases in theft from illegal marijuana grow operations, and (ii) the decrease in the overall number of illegal marijuana grow operations on its network resulting from the AMI project.

65.1.2 Does FortisBC consider that the level of accuracy in measuring (i) the decrease in theft from illegal marijuana grow operations, and (ii) the decrease in the overall number of illegal marijuana grow operations on its network resulting from the AMI project is sufficient to consider performance based regulatory mechanisms for this project? If no, please explain how ratepayers can be assured that projected benefits will materialize.

65.2 Please describe the methodology FortisBC plans to use to allocate AMI costs between customer classes in its fully allocated cost of service study.

65.2.1 Does FortisBC consider that cost causation should be the foundation of rate setting? If no, please explain why not.

65.2.2 Does FortisBC consider that, if, say 50% of AMI benefits relate to theft reduction, 50% of AMI costs should be allocated to customer classes on the basis of energy consumption? If no, please explain why not. If yes, please explain if the FortisBC proposed approach to allocate AMI costs between customer classes in the fully allocated cost of service study is consistent with this approach.

**66.0 Reference: Marijuana Grow Operations - General  
Exhibit B-6, BCUC IR 1.86.1, Appendix 1, p. 7  
Safety and Emission Considerations**

Professor Boyd states in Appendix 1 to BCUC IR 1.86.1 on page 7:

“If the local governments within the area served by FortisBC adopt the approach made possible by the Act of 2006, .... we may see a significant percentage of growers consider the theft of alternative forms of energy – gas and propane, along with off the grid possibilities such as generators. In this circumstance public safety will be placed at greater risk ... “

66.1 To what extent, if any, does FortisBC consider that there could be additional safety and/or emissions concerns from the status quo or AMI scenario related to a move of illegal marijuana grow operations from electricity to non-renewable energy sources for lighting? Please explain.

**67.0 Reference: Conservation benefits  
Exhibit B-6, BCUC IR 1.107.1, 1.110.6  
Framework**

FortisBC states in BCUC IR 1.107.1:

“Given that the electric system is designed and built to accommodate the peak aggregate load of the Company’s customers, FortisBC considers that successfully reducing customers’ total demand and shifting usage to off-peak hours will provide such benefits as:

- Delaying requirement for new generating facilities and transmission and distribution infrastructure, lowering costs for all customers;
- Reducing future power purchase expense (as shown in Table 6.5a);
- Inasmuch as some market-based power supply alternatives may be fossil fuel based, a reduction in any reliance on such resources provides an environmental benefit.

These drivers are relevant to FortisBC now, which is why the Company has contemplated the implementation of time-varying rates in the AMI CPCN.”

FortisBC states in BCUC IR 1.110.6:

“FortisBC believes that all costs to customers should be considered (and quantified where it is possible to do so with reasonable accuracy) when evaluating whether conservation rates provide a net benefit to customers.”

67.1 Does FortisBC consider that conservation benefits from AMI can be described as ‘facilitating initiatives which mitigate market barriers to efficient customer investment and consumption decisions’? If no, please explain why not.

67.2 Does FortisBC consider that the key conservation related initiatives which AMI facilitates are: (i) enhanced consumption information through the online customer information portal; (ii) enhanced consumption information through an in-home information display (IHD); (iii) time-of-use rates (TOU); and (iii) critical peak pricing rates (CPP)? If no, please explain why not.

67.3 Does FortisBC consider that, in order for the initiatives identified above to provide a net benefit to BC, FortisBC should demonstrate that:

- there is a market failure to begin with regarding when and how much electricity is used by a customer. For example, if customers had perfect information regarding FortisBC incremental costs and externalities, and responded efficiently to these pricing signals, would they consume less electricity and/or at different times compared to the status quo? (Effectively what the Total Resource Test (TRC) aims to measure); and
- it is lower cost to the utility to undertake program(s) to address the market barrier, than to supply the additional energy/demand resulting from the market failure. (Effectively what the Utility Cost Test (UCT) aims to measure).

67.4 Does FortisBC consider that a high level of free riders indicates an initiative is not effective at addressing a market failure? If no, please explain why not.

67.5 Does FortisBC consider that the key tests to determine if there is a conservation benefit from AMI are listed below? If no, please explain why/why not.

- Determining if there is a market failure with regards to *when* customers use electricity, and if so, if TOU/CPP rates are a cost effective way of mitigating that market failure; and
- Determining if there is a market failure as to *how much* electricity is used by customers, and is so, if customer information portals/IHD are a cost effective way of mitigating that market failure.

67.6 Does FortisBC consider that, if there is a BC benefit from AMI with regards to *when* customers use electricity, then the net benefit to BC can be estimated as the avoided utility generation/network cost (plus any related non-financial benefit to participating customers), less (i) the direct and indirect cost to customers of shifting consumption (or decreasing consumption during peak hours), and (ii) any utility implementation costs. Incentive credits to the customer and incentive costs to the utility would be excluded as they are a wealth transfer. If no, please explain why not and describe/justify an alternative approach.

67.7 Does FortisBC consider that, if there is a BC conservation benefit from AMI with regard to *how much* electricity is used by customers, then the net benefit to BC is the avoided delivered long-run supply costs (plus any related non-financial benefit to participating customers), less (i) the direct and indirect cost to customers of reducing consumption, and (ii) any utility implementation costs? Incentive credits to the customer and incentive costs to the utility would be excluded as they are a wealth transfer. If no, please explain why not and describe/justify an alternative approach.

**68.0 Reference: When customers use electricity**  
**Exhibit B-6, BCUC IRs 1.107.4, 1.107.4.1, 1.108.1, 1.109.1.3.1, 1.111.2.1, 1.107.2.2, 1.107.4.3**  
**Determining if there is a problem**

In BCUC IR 1.107.4, FortisBC was asked to estimate how much money a residential customer with average consumption volume would save in one month if they shifted 10 percent of their consumption from peak to off-peak periods in 2012, assuming the customer is on a FortisBC residential TOU tariff where the peak: off-peak ¢/kWh difference is set equal to the peak: off-peak ¢/kWh difference forecast

in the Midgard BC Wholesale Market Energy Curve. FortisBC estimated the customer saving in this scenario at 22¢/month:

	Before Shifting Consumption			After Shifting Consumption		
	Usage (kWh)	Rate	Cost	Usage (kWh)	Rate	Cost
On-Peak	418	0.09783	\$ 40.61	374.4	0.09783	\$ 36.55
Off-Peak	624	0.09238	\$ 57.63	665.6	0.09238	\$ 61.47
<b>Total</b>	<b>1040</b>		<b>\$ 98.25</b>	<b>1040</b>		<b>\$ 98.03</b>

In BCUC IR 1.107.4.1, FortisBC undertook the same analysis for each year up to 2030. Maximum monthly savings were achieved in 2020, with a saving of 47¢/month.

FortisBC states in BCUC IR 1.108.1 “In any case, the ability to economically address future capacity gaps on a planning basis through the introduction of residential TOU rates is uncertain.”

FortisBC states in BCUC IR 1.109.1.3.1 “FortisBC is not forecasting “very high critical peak prices” in its resource plan, so it cannot estimate when CPP could become a viable option on this basis.”

FortisBC states in BCUC IR 1.111.2.1: “The total [avoidable network investment] costs are composed of many individual projects that may cover an area as small as a portion of distribution feeder or an area as large as the north or south Okanagan. Thus, to have any impact on future projects that support growth in an area, any load reductions would need to be specific to the area covered by those individual projects.”

FortisBC states in BCUC IR 1.107.2.2:

“A comparison of [peak/off-peak TOU] prices is not possible because neither the FortisBC AMI Application nor the Navigant report use a set of TOU prices as a basis for estimating the customer participation rate or capacity and energy savings attributable to the introduction of the conservation rate.”

In BCUC IR 1.107.4.3 FortisBC states “... the Company does not view the assumptions used by Navigant to be optimistic.”

- 68.1 Does FortisBC consider that the evidence supports an assumption that customers are not being inefficient in regards to *when* they consume electricity over (i) the next 5 years, and (ii) the term of the project? If no, please explain why not.
- 68.2 If FortisBC considers that customers in certain areas may be inefficient in regards to *when* they consume electricity (for example, those located at the end of a network constraint), please describe (i) the specific area(s), (ii) percentage of load which would need to be shifted to off-peak periods and minimum customer participation rate to achieve the utility cost reduction, and (iii) an estimate of participating customer bill savings assuming all utility cost savings were passed through to participating customers. Please state all assumptions made.
- 68.3 Is it FortisBC’s position that the size of potential bill savings from a shift in consumption from peak to off-peak periods is not a significant relevant consideration in estimating customer uptake and response to a TOU rate (other than for those who would be free-riders)? If yes, please explain why. If no, please explain if FortisBC considers the Navigant report to provide useful evidence regarding expected customer uptake and response to a TOU/ CPP rate for this

Application, and if so why.

**69.0 Reference: When customers use electricity  
Exhibit B-6, BCUC IR 1.107.5  
Determining if TOU/CPP is an effective way to address the problem**

In BCUC IR 1.107.5, FortisBC addressed the issue of ‘free-riders’ (for example, customers who consume more energy than average at the higher Tier-2 price and who may see significant bill savings from a switch to a TOU rate without making any changes to their consumption pattern). FortisBC responded that:

“The Company considers that a certain amount of free-ridership is going to occur on any conservation rate that it may implement. ... The Company does not expect however that bill savings would be “significant”. Using the assumptions provided in the responses to BCUC IR 1 Q107.4, and the current RCR rate, (also revenue neutral to the 2012 flat rate), the savings attributed to a customer moving from RCR to TOU with no change in behaviour (assumed 40 percent consumption is on-peak) is shown in the table below:”

**Table BCUC IR1 Q107.5 – RCR and TOU Bill Comparisons**

Monthly Consumption	Residential Conservation Rate						Time of Use Rate (@40% on peak)							Difference
	Threshold	Tier 1 rate	Tier 2 rate	Customer Charge	Energy Charges	Total	On-Peak Rate	Off-Peak Rate	On-Peak Usage	Off-Peak Usage	Customer Charge	Energy Charges	Total	
1300	800	0.08136	0.11769	\$ 29.65	\$ 123.93	\$ 153.58	0.09763	0.09236	520	780	\$ 30.07	122.81	\$ 152.88	\$ 0.70
1350	800	0.08136	0.11769	\$ 29.65	\$ 129.82	\$ 159.47	0.09763	0.09236	540	810	\$ 30.07	127.53	\$ 157.60	\$ 1.87
1400	800	0.08136	0.11769	\$ 29.65	\$ 135.70	\$ 165.35	0.09763	0.09236	560	840	\$ 30.07	132.26	\$ 162.33	\$ 3.03
1450	800	0.08136	0.11769	\$ 29.65	\$ 141.59	\$ 171.24	0.09763	0.09236	580	870	\$ 30.07	136.98	\$ 167.05	\$ 4.19
1500	800	0.08136	0.11769	\$ 29.65	\$ 147.47	\$ 177.12	0.09763	0.09236	600	900	\$ 30.07	141.70	\$ 171.77	\$ 5.35
1550	800	0.08136	0.11769	\$ 29.65	\$ 153.36	\$ 183.01	0.09763	0.09236	620	930	\$ 30.07	146.43	\$ 176.50	\$ 6.51
1600	800	0.08136	0.11769	\$ 29.65	\$ 159.24	\$ 188.89	0.09763	0.09236	640	960	\$ 30.07	151.15	\$ 181.22	\$ 7.67
1650	800	0.08136	0.11769	\$ 29.65	\$ 165.12	\$ 194.77	0.09763	0.09236	660	990	\$ 30.07	155.87	\$ 185.94	\$ 8.83
1700	800	0.08136	0.11769	\$ 29.65	\$ 171.01	\$ 200.66	0.09763	0.09236	680	1020	\$ 30.07	160.60	\$ 190.67	\$ 9.99
1750	800	0.08136	0.11769	\$ 29.65	\$ 176.89	\$ 206.54	0.09763	0.09236	700	1050	\$ 30.07	165.32	\$ 195.39	\$ 11.15
1800	800	0.08136	0.11769	\$ 29.65	\$ 182.78	\$ 212.43	0.09763	0.09236	720	1080	\$ 30.07	170.04	\$ 200.11	\$ 12.32
1850	800	0.08136	0.11769	\$ 29.65	\$ 188.66	\$ 218.31	0.09763	0.09236	740	1110	\$ 30.07	174.77	\$ 204.84	\$ 13.48

69.1 Please confirm that, for a residential TOU rate as modeled in BCUC IR 1.107.4, typical bill savings from free riders can be significantly higher than bill savings from a customer who shifts 10% of consumption onto off-peak periods. If no, please explain why not.

69.1.1 Does FortisBC consider that the results above indicate a significant free-rider risk associated with an optional TOU rate? If no, please explain why not.

**70.0 Reference: How much electricity is used  
Exhibit B-1, Tab 3, Section 3.2.4, p. 32; Exhibit B-6, BCUC IR 1.28.1.1  
Determining if there is a problem**

FortisBC states on page 32 of the Application:

“The AMI system allows customers to access billing information through the online customer information portal or an IHD, providing them with more detailed information about their energy consumption, including both the timing and amount of energy consumed.”

FortisBC states in BCUC IR 1.28.1.1:

“The Total Resource Cost Benefit/Cost (B/C) ratio of an IHD measure is calculated as 1.6, based on a unit cost of \$150. The Utility Cost Test B/C ratio is 4.2, with a simple payback of one year on the \$50 incentive paid to a customer.”

- 70.1 Please provide a brief overview of the types of customer investment decisions (for example, lighting, appliances) and customer consumption decisions (for example, not turning off lights/heating when no longer required) that provide support for an assumption that there are market failures with regards to how much electricity customers consume.
- 70.2 Please provide evidence that a customer is being inefficient by not investing in an IHD. Please include in this response a TRC calculation for this initiative, using the long-run marginal cost of delivered energy as the avoided utility cost, the IHD cost as a customer cost, and exclude any incentive from utility/customer costs. Please describe (and quantify where possible within the TRC) any additional costs a customer may incur in order to achieve the assumed conservation (such as investment in more efficient lighting/heating, health/comfort impacts from changing home temperature settings), less any associated non-energy benefits. Please state all assumptions made.

**71.0 Reference: How much electricity is used  
Exhibit B-6, BCUC IR 1.28.1.1; FortisBC Powerlines newsletter, November 2007, p. 2  
Determining if enhanced billing/IHD is an effective way to address the problem**

FortisBC states in BCUC IR 1.28.1.1:

“The Total Resource Cost Benefit/Cost (B/C) ratio of an IHD measure is calculated as 1.6, based on a unit cost of \$150. The Utility Cost Test B/C ratio is 4.2, with a simple payback of one year on the \$50 incentive paid to a customer.”

A FortisBC November 2007 Powerlines newsletter states on page 2:<sup>18</sup>

“The Blue Line monitor, no bigger than two playing cards, plugs into an outdoor electricity meter. The meter displays usage by cents per hour, a graphic of the running meter, the total cost since the meter has been in place, as well as the temperature outside the home. ...

In 2007 FortisBC plans to expand the Blue Line monitor trial to include 100 homes across its service territory to assess the value that this type of technology will have for its customers.”

- 71.1 Please describe the specific problem, in regards to inefficient consumption levels only, which (i) an online customer information portal and (ii) IHD is expect to address (for example, lack of customer awareness as to the amount of electricity consumed by certain equipment or as a result of certain actions).

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<sup>18</sup> [http://www.fortisbc.com/About/Newsletters/Powerlines/Documents/Powerlines\\_February2007.pdf](http://www.fortisbc.com/About/Newsletters/Powerlines/Documents/Powerlines_February2007.pdf)

- 71.2 Please describe alternative approaches used in other jurisdictions to address this problem, and why FortisBC is not proposing these options instead. Please include in this response a description FortisBC Blue Line monitor trial and the results.
- 71.2.1 Please describe (and quantify where possible) the costs/benefits of the IHD product proposed for the Power Smart project with (i) the Blue Line monitor and (ii) other similar products on the market that do not require AMI
- 71.2.2 Please describe (and quantify where possible) the costs/benefits of the online customer information portal with other similar products that do not require AMI.
- 71.3 Please provide the Utility Cost Test analysis for (i) an online customer information portal and (ii) the IHD proposal. Please describe all assumptions used, and use the long-run marginal cost of delivered energy as the utility cost. Please include the IHD incentive as a cost to the utility.
- 71.4 For the IHD proposal, has FortisBC surveyed other utilities to determine why, or why not, they promote IHDs for their customers? If yes, please describe the process undertaken and the results. If no, please explain why not.

**72.0 Reference: How much electricity is used  
Exhibit B-6, BCUC IR 1.28.1.1  
Quantifying the benefit**

FortisBC states in BCUC IR 1.28.1.1:

“The Total Resource Cost Benefit/Cost (B/C) ratio of an IHD measure is calculated as 1.6, based on a unit cost of \$150. The Utility Cost Test B/C ratio is 4.2, with a simple payback of one year on the \$50 incentive paid to a customer.”

- 72.1 Please estimate, and provide a justification for, residential customer use of/uptake of a (i) online customer information portal, and (ii) IHD.
- 72.2 Using the TRC input data calculated in IR 70.2, and the customer uptake assumptions above, please estimate the NPV to BC of (i) an online customer information portal, and (ii) an IHD as it relates to energy conservation over the life of the project.

Please use the long-run marginal cost of delivered energy as the avoided utility cost, the IHD cost as a customer cost, and exclude any incentive from utility/customer costs. Please describe (and quantify where possible within the analysis) any additional costs a customer may incur in order to achieve the assumed conservation (such as investment in more efficient lighting/heating, health/comfort impacts from changing home temperature settings), less any associated non-energy benefits. Please state all assumptions made

- 72.2.1 If FortisBC does not consider the assumptions used are reasonable, please explain why and provide additional NPV analysis using assumptions considered more appropriate by FortisBC. Please justify the assumptions used.
- 72.3 Does FortisBC consider that there will be any additional social or environmental impacts related to an online customer information portal/IHD proposal? If yes, please describe.

72.4 Please describe (and quantify where possible) the effect on the estimated NPV of benefit to BC of a 5 year delay in the AMI project for the (i) online customer information portal, and (ii) IHD proposal. Please state all assumptions used.

**73.0 Reference: How much electricity is used  
Exhibit B-6, BCUC IRs 1.110.5, 1.110.5.1  
Pre-pay meters**

FortisBC confirms in BCUC IR 1.110.5 that it is possible to have pre-pay meters without AMI infrastructure in place.

FortisBC states in BCUC IR 1.110.5.1 that “Pre-pay rates are considered a future benefit since they require further analysis and are not proposed as part of the AMI project.”

73.1 Does FortisBC consider that because pre-pay meters can be provided to customers without AMI, the net benefit to BC of AMI as it relates to pre-pay meters is the lower of:

- Cost savings: the cost difference between pre-pay meters if AMI was not installed, and pre-pay meters if AMI was installed; and
- Net benefits from lowest cost option: the utility and customer benefit from pre-pay meters (including any non-financial benefits), less associated costs, under the AMI scenario?

If no, please explain why not.

73.2 Please provide an estimate of the cost of a pre-pay meter (i) with AMI; and (ii) without AMI.

73.3 Please list (and quantify where possible) the benefits to the utility and customers from pre-pay meters (including any non-financial benefits).

73.4 How would FortisBC expect to recover the pre-pay meter costs (for example, would customers be charged a separate fee)?

73.5 Please estimate customer uptake of pre-pay meters over the AMI period (assuming AMI was approved). Please provide assumptions used.

73.5.1 Please estimate the BC NPV of net benefit for pre-pay meters under the AMI scenario (i.e., net benefits less net costs). Please state all assumptions made.

73.5.2 Please estimate the total cost savings to the utility if pre-pay meters were installed under the AMI scenario compared to the status quo. Please state all assumptions made.

**74.0 Reference: How much electricity is used  
CPCN Guidelines, Appendix A, p. 6  
Class 4 degree of accuracy**

Appendix A of the BCUC 2010 CPCN Guidelines<sup>19</sup> states on page 6: “Cost estimates used in the economic comparison should have, at a minimum, a Class 4 degree of accuracy as defined in the Advancement of Cost Engineering (“EECA International”) Recommend Practice No. 10S-90.”

74.1 Does FortisBC consider that any financial benefits estimated for (i) TOU/ CPP rates; (ii) online customer information portal/IHD; and (iii) pre-pay meters within this Application are included within the general description of a ‘cost estimate used in the economic comparison’ of the BCUC CPCN guidelines? If no, please explain why not.

74.1.1 Does FortisBC consider it has met the Class 4 threshold for each item listed above? If yes, please explain. If no, please comment, for each item listed above, on the extent to which the Commission should discount or disregard projected future benefits when this threshold has not been met.

**75.0 Reference: Grow Op Thefts  
Exhibit B-6, BCUC IR 1.75.1  
Exhibit B-1, Table 5.3.2.a; Table BCUC IR 1.76.1.1  
Exhibit A2-1**

75.1 FortisBC stated “FortisBC has had a revenue protection program in place since 2006. Based on a three year average for the period 2009-2011, the program has identified an average 25 percent of known or suspected marijuana sites as diverting energy,…”

75.1.1 Exhibit A2-1 states that the proportion of growers stealing power appears to be approximately 52% and as the number has been confirmed by BC Hydro, then why does FortisBC believe that only 25% of known or suspected marijuana sites are diverting energy.

75.1.2 Provide evidence to support the statement that 25 percent of known or suspected marijuana sites are diverting energy.

75.2 Confirm that Exhibit A2-1 estimates 13,206 active growing operations in the province of BC.

75.2.1 Confirm that Exhibit A2-1 estimates only 6,867 operations stole electricity across the province.

75.3 Confirm that the number of grow sites used in Exhibit A2-1 is 13,740.

75.3.1 Provide the reference or calculation used to obtain the number 13,740.

75.4 Of the 683 accounts, consuming more than 93 kWh/day every billing period since September 2010, how many of these accounts have 200A service?

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<sup>19</sup> [http://www.bcuc.com/Documents/Guidelines/2010/DOC\\_25326\\_G-50-10\\_2010-CPCN-Application-Guidelines.pdf](http://www.bcuc.com/Documents/Guidelines/2010/DOC_25326_G-50-10_2010-CPCN-Application-Guidelines.pdf)

- 75.5 Confirm that the 683 accounts, consuming more than greater than 93 kWh/day every billing period since September 2010, are paying customers.
- 75.5.1 In Exhibit B-1, p. 83, FortisBC states “Applying the 75 percent deterrence factor to the estimated 824 grow sites in FortisBC’s service territory in 2012 indicates that 206 grow sites are diverting electricity while the remaining 618 sites are assumed to be paying customers.” Please reconfirm the number of 206 grow sites using Exhibit A2-1 and assuming those with 10 or less lamps are paying customers and provide the calculation.
- 75.5.2 For what year does the number, 206, apply?
- 75.6 FortisBC states that for the years 2013, 2014 and 2015, the number of theft sites is 218, 231, and 244 respectively.
- 75.6.1 Please explain how these numbers related to the number 824 in Exhibit B-1, Table 5.3.2.a.

**76.0 Reference: AMI Project Progress Reports  
Exhibit B-6, BCUC IR 1.56.2**

“FortisBC proposes to report on the above items annually to the BCUC for a period of five years once the AMI project is complete” or year 2020.

- 76.1 Please explain why FortisBC is not proposing to report on the benefits annually to BCUC for a period ending in 2032.
- 76.2 Would FortisBC agree to issue quarterly project progress reports for the deployment period of the AMI project that addresses both costs and benefits?
- 76.3 Would FortisBC agree to issue annual project progress reports for the post-deployment period to year 2032 of the AMI project that addresses both costs and benefits?
- 76.4 Explain the benchmarking that FortisBC proposes to use to report benefits to BCUC.
- 76.4.1 Provide the benchmarking information for each benefit in the Application to be used for cost recovery and reporting, and assessing the performance of the AMI project.
- 76.4.2 If no benchmarking information is available, would FortisBC consider the final adjusted benefits from the cost/benefits analysis in the Application to be used as an appropriate baseline for cost recovery, reporting, and assessing the performance of the AMI project.

**77.0 Reference: AMI Cost and Benefits  
Exhibit B-6, BCUC IR 1.56.14  
FortisBC Controlled**

- 77.1 Please identify the expenditures and benefits that are under the control of FortisBC, and their risk and uncertainty in being able to be achieved.

**78.0 Reference: AMI Cost Recovery  
Exhibit B-6, BCUC IR 1.53.14.2  
MIT Study on the Future of the Electric Grid, Chapter 8, pp. 180-181<sup>20</sup>**

“...investments in new distribution technologies, such as those necessary to efficiently and reliably integrate distributed generation or effectively use the wealth of information provided by advanced metering infrastructure (AMI), may be subject to uncertainty about not only the level of costs and benefits but also about their timing and achievability. To be most effective, these investments may require coordination across different utility business units and the integration of legacy data communications and information management systems. Utilities may have limited experience with these technologies and have to work closely with equipment vendors that may have little experience with electric power distribution systems.

Complicating calculations further, many new technologies have benefit streams that potentially will extend many years after costs have been incurred and are partially a function of future technology innovation and deployment decisions. As a result, modernization investments may not be easily justified by predictable short-term improvements in reliability or incremental improvements in operations or operating costs. Extrapolation or meta-analyses of pilot results may help to narrow the range of likely outcomes, but considerable uncertainty for system deployments may remain.”

78.1 Provide and explain the level of the uncertainty and risk in delivering each benefit stream identified in the Application over the deployment and post-deployment period.

**79.0 Reference: AMI Cost Recovery  
Exhibit B-6, BCUC IR 1.53.14.2  
Recovery of Smart Grid Costs**

EnerNex served as the Facilitator of the Illinois Statewide Smart Grid Collaborative (ISSGC) and prepared the Collaborative Report dated September 2010 for submission to the Illinois Commerce Commission.

79.1 Does FortisBC consider smart grid investments to be different from other more traditional utility investments in ways that require special non-traditional cost recovery treatment?

79.2 Do the AMI project investments have characteristics that differentiate them from traditional<sup>21</sup> utility investments (i.e. substations) that are made to expand, maintain and upgrade the electricity delivery system in ways that pose new regulatory challenges, such as:

- higher level of uncertainty as to how they will function over time and affect costs,
- benefits may be difficult to predict, quantify, measure, and monetize,
- benefits that may justify such investments may be difficult to predict, quantify, measure and monetize, and may develop over an extended period of time,

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<sup>20</sup> <http://mitei.mit.edu/publications/reports-studies/future-electric-grid>

<sup>21</sup> Non-traditional recovery was defined for Collaborative discussion purposes as anything other than recovery of costs in the context of a general rate case.

- some potential smart grid benefits may not be directly experienced by some customer groups or individuals, and
- may not be needed to provide safe, adequate, and reliable service?

**80.0 Reference: Cost Recovery of AMI Cost and Benefits  
Exhibit B-6, BCUC IR 1.40.3  
Recovery Options**

80.1 As BC Hydro's business plan provides for rate smoothing and also claims significant benefits, please provide a more expansive explanation as to why the rate smoothing option was rejected.

80.2 Does FortisBC consider that non-traditional cost recovery methods other than rate base recovery to be applicable to the AMI Application?

80.2.1 As the project is primarily delivering benefits to the ratepayers for a cost, could it be considered for non-traditional cost recovery as it is not a substation or transmission line that has a stated capacity and which could be easily considered as traditional for cost recovery purposes?

**81.0 Reference: Other Proposed Rate Recovery Options  
Exhibit B-6, BCUC IR 1.20.1  
Non-Traditional Cost Recovery for AMI/Smart Grid Investments**

In summarizing FortisBC's responses to BCUC IR 1.120.1, FortisBC stated:

1. Reconcilable tariff riders - such riders have not been employed by utilities operating in BC to effect rate recovery of specific capital expenditures.
2. As noted for the option above, such a mechanism has not been employed by utilities in BC for recovery of capital project expenditures.
3. Base-rate recovery opportunities – This is the existing rate-recovery mechanism applied to all of FortisBC's capital projects, and is the proposed mechanism for recovering the costs associated with the AMI Project.
4. Reconcilable balancing account mechanisms – This approach involves tracking the project costs and forecast benefits in a separate account to be periodically trued-up for recovery in rates. Like tariff riders and customer surcharge mechanisms, this type of mechanism for recovery of capital expenditures has not been employed by utilities operating in BC.
5. Rate-basing of some capital investment – same as 3.
6. Linking rate proceedings to smart grid projects that have stimulus funding – applies to USA only.

81.1 As the AMI/Smart Grid Investments in other jurisdictions are starting to consider these type of projects to be non-traditional and the cost recovery should be treated differently than substations and transmission lines as the deliver benefits over a longer period, please explain why the Commission should use a base-rate recovery methodology instead of a reconcilable balancing account methodology have performance base conditions for the total cost and benefit duration of the AMI project (2013-2032).

81.1.1 Also in point 4 above, FortisBC stated:  
“As noted in the response to BCUC IR1 Q53.14.2, the benefits of the Project would be incorporated into Revenue Requirements either as cost reductions or incremental revenue as they are forecast to be realized.”

81.1.1.1 As the justification of the AMI project is a positive NPV resulting of a positive cost/benefit analysis, with the costs being mostly expended in the first two years and benefits delivered over the duration (2013-2032), what assurances does FortisBC provide for the benefit amounts to be realized in a timely manner to confirm justification of the NPV?

**82.0 Reference: Tracking of AMI Cost and Benefits  
Exhibit B-6, BCUC IR 1.40.3, 1.56.3; Exhibit B-1, Section 5.3  
Benefits**

82.1 Please provide a similar table in the response to BCUC IR 1.40.3 for the monitoring and tracking of the benefits through to the end of the post-deployment period.

**83.0 Reference: Electrical Safety during AMI Installation  
Exhibit B-6, BCUC IRs 1.27.1.2, 1.36.1.1, 1.36.2, 1.47.1, 1.47.2  
Meter Bases, Point of Delivery, Jurisdiction, Meter Deployment Training Manual, Itron**

83.1 Provide a description of an A-Base meter adaptor.

83.1.1 As the meter base is required to be CSA approved (see FortisBC British Columbia Service and Metering Guide, Version 4, Revision Date: July 2009, Section 1.13 - CSA Approved Device / Meter Socket Requirements), is the Itron meter also CSA approved? If not, please explain why not.

83.1.1.1 Do the meter sockets/bases have to conform to C22.2 NO. 115-M1989 (R2010) - Meter-Mounting Devices and, if so, do any of the older meter bases have to be changed out to the newer CSA standard?

83.1.2 If a non-CSA device is inserted into a CSA device is the resulting assembly still considered CSA approved?

83.2 Does CSA CAN3-C17-M84 (R2008) apply to the Itron meter? If not, please explain why not.

83.3 Provide a list of CEA standards that apply to FortisBC's AMI Application and identify those CEA standards, which FortisBC's AMI Application does not comply.

83.4 Provide a list of standards, which the Itron meter complies to, and identify any Canadian standards that are applicable.

83.5 Are there any BC Electrical Safety Regulations that may apply to the installation of the Itron meters?

83.6 Provide a list of Industry Canada (Measurement Canada branch) approvals required and obtained for the installation of the Itron meters.

- 83.7 Provide the Point of Delivery for the common overhead service at less than 300VAC to Residential Customers.
- 83.8 Who in FortisBC will approve the meter deployment training manual once it is created?
- 83.8.1 Will a FortisBC Professional Engineer approve and seal the meter deployment training manual once it is created?
- 83.8.2 When will the draft meter deployment-training manual be available for review?
- 83.8.3 When will the approved meter deployment-training manual be available for review?
- 83.9 Does Itron retain liability for any property damage caused by AMI meter deployment, or do the Terms and Conditions of FortisBC's Electric Tariff also protect it from liability?
- 83.10 As the AMI will generally be located downstream of the Point of Delivery and the meter base is the property of the homeowner, explain why FortisBC considers it is exempt from the Safety Standards Act administered by the BCSA?
- 83.10.1 If FortisBC considers itself exempt from the Safety Standards Act in this instance, then is FortisBC subject to the Utilities Commission Act, sections 23 through 26 for safety oversight and regulatory matters?
- 83.10.2 Section 3.1 ("Point of Delivery") of the FortisBC Electric Tariff states: "Unless otherwise specifically agreed to, the Point of Delivery is the first point of connection of the Company's facilities to the Customer's conductors or equipment at a location designated by or satisfactory to the Company, without regard to the location of the Company's metering equipment."
- 83.10.2.1 In this case of the Tariff, who has jurisdiction for safety, the Commission or the BCSA?
- 83.11 As FortisBC agrees there is a low risk of mechanical damage during the installation of an AMI meter, does FortisBC agree that the impact of the mechanical damage may result in significant consequences (such as a fire)?
- 83.11.1 In the unlikely event of a fire, would FortisBC be accountable under the Terms and Conditions of FortisBC's Electric Tariff, or is the homeowner expected to cover the damage?
- 83.11.2 Provide a copy of the Underwriters Laboratories (UL) Report<sup>22</sup> prepared for the alleged PECO smart meter fires experienced in Pennsylvania.
- 83.12 What is the likelihood of the AMI meter functioning after an extreme temporary overvoltage event occurring; and can the fuse be repaired by the manufacturer or FortisBC?

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<sup>22</sup> [http://articles.philly.com/2012-10-11/news/34364508\\_1\\_sensus-meters-landis-gyr-ag-smart-meters](http://articles.philly.com/2012-10-11/news/34364508_1_sensus-meters-landis-gyr-ag-smart-meters)

83.12.1 Is there any other means of protecting the meter against the impact of an extreme temporary overvoltage event that have been known to occur within the FortisBC service area?

**84.0 Reference: Opt-Out  
Exhibit B-6, BCUC IRs 1.117.1, 1.117.2  
Quebec Opt-Out; FortisBC Opt-Out and Impact to NPV**

84.1 Please provide a translated (English) version of the Decision made by Quebec.

84.2 Confirm that by the Clean Energy Act, does not address the opt-out provision for FortisBC customers at this time and only applies to BC Hydro.

84.3 Confirm that under section 8.2 of the Terms and Conditions of FortisBC's Electric Tariff, FortisBC may, or will, suspend service to those customers refusing installation of an AMI meter.

84.4 If an opt-out provision is allowed and the existing meters are permitted to be retained, at what level of opt-out does the NPV become negative.

84.4.1 Assuming levels of opt-out of 1%, 5% and 10%, provide an order of magnitude cost for retaining the existing meters while considering these opt-out levels.

84.5 If an opt-out provision is allowed and the AMI meter transmit function are disabled, at what level of opt-out does the NPV become negative?

84.5.1 Assuming levels of opt-out of 1%, 5% and 10%, provide an order of magnitude cost for reading the disabled AMI meters while considering these opt-out levels.

84.6 Provide a discussion of the public interest in allowing the retention of existing meters and the disabled AMI meters while considering the reduction in the flow of benefits to the other customers having AMI meters.

**85.0 Reference: Distribution of Costs and Benefits  
Exhibit B-6, BCUC IR 1.118.1; Exhibit B-1, Tab 9.0, Section 9.4, pp. 147-148  
BCMEU Expectation**

In the Application, FortisBC states "...There is an expectation from the BCMEU that there should be no cost impact to the wholesale customers of FortisBC (which are the members of the BCMEU receiving wholesale service from FortisBC);..."

85.1 Please explain the above statement in the Application while considering the response to BCUC IRs 1.118.1, 1.118.2, and 1.118.3.

**86.0 Reference: Accuracy of the Cost and Benefits  
Exhibit B-6, BCUC IR 1.53.3, 1.53.4  
Benefits and Class 4 Estimate**

86.1 Provide the accuracy of the benefits shown in the Application.

86.1.1 Describe and rank the risk and uncertainty in achieving the stated benefits with the number 10 being the highest risk and/or uncertainty.

86.2 For the portion, 2.6%, of the project that warranted a Class 4 estimate classification, please identify the items included, the scope, risk and consequences.

86.3 Please explain why the Class 3 estimate portion has a contingency of 13.16% when the Class 4 estimate portion has a contingency of only 10%.

**87.0 Reference: Accuracy of the Cost and Benefits  
Exhibit B-6, BCUC IR 1.53.4  
Table BCUC 1.29.1**

87.1 In Q1 2014, the table shows a significant slowdown in the progress of the project. Please explain the cause of the slowdown and are resources maintained or curtailed during this period.

**88.0 Reference: Percentage Completion of Project  
Exhibit B-6, BCUC IR 1.29.1  
Customers Classes**

88.1 Provide the data to show the distribution of costs and benefits across the various direct customer classes forecast in the year 2013 by completing the tables below.

88.1.1 Complete the Regulatory Cost and Capital Expenditure Distribution table below:

FortisBC Direct Customer Classes	Forecasted Direct Customers in 2013	Regulatory Costs (\$)	Capital Expenditure (\$)	Capital Expenditure per AMI meter installed (\$)	Capital Expenditure per AMI meter installed (%)	Capital Costs per meter per kWh consumed (\$)	Capital Costs per meter per kWh consumed (%)
Residential							
Commercial							
Wholesale							
Industrial							
Lighting							
Irrigation							
Total							

88.1.2 Complete the AMI Benefit Distribution table below.

FortisBC Direct Customer Classes	Forecasted Direct Customers in 2013	Benefits (\$)	Benefits per AMI meter installed (\$)	Benefits per AMI meter installed (%)	Benefits per meter per kWh consumed (\$)	Benefits per meter per kWh consumed (%)
Residential						
Commercial						
Wholesale						
Industrial						
Lighting						
Irrigation						
Total						

88.2 Complete the Net Cost/Benefit Distribution table below.

FortisBC Direct Customer Classes	Forecasted Direct Customers in 2013	Costs/Benefits (\$)	Costs/Benefits per AMI meter installed (\$)	Costs/Benefits per AMI meter installed (%)	Costs/Benefits per meter per kWh consumed (\$)	Costs/Benefits per meter per kWh consumed (%)
Residential						
Commercial						
Wholesale						
Industrial						
Lighting						
Irrigation						
Total						

88.3 Complete the table below for the 20 year program:

Year	Costs per AMI meter installed (\$)	Benefits per AMI meter installed (\$)
2013		
2014		
2015		
2016		
2017		
2018		
2019		

Year	Costs per AMI meter installed (\$)	Benefits per AMI meter installed (\$)
2020		
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		
2031		
2032		
2033		

**89.0 Reference: Project Costs/Benefits  
Exhibit B-6-1, BCUC IR 1.120.1  
Reward and Penalties Balancing Account,  
and Cost Cap**

89.1 If the benefits were all recovered through rates, would those who participated in the AMI project not receive their fair benefits?

89.1.1 How does FortisBC propose to attribute the cost and benefits amongst its various customer classes that may or may not participate in the AMI program?

89.2 Would FortisBC agree to the establishment of a Reward and Penalties Balancing Account for the ratepayers' costs that exceed +/-10% of the stated project costs and benefits in the Application?

89.2.1 If not, please explain why not.

89.3 Would FortisBC agree to the establishment of a Cost Cap of +10% on the capital cost stated in the Application?

89.3.1 If not, please explain why not.

**90.0 Reference: Realization of Benefits  
Exhibit B-1, Section 4.0, pp. 40, 41  
Exhibit B-1, Section 9.4, pp. 147 - 148  
Customer Groups**

90.1 Please identify the individual customer classes that will be rate impacted by the AMI project and at the same time eligible for the benefits flowing from the AMI project.

90.1.1 Please explain how FortisBC proposes to confine the rate impacts and benefit to customers classes had have AMI meters installed over the 20 year life of the project.

**91.0 Reference: Realization of Benefits  
Exhibit B-1, Section 4.2.2,  
AMI Project Benefits Realization Plan**

91.1 Does FortisBC agree that a reporting system to track and monitor performance of the AMI solution if difficult to implement and track all the cost benefits stated in the Application?

91.2 In the absence of a benefit realization program, please provide comment on the above method of benefit recovery.

91.3 Please provide a table by year showing the monthly credit per AMI meter derived from the benefits in the Application based on the AMI project life.

91.4 Would this method of tracking the cost benefits flowing to the AMI ratepayer be simpler to implement?

91.4.1 If not, please explain why not.

In Exhibit B-1, Appendix C-4, Benefit Realization, page 7, BC Hydro states “The Smart Metering Program is a large and complex project designed to deliver significant benefits from across several business groups at BC Hydro. The benefits described in this business case pay for the investment in the program. BC Hydro is implementing a formal benefit realization framework, base-lined with the benefit streams identified in this business case, to ensure accountability and transparency in the measurement and reporting of the benefits over time.”

In Exhibit B-1, Appendix C-4, Appendix 7: Rate Analysis, page 33, BC Hydro stated “...the Smart Metering Program has initial rate impacts which are reduced over time as the benefits accumulate. In order to better match the initial cost recovery to the timing of benefits realization, BC Hydro will seek BC Utilities Commission approval to “smooth” rate impacts”

In Exhibit B-1, Section 3.2.4, p. 30, FortisBC states “The installation of AMI will save customers approximately \$19 million on a net present value basis over the 20 year evaluation of the Project.” However FortisBC does not clearly elaborate on how these benefits will be realized by the 115,000 residential and commercial customers affected.

As several factors impact any benefit realization program and the claims by FortisBC indicate significant benefits for the affected ratepayers could be realized if the AMI project is executed in a cost effective and timely manner, would FortisBC be agreeably to implementing a monthly credit per AMI meter in order to provide some additional certainty regarding the benefits claimed in the Application?

- 91.5 Would FortisBC agree to 100% of AMI revenue requirement (cost/benefits) being allocated among customer classes utilizing AMI meters when AMI Project costs are recovered in rates?
- 91.6 Would FortisBC agree that since the AMI project costs are not evenly across all its customers that separate tariffs should be established for those participating in the AMI project and those who are not participating in the project?
- 91.6.1 If not, please provide a detailed explanation as to why not. If yes, please explain further.
- 91.7 Please provide a benefit realization plan that spans the period from 2013 to 2032 using the template below as an example. See Appendix 5 on Attachment Panel.

**92.0 Reference: AMI Equipment Extended Warranty  
Exhibit B-6, BCUC IR 1.1.2**

- 92.1 Do the vendors offer an extended warranty for the AMI equipment?
- 92.1.1 If so, what is the additional period covered by the extended warranty by equipment type?
- 92.1.2 If so, what is the additional cost of the extended warranty by equipment type?
- If so, please explain why FortisBC did not acquire the extended warranty for these equipment types.