

BRITISH COLUMBIA UTILITIES COMMISSION

IN THE MATTER OF THE *Utilities Commission Act*, RSBC 1996, c.473
and

FortisBC Inc.

Application for a Certificate of Public Convenience and Necessity for the
Advanced Metering Infrastructure Project

BCUC Project No. 698682

FINAL SUBMISSION OF
BC Pensioners' and Seniors' Organization,
BC Coalition of People with Disabilities,
Counsel of Senior Citizens' Organizations of BC and
Tenant Resource and Advisory Centre
(BCPSO et. al.)

April 25, 2013

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1 This is the final submission of the BC Pensioners' and Seniors' Organization, the BC Coalition of
2 People with Disabilities, the Counsel of Senior Citizens' Organizations of BC and the Tenant
3 Resource and Advisory Centre, known in this process as BCPSO et al.

4 BCPSO is a coalition of FortisBC's ("FBC") low and fixed-income residential ratepayers who
5 collectively represent the interests of FBC's most economically vulnerable customers. BCPSO
6 and their predecessors have a longstanding history of representing the interests of low and
7 fixed income ratepayers, since the BC Public Interest Advocacy Centre was founded in 1981. We
8 were active interveners in FBC's 2008 AMI application¹ that was not approved by this
9 Commission.

10 BCPSO's interest in this project is to examine the financial and rate impacts that it will have on
11 the ratepayers who ultimately bear the cost of FBC's approved expenditures. We have focused
12 our questions in the IR phase on financial and operational issues. This submission is based on
13 the lens of ratepayer impact and will closely examine FBC's claims on need, costs, benefits and
14 expected rate impacts.

15 Issues relating to security, privacy, health and environment have also been prominent in this
16 proceeding. As stated at the oral phase of the hearing, BCPSO will examine these issues in the
17 context of their interrelation with the Utility's sated costs and benefits.

18 Below are BCPSO's submissions on the application. A very large volume of evidence has been
19 adduced for this proceeding and we will not be referencing it all. Silence on an issue should not
20 be taken as acceptance.

21 **SUMMARY**

22 In BCPSO's view, the need analysis should not include the indirect benefits. Those are properly
23 discussed in the cost/benefit analysis of the preferred alternative. FBC's business case shows
24 that there is a net benefit to ratepayers from this project. However, upon closer examination,
25 those benefits are largely based upon speculative estimates that are very difficult to ascertain
26 with any degree of certainty. BCPSO submits that FBC may have overestimated the benefits and
27 appears to have underestimated the number of refusals (0.5%). BCPSO is not convinced that
28 the business case has been made. At the very least, an opt out should be provided that does
29 not cause undue hardship for those who may need accommodation but cannot afford the extra
30 cost.

¹ Project No. 3698493; Order G-168-08

31 **1. NEED**

32 In order to grant a Certificate of Public Convenience and Necessity, the Commission must find
33 that the proposed expenditure is necessary. The test for what constitutes public convenience
34 and necessity was set out by the Supreme Court of Canada in *Memorial Gardens Assn. (Can.)*
35 *Ltd. v. Colwood Cemetery Co.*, [1958 CanLII 82 \(SCC\)](#), [1958] S.C.R. 353 in which the Court
36 recognized that the CPCN test was primarily one of opinion, and not fact.

37 **1.1 Current Situation**

38 Currently FBC utilizes a cellular modem based system to collect meter readings for
39 approximately 60 of its (largest) industrial customers. For the balance of its customers
40 (residential, commercial and some industrial) FBC utilizes either electro-mechanical meters
41 (approximately 80,000 customers) or solid state digital meters (approximately 35,000).² The
42 electro-mechanical and digital meters have identical functionality, with the sole distinction of
43 digital versus mechanical operation.³ In both cases, the information recorded must be
44 collected manually by meter readers.⁴

45 Electro-mechanical meters have been replaced by digital meters as the standard form of
46 metering technology as the manufacturing and support for electro-mechanical meters has
47 gradually been eliminated.⁵

48 Measurement Canada requires that meters are sealed and that they be periodically tested to
49 ensure that they are accurate. Meters are purchased and installed by utilities in “batches”
50 where each batch is from the same vendor and are of a similar type and factory specification.
51 Each batch is then assigned testing requirements in term of the number of meters to be tested,
52 the frequency of the testing and the test criteria. If the random sample meters in a “batch”
53 pass the test the “batch” is assigned a new seal period. If not, the entire batch of meters is
54 considered non-compliant and must be removed from service.⁶

55 **1.2 ‘Need’ to Be Addresses**

56 Effective April 1, 2014, new regulations from Measurement Canada require utilities such as FBC
57 to a new sampling plan (S-S-06) which increases increase the accuracy requirements for
58 calibrating and testing meters. FBC expects that the 80,000 electro-mechanical meters will fail
59 compliance testing at an increasing rate such the expected lifespan of these meters will be
60 significantly reduced. Similarly, the requirement for larger sampling sizes will also impact FBC’s
61 fleet of digital meters due to the existence of a large number of small compliance groups. This

² Application, page 46

³ Application, page 17

⁴ Application, page 18

⁵ Application, page 17 and BCUC 1.6.1

⁶ Application, pages 18 and 92

62 affects approximately 8,000 of FBC's digital meters. These impacts are expected to accelerate
63 the required replacement of the affected meters over a 21 year period.⁷ However, FBC plans
64 on replacing the existing 80,000 electro-mechanical meters as well as all of the existing 35,000
65 digital meters.⁸

66 The need that this CPCN is based upon is how to respond to the anticipated acceleration of
67 meter replacements as a result of Measurement Canada's new requirements. The CPCN
68 Application filed by FBC represents the Company's preferred approach.⁹

69 In BCPSO's submission, a distinction must be made between the project's "need" and the
70 project's "benefits." The Application¹⁰, the interrogatory responses¹¹ and FBC's Argument-in-
71 Chief ("AIC")¹² all include a discussion of various project benefits in the section of each
72 respective document's purported discussion of need.

73 While such benefits may be legitimate considerations in assessing the relative merits of
74 different alternatives, this is a notably different context for consideration than positioning them
75 as presenting the "need" which must be met. For example, if theft reduction was the 'need' to
76 be addressed, then the focus of the Application, and particularly the alternatives being
77 considered, would be on the most cost-effective method of reducing theft. Similarly, if
78 encouraging energy efficiency was the 'need' then the focus of the Application would be on
79 why energy efficiency was needed and the alternatives ways by which this could best be
80 achieved.

81 BCPSO submits that if the Commission accepts that the 'need' represented in this application is
82 the replacement of meters which will soon need to be replaced, then the options to be
83 considered should be based upon that need, rather than being based on the purported ancillary
84 benefits. In that context, BCPSO is of the view that FBC has not conclusively set out the case
85 that the AMI meters, as applied for, are the most cost effective way to meet the need. The
86 numerous touted benefits are superfluous to the need of the Utility to accurately and reliably
87 determine how much power a customer is consuming, as captured in the conversation between
88 Mr. Flynn and Mr. Warren about the desire for ZigBee devices operating in the Home Area
89 Network:

⁷ Application, pages 18 and 93 and BCUC 1.5.1

⁸ BCUC 1.6.5

⁹ Application, page 18

¹⁰ Application, pages 18-19

¹¹ BCUC 1.2.1 & 1.2.2 and BCPSO 1.4.1

¹² AIC, pages 40-41

90 *MR. FLYNN: Q: Would you accept that I am 77 years of age, I've lived all over this country in*
91 *many many homes, all I've ever wanted from my utility was they give me a bill at the end of*
92 *the month. Why is it suddenly I need this stuff?*

93 *MR. WARREN: A: I can't speak as to why you may need this.*¹³

94 BCPSO submits that the examination of additional benefits should properly occur elsewhere in
95 the CPCN analysis, and not to answer the discussion of need.

96 **2. PREFERRED ALTERNATIVE**

97 **2.1 Project Description**

98 FortisBC's preferred alternative for the AMI Project consists of several inter-related networks
99 and system, including:¹⁴

100 The **Local Area Network (LAN)** which consists of the meters, range extenders and collectors
101 that communicate with each other. The LAN provides each meter with a network path to at
102 least one collector for aggregating and forwarding data;

103 The **Wide Area Network (WAN)** which aggregates and forwards data from the collectors back
104 to the utility. It is currently expected that a small number of AMI meters will not have an
105 economic WAN option available at the time of AMI deployment and FBC plans to manually
106 download data from these meters at periodic intervals;¹⁵

107 The **Head End System (HES)** which collects the data at the utility and also serves as a reporting
108 system and network management system with respect to the AMI network along with
109 transferring data to the Meter Data Management System;

110 The **Meter Data Management System (MDMS)** which captures and acts as a repository for the
111 data delivered from the HES and, after validation, editing and estimation, distributes the data
112 to FBC's internal systems;

113 The **Home Area Network (HAN)** which customers can choose to enable and which will allow
114 additional optional features such as the use of In-Home Devices (IHD) for viewing the near real-
115 time information on electricity usage and prices. This capability is achieved by requiring meter
116 vendors to be able to meet the Zigbee communications protocol. Future Zigbee enhancements
117 are expected to allow for the addition of services for plug-in electric vehicle charging, prepay

¹³ Transcript Vol 7, p. 1344 line 6

¹⁴ Application, pages 41-43

¹⁵ Application, page 49

118 services, load control and demand response.¹⁶ The provision of Zigbee-related products and
119 services is not part of the current AMI projects, but FBC intends to, through its PowerSense
120 group, offer incentives to customers enabling them to purchase compatible IHDs.¹⁷ At the Oral
121 hearing, Mr. Chernikhowsky confirmed that any firmware upgrades relating to changing
122 protocols were included in the ongoing maintenance agreement portion of the contract, so that
123 there we be no incremental costs in addition to what has been applied for in this proceeding.¹⁸

124 Finally, as part of the project, FBC plans to implement an internet-based customer information
125 portal that will enable customers to view usage information from their home computer.¹⁹
126 Customers without internet access or who prefer to deal with FBC over the phone will be able
127 to call and requested printed data be mailed to them, at no additional cost.²⁰

128 BCPSO submits that the requirement for the Zigbee protocol is not a necessary to meet the
129 current approach to metering customers and therefore not required to meet the 'need' for the
130 project. This does not mean that the Zigbee protocol should not be part of the project analysis,
131 but rather that the prudence and cost-effectiveness of including the Zigbee protocol as part of
132 the project needs to be separately assessed.

133 With respect to the customer information portal, it is reasonable to expect that a part of
134 project includes the means by which customers could obtain the usage information used to bill
135 them. However, since customers are currently billed based on the total usage in the billing
136 period (and not on a time-of-use basis), there is no immediate need to provide the customer
137 information portal in order to address meet the defined "need" for the project, from a
138 metering and billing perspective. Like the Zigbee protocol functionality, this does not mean
139 that the customer information portal should not be part of the project assessment, but that
140 prudence and cost-effectiveness of including this functionality and cost should be assessed
141 independent of the needs analysis.

142 Finally, the project also includes roughly \$1 M for additional metering required to detect losses
143 on the distribution system.²¹ Again, these cost are not directly related to the defined "need"
144 and must be assessed against the incremental benefits they provide.

145 **2.2 Project Costs**

146 At the time of the Application, the capital costs of the AMI Project were projected to be \$47.7
147 M, including an overall project contingency of 6.4%.²² Subsequently, FBC indicated that it had

¹⁶ Application, page 43

¹⁷ Application, page 44

¹⁸ Transcript Vol2, p. 269 line 12

¹⁹ Application, page 51

²⁰ BCUC 1.8.1.3.1

²¹ Application, pages 70-71 and BCUC 1.54.1

148 purchased the City of Kelowna's electricity distribution assets and would be serving its
149 approximately 15,000 customers. With these additional customers, the capital cost of the
150 project increases to **\$51.2 M.**²³

151 The 6.4% contingency allowance was established by breaking the project down into major
152 components and making a determination as to the AACE Class classification warranted for
153 each.²⁴ BCPSO discusses the adequacy of this contingency in Section 7 below.

154 The project cost includes the costs of additional feeder, transformer and portable meters to
155 enable the detection of electricity theft at a cost of around \$1 M.²⁵

156 If one excludes the contingency costs, 57.6% of the initial total project capital costs are based
157 on firm contracted prices.²⁶ However, roughly \$21 M of the project costs are related to the
158 Itron contract for AMI and the prices will be held firm provided that FBC receives CPCN
159 approval and agrees to any conditions set by the BCUC by August 1, 2013.²⁷

160 There will also be incremental ongoing sustaining capital costs due to meter
161 growth/replacement and to support the AMI system. For the period 2014-2032 these are
162 expected to total \$17.8 M.²⁸ Total new operating costs associated with the project are expected
163 to be \$32.4 M over the period 2014-2032.²⁹

164 BCPSO notes that the project costs includes \$0.25 M for the capital cost of the customer
165 information portal.³⁰ In addition there are computer software costs
166 (licensing/installation/integration) which FBC is unable to accurately separate out³¹.

167 The AMI project does not include the acquisition/deployment of In-House Displays (IHDs). But
168 it does include a Home Area Network (HAN) related capabilities (based on Zigbee protocols)
169 built into the all software and hardware procured as part of the project.³² FBC did not provide
170 the costs associated with including these Zigbee capabilities as they are part of the overall
171 meter specification to be provided by the successful vendor.³³

²² Application, page 70

²³ Exhibit B-1-2, page 4

²⁴ BCUC 1.53.3 and 1.53.4

²⁵ BCUC 1.54.3

²⁶ BCUC 1.49.1

²⁷ BCUC 1.3.1

²⁸ BCPSO 3.4.2

²⁹ Exhibit B-1-2, page 9

³⁰ BCUC 1.8.1.3 and BCPSO 1.8.1

³¹ BCPSO 1.30.1

³² BCPSO 1.21.1

³³ Application, page 43, BCPSO 1.21.1 and BCUC 1.30.1.1

172 The RFP for the AMI meters require that they have the ability to provide meter reading services
173 for other utilities.³⁴ According to FBC, this did not increase the cost of the project³⁵.

174 FBC indicates that the capital cost for the AMI project is \$415³⁶ to \$425³⁷ per customer. This
175 compares to BC Hydro's per customer cost of \$516 and FortisAlberta's cost of \$268.

176 **2.3 Project Benefits**

177 FBC attributes a number of benefits to the project which offset the \$51.2M cost. Benefits can
178 broadly be categorized as direct benefits and indirect benefits.

179 The financial benefits which FBC states will be realized directly as a result of the proposed
180 project include financial benefits through reduced costs relating to theft reduction, meter
181 reading, remote disconnect/reconnect, Measurement Canada compliance, meter exchanges,
182 and contact centre.³⁸ The benefits relating to these areas are included in FBC's financial
183 analysis which includes the cost benefit analysis and rate impact analysis.

184 The Application also identifies a number of other benefits which are not included in the
185 financial analyses. These are categorized as:

- 186 • Customer service benefits attributable to the project³⁹,
- 187 • Operational efficiencies/benefits attributable to the project⁴⁰,
- 188 • Environmental benefits attributable to the project⁴¹ and
- 189 • Future benefits that are enabled by the project but will require additional capital
190 expenditures in order to realize⁴².

191 In BCPSO's view, the financial analysis should rigorously examine the purported benefits which
192 inform the cost benefit and rate impact analyses. In BCPSO's submission, a rigorous
193 examination includes a critical assessment of the assumptions informing estimates, which in
194 turn informs the reliability of those estimates.

³⁴ Application, page 53

³⁵ BCUC 1.38.1.1

³⁶ BCPSO 1.36.1

³⁷ BCUC 1.82.5

³⁸ Application, page 72 and pages 77-96

³⁹ Application, pages 31-34

⁴⁰ Application, pages 35-39

⁴¹ Application, page 38

⁴² Application, pages 97=104

195 **2.3.1 Direct Financial Benefits**

196 ***Theft Reduction***

197 Theft reduction comprises the single largest financial benefit that this project will purportedly
 198 create.⁴³ FBC states that indoor marijuana grow operations account for the majority of the
 199 energy theft.⁴⁴ FBC estimates a NPV value of \$38.4 M (prior to acquisition of the City of
 200 Kelowna). This benefit, according to FBC, occurs in two ways.

201 First, under AMI it is assumed that the level of theft detection (i.e., the % of total theft sites
 202 detected annually) will increase from 8% to 12% in 2014 and to 25% by 2016.⁴⁵ This will reduce
 203 the amount of unbilled kWhs that are currently subsumed in the Company's overall loss
 204 factor.⁴⁶

205 Second, the proportion of theft sites (i.e., theft sites as a percentage of total marijuana growth
 206 sites) will decrease from 25% to 5% by 2021 such that more sites are "paying for electricity".
 207 This will not only reduces the recorded losses but also increases revenue⁴⁷.

208 FBC's financial analysis of theft reduction due to AMI starts with a set of basic assumptions
 209 regarding the current number of marijuana sites in its service area, their breakdown between
 210 paying versus non-paying sites and the average energy use per site.⁴⁸ These assumptions are
 211 based on a combination of academic research and FortisBC's own experience.⁴⁹

212 The financial analysis compares two scenarios. The first is a Status Quo scenario which looks at
 213 the expected number of marijuana sites through to 2032, broken down between paying and
 214 non-paying assuming no AMI enabled meters and the continuation of the Company's current
 215 Revenue Protection Program.⁵⁰ The second scenario looks at the effect of AMI-enable meters
 216 and associated theft protection activities on the expected number of sites, the discovery rate
 217 for theft sites and the breakdown between paying and non-paying sites.⁵¹ The NPV benefit
 218 attributed to theft reduction is then calculated by looking at the difference between the two
 219 scenarios in terms of the change in number of paying sites and non-paying sites and the
 220 resulting impact on the Company.⁵² For purposes of the AMI-enable meter scenario, FBC looked
 221 at what it deemed to be the Probable Scenario which yielded the \$38.4 M NPV benefit as well

⁴³ Application, page 69

⁴⁴ Application, page 81

⁴⁵ Application, pages 87-88

⁴⁶ BCUC 1.76.1.1

⁴⁷ Application, page 84 and BCUC 1.76.2.1

⁴⁸ Application, page 82

⁴⁹ BCUC 1.74.1; 1.79.2; and 1.83.2 & 83.4

⁵⁰ BCUC 1.87.1 and BCSEA 1.34.3

⁵¹ BCUC 1.87.1 and BCSEA 1.34.3

⁵² Application, pages 83-84

222 as the impact of alternative assumptions which resulted in NPV benefits ranging from \$29 M to
223 \$93 M.⁵³

224 In his opinion, found at BCUC 1.86.1, SFU Criminology professor Neil Boyd states: “I cannot say
225 with confidence that the forecast savings (varying between \$42 and \$58 million over the 2012
226 to 2032 term) represent an accurate assessment.”⁵⁴ Mr. Boyd expects that electricity theft will
227 be significantly reduced if there are no changes to technologies of growing, patterns of
228 cannabis distribution and export, and the status quo of criminal prohibitions over 20 years. In
229 BCPSO submission, it is extremely unlikely that there will be no changes to technology, patterns
230 of distribution and export or the status quo of criminal prohibitions. Indeed, even in the short
231 time since the opinion was authored in June of 2012, Washington State, likely a major export
232 source for ‘BC Bud’ has decriminalized marijuana. This would presumably change patterns of
233 distribution and export for BC growers. Likewise, BCPSO is not persuaded by a conclusion that
234 assumes no changes to technology or criminal prohibitions over a 20 year period.

235 Theft reduction represents the most significant portion of the total financial benefits.⁵⁵ These
236 benefits are not achievable without both the AMI meters and the additional metering proposed
237 by FBC. Should the Commission accept FBC’s analysis of theft reduction, then BCPSO submits
238 that the additional \$1 M in metering costs⁵⁶ and the additional OM&A costs⁵⁷ included in the
239 project to enable theft detection are justified. Finally, BCPSO notes that theft reduction benefits
240 do not require that the AMI meters be “radio on” enabled⁵⁸.

241 BCPSO submits that what is abundantly clear is that the actual amount of electricity theft, and
242 the expected reduction in theft resulting from the AMI project is impossible to determine with
243 any degree of certainty. What is also clear is that even under FBC’s own scenarios, electricity
244 theft will remain an issue – AMI will not eliminate electricity theft entirely: at best it may
245 reduce theft. BCPSO submits that, this implies that FBC expects that electricity thieves will still
246 find a way to steal power even with AMI. BCPSO notes that if theft reduction was the primary
247 need to be addressed in this project, then simpler, lower cost systems exist.⁵⁹

248 In BCPSO’s view, FBC has not conclusively made the business case about electricity theft
249 reduction. The information provided on the scale of electricity theft is entirely comprised of
250 estimates. Assertions about anticipated theft reductions over the next 20 years are speculative
251 and the possibility of technology changes, distribution patterns and decriminalization, for which

⁵³ Application, page 86-87

⁵⁴ BCUC 1.86.1 (Appendix)

⁵⁵ BCUC 1.15.1

⁵⁶ BCUC 1.54.1

⁵⁷ BCUC 1.54.3

⁵⁸ CEC 2.15.1

⁵⁹ BCUC IR 1.82.0

252 there is considerable popular support, would change the landscape and undoubtedly impact
253 the FBC business case.

254 Inaccuracies and uncertainties in estimates materially impact the NPV of the project. FBC's NPV
255 analysis is based, in part, on the BC Hydro business case for their own AMI project that was not
256 subject to BCUC oversight. This puts FBC and the BCUC in a unique position to use BC Hydro as a
257 test to see how accurate and reliable theft reduction assumptions regarding the impact of
258 smart meters are. Much more reliable information will be available from BC Hydro on the
259 actual costs and benefits of AMI relating to theft reduction and indeed many of the touted
260 benefits of AMI.

261 In BCPSO's view, the NPV benefit from theft reduction is entirely speculative, from the estimate
262 of the current amount of theft to the level of theft reduction that can be anticipated with the
263 introduction of AMI. Utilities cannot precisely forecast their own load demands in the best of
264 times, despite considerable expertise and resources. Granting a CPCN based on financial
265 analysis that is based on such speculative estimates may not be prudent. It is clear that this
266 project would not pass a cost/benefit analysis without the inclusion of the theft reduction
267 estimates.

268 *Meter Reading*

269 Historically, meter reading costs have been between \$2.1 M and \$2.4 M annually in recent
270 years.⁶⁰ The AMI project will virtually eliminate the need for a manual metering reading process
271 and by extension the people employed to read meters. This includes both the regular meter
272 reads as well as any additional reads that are needed due to customers moving in and out of
273 premises, and requests by customers for verification of a previous reading.⁶¹

274 FBC has estimated that over the 2014-2032 period the net present value of meter reading
275 savings will be \$23.8 M (\$26.5 M with the City of Kelowna).⁶²

276 While the AMI financial analysis assumes the elimination of manual meter reading operations.
277 FBC has not made any assumptions regarding the treatment of the existing employees.
278 However, it has assumed that any transition cost will be minimal.⁶³ Since this is one of the key
279 "savings" areas (second only to theft reduction⁶⁴) associated with the AMI Project and an area
280 over which FBC claims⁶⁵ to have "cost control" the savings in this area should be closely

⁶⁰ Application, page 80

⁶¹ Application, pages 78-79

⁶² Application, pages 69 & 80 and Exhibit B-1-2, pages 5-6

⁶³ BCPSO 1.44.1 and BCPSO 2.8.1

⁶⁴ Application, page 69

⁶⁵ BCPSO 2.8.1

281 monitored and FBC held accountable for any material reduction from the level of savings
282 anticipated.

283 *Remote Disconnect/Reconnect*

284 The need for FBC to disconnect/reconnect customers arises for a number of reasons, including
285 the need to disconnect vacant premises without a customer account and reconnect if premises
286 subsequently become occupied, or the need to disconnect as a last resort in the event of non-
287 payment and reconnect if payment is subsequently received.

288 The AMI meters will allow FBC to remotely disconnect or connect a service as required.⁶⁶
289 Savings arise due to reduced visits to vacant premises and more timely disconnection of vacant
290 premises (i.e., less unbilled use).⁶⁷ It is anticipated that one site visit will still be required for
291 100% of disconnects due to non-payment.⁶⁸ However, AMI will reduce the number of site visits
292 required for actual disconnection and reconnection⁶⁹.

293 The net present value of these savings for 2014-2032 is \$6.2 M with the City of Kelowna.⁷⁰

294 FBC has indicated that the marginal cost of remote reconnection will drop substantially with the
295 AMI project, meaning that in theory the reconnection fee could be dropped substantially.⁷¹
296 However, in response to BCUC 1.92.2.1, FBC states that it plans on maintaining its current
297 reconnection charge until at least the next COSA. Its reasons are two-fold: (i) in order to better
298 understand the costs actually associated with its new processes; and (ii) in recognition that such
299 charges also deter disconnections.⁷² In contrast, in response to CEC 1.84.4.6, FortisBC states
300 that customers with AMI meters will only be charged \$100 for reconnection whereas customers
301 still read manually will be subject to the standard charges.

302 BCPSO submits that there are three issues arising from these responses. First, FBC needs to
303 clarify its planned approach to reconnection charges. Will they remain unchanged from the
304 current standard charges (which includes \$200 in the case of a disconnect/reconnect⁷³) after an
305 AMI meter is installed or will they be reduced to a flat \$100? Second, in cases where the
306 customer's meter is still read manually because there is no "economic" full AMI-enabled
307 alternative, the application of the standard charges (including higher rates for overtime and
308 callout hours⁷⁴) is not appropriate. The customer has not "chosen" to be manually read and,

⁶⁶ Application, page 89

⁶⁷ BCPSO 1.47.4

⁶⁸ Application, page 91

⁶⁹ BCUC 1.91.1 and 1.91.2

⁷⁰ Application, page 69 and Exhibit B-1-2, page 5

⁷¹ BCUC 1.92.2.1

⁷² BCUC 1.92.2.1

⁷³ FortisBC Electric Tariff, Schedule 80

⁷⁴ BCUC 1.92.2

309 indeed, may well prefer the benefits that would come from full AMI-enabled metering (e.g.
310 access to recent usage data through use of the customer information portal). It is inappropriate
311 to further disadvantage such customers by charging them higher fees in the event of
312 reconnection. In contrast, if an opt-out option were to be provided then for those customers
313 who chose to opt-out it may be appropriate to apply the standard charges in the event of a
314 reconnection as long as that consequence is clearly communicated to opters-out.⁷⁵

315 Thirdly, BCPSO disputes the assertion that a high reconnection charge deters disconnections.
316 FBC provides an essential, life sustaining product. The low and fixed-income ratepayers
317 represented by BCPSO are the most likely to experience disconnections due to non-payment
318 and a reconnection charge that exceeds the cost of service is unduly punitive and acts as an
319 additional barrier to accessing a basic standard of living.

320 BCPSO also notes that there are inconsistencies in the evidence provided regarding the
321 calculation of the savings from disconnects/reconnects under AMI. The Application⁷⁶ and
322 BCPSO 1.47.4 both indicate that the savings include reductions in unbilled energy. However,
323 the comparison of Gross Status Quo and AMI operating costs set out in BCUC 1.48.3 b) does not
324 include any allowance for reduced unbilled energy yet it produces the same savings (e.g.
325 \$544,000 in 2016). BCPSO , invites FBC to reconcile this in its Reply.

326 BCPSO further notes that the calculation of the benefits includes the reduction in consumption
327 that would previously have been unbilled.⁷⁷ This reduction occurs due to AMI enabling vacant
328 premises to be identified more quickly. FBC has valued this reduction in unbilled energy at its
329 marginal revenue margin.⁷⁸ However, since early disconnection does not result in additional
330 revenue but rather a reduction in purchases that are unbilled, the benefit is really reduced
331 power purchases and the kWh saved should be valued at FBC's marginal cost of purchases
332 which for 2016 are \$68.47/MWh as compared to a marginal revenue value of \$92.16/MWh.⁷⁹

333 As discussed under Meter Exchanges the "savings" associated with Disconnects/ Reconnects
334 arise (in part) because it is assumed that the visits still required to premises due to vacancy and
335 unpaid bills⁸⁰ can be performed by CSPs whose time is no longer required to perform meter
336 exchanges. However, this approach assumes that the savings attributed to Meter Exchanges
337 have not already accounted for the reduced CSP requirements. It also assumes that the savings
338 in CSP time will continue for the entire evaluation period (i.e. through to 2032) whereas the

⁷⁵ BCUC 1.84.4.7

⁷⁶ Application, page 91

⁷⁷ Application, page 91

⁷⁸ BCPSO 1.47.4

⁷⁹ Application, page 84

⁸⁰ BCUC 2.14.1 and BCPSO 1,47.4

339 savings are only expected to occur for the first six years. As a result, BCPSO submits that the
340 savings attributed to Disconnects/Reconnects is likely overstated.

341 *Meter Exchanges*

342 The AMI Project defers the exchange and compliance testing costs in the short term as all of the
343 existing meters are replaced and do not require testing for ongoing compliance with
344 Measurement Canada standards.⁸¹ The net present value of these savings is \$1.5 M (\$1.6 M
345 with City of Kelowna)⁸².

346 In principle the savings related to deferred exchange and compliance testing costs should
347 reflect the full savings to be achieved, i.e. both the savings related to the actual removal of the
348 meters involved as well as any savings in actual testing costs. However, it is not clear from the
349 evidence provided that this is the case. Indeed, BCPSO 1.47.4 suggests that these costs
350 associated with the Customer Service Persons (CSP) who would do such work have not been
351 included and therefore the “savings” are available to cover off the required site visits associated
352 with disconnects and reconnects.⁸³

353 Furthermore, even if the CSP savings related to meter exchanges have not been accounted for
354 in the analysis, FBC notes that they are expected to exist for only the first six years after meter
355 deployment after which the cost of meter exchanges is expected to begin to return to pre-AMI
356 deployment levels.⁸⁴ Thus, BCPSO submits that savings are not available to cover of the cost of
357 site visits associated with disconnects/reconnects under AMI over the entire 20-years of the
358 financial analysis as FBC appears to have assumed. BCPSO invites FBC to clarify of these issues
359 and whether the savings associated with remote disconnects and reconnects have been over
360 stated in its Reply.

361 *Contact Centre*

362 According to FBC, the irregular meter reads related to customer moves, etc. give rise to not
363 only additional meter reading costs but also additional contact centre costs where personnel
364 input such reads into the billing system. Offsetting this will be an increase in call volume during
365 the Project implementation. The net savings from these two areas is expected to be \$0.5 M
366 evaluated on a net present value basis over 2014-2032 with City of Kelowna.⁸⁵

367 FBC also believes that there will be fewer calls and billing corrections due to inaccurate reads
368 and estimates as a result of the AMI Project. However, these savings are difficult to estimate

⁸¹ Application, page 94

⁸² Application, page 95 and Exhibit B-1-2, page 5

⁸³ BCPSO 2.11.2

⁸⁴ Application, page 94 and BCUC 2.15.2

⁸⁵ Application, page 96 and Exhibit B-1-2, page 5

369 and no allowance has been made for them in the financial analyses.⁸⁶ Indeed, it may be the
370 case that contact centre calls increase as a result of the implementation of AMI.

371 *Overall*

372 FBC has established a benefit monitoring plan and proposes to report annually to the BCUC for
373 a period of five years.⁸⁷ The BCUC should require that FBC notify interested parties (e.g. those
374 registered in the current CPCN proceeding) when the annual reports are available and how they
375 may be accessed.

376 **2.3.2 Non-Financial Benefits**

377 Non-financial benefits attributed to the project fall into two areas: i) customer service benefits
378 and ii) improved operational efficiencies.⁸⁸

379 *Customer Service Benefits*

380 Customer service benefits from the AMI Project noted by the Application include:

- 381 • Increase customer awareness of their electricity usage, particularly through the use of
382 the online web portal and/or optional In-Home Displays (IHD), with anticipated
383 reductions in overall energy usage.⁸⁹ For customers without internet access similar
384 information will be provided via mail upon request.⁹⁰
- 385 • Enable FBC to implement time-based conservation rate structures at some future time,
386 subject to BCUC approval.⁹¹
- 387 • Enhanced billing information for customers and increased bill accuracy.⁹²
- 388 • Facilitate consolidated billing, which is currently not feasible as different electricity
389 accounts' meters may be read on different days.⁹³
- 390 • Facilitate the ability to provide more flexibility around billing dates.⁹⁴
- 391 • Reduce need access customers' premises (for purposes of meter reading).⁹⁵

392 *i) Customer Information Portal*

393 The capital cost of the customer information portal is \$0.25 M.⁹⁶ However, there will be
394 additional portal-related computer software costs which FBC has not been able to separate

⁸⁶ Application, pages 33 and 96

⁸⁷ BCUC 1.56.3

⁸⁸ Application, pages 31 – 39 and BCUC 1.14.1

⁸⁹ Application, page 32

⁹⁰ BCUC 1.8.1.3 and BCPSO 1.9.1

⁹¹ Application, page 32

⁹² Application, pages 32-33

⁹³ Application, pages 33-34

⁹⁴ Application, page 34 and CEC 1.97.1

⁹⁵ Application, page 34

⁹⁶ BCUC 1.8.1.3

395 out.⁹⁷ As a result, there is no clear indication of the total cost of providing the customer
396 information portal.

397 In response to BCUC 1.16.1 FBC has revised its estimated energy savings from the customer
398 information portal to 2.2 GWh starting in 2015 and increasing to 5.3 GWh in 2025.⁹⁸ Based on
399 these savings and an energy cost of \$85/MWh⁹⁹ the NPV of the project would increase to \$20.9
400 M¹⁰⁰ (over the initial value of \$17.6 M). From a financial impact perspective (and more
401 particularly a revenue requirement impact perspective) it is questionable as to whether the
402 analysis should be based on FBC's long-run marginal cost. A more appropriate basis may to use
403 FBC's forecast incremental cost of purchased power, particularly in the near term, as used in
404 the theft analysis.¹⁰¹

405 However, even if one were able to account for the additional portal-related computer software
406 costs and value the savings at the marginal purchases costs, it is expected that the additional
407 cost of providing the CIP is cost-effective.

408 *Zigbee Protocol*

409 As noted previously, the incremental cost of requiring vendors¹⁰² to meet the industry
410 standards for IHDs using the Zigbee communications protocol is unknown. However, that does
411 not mean there is no cost. Indeed, recent Decision by the Ontario Energy Board indicates that
412 for Guelph Hydro the cost of including the Zigbee chip was approximately \$12/meter which it
413 viewed as material.¹⁰³ Absent any cost information specific to FBC it would be reasonable to
414 assume that at least \$1 M of the project's capital is associated with the Zigbee capability.

415 There are two issues that arise from the inclusion of Zigbee capability in the current AMI
416 project. First, there are no immediate benefits associated with this additional capability/cost.
417 As result, is questionable as to whether the "cost" should be charged to ratepayers when the
418 AMI project comes into service. Second, any evaluation of the economics of an IHD-based
419 conservation incentive programs should include this cost.

420 *Operational Efficiency*

421 • Operational efficiency benefits noted in the Application include¹⁰⁴:

⁹⁷ BCPSO 1.30.1

⁹⁸ See also BCPSO 1.11.1

⁹⁹ Represents FBC's long range marginal cost expressed in nominal dollars, per CEC 1.19.5

¹⁰⁰ BCUC 1.16.2

¹⁰¹ Application, page 84

¹⁰² Application, page 43

¹⁰³ Ontario Energy Board Decision EB-2011-0123, page 7

(http://www.ontarioenergyboard.ca/OEB/_Documents/2012EDR/DecOrder_Guelph_2012COS_20120222.pdf)

¹⁰⁴ Application, pages 35-39

- 422 ○ Improved accuracy of electrical system modelling through the availability of
423 enhanced and more timely system data, particularly at the distribution level.
- 424 ○ Improved financial reporting, load forecasting and cost of service analyses.
- 425 ○ Enhanced employee safety through a reduction in exposure to driving, walking and
426 animal/property access hazards.
- 427 ○ Reduced GHG by decreasing the usage of FBC vehicles (for meter reading)
- 428 ○ Improved ability to detect and locate power outages along with more detailed
429 information regarding the duration and number of customers affected.
- 430 ○ Improved power quality monitoring.

431 BCPSO agrees with FBC when it notes that without an Outage Management System, AMI
432 outage information will be of limited value at the onset of an outage and that the immediate
433 outage related benefits from AMI will be the ability to view remaining/nested outages following
434 power restoration.¹⁰⁵ Given that there may be a several hour delay (in real time) between
435 actual downloads of AMI data¹⁰⁶, even this benefit may be questionable.

436 Apart from this qualification, there appear to be number of operational benefits (that have not
437 been quantified for purposes of the cost-benefit analysis) from the AMI project.¹⁰⁷

438 2.3.3 Future Benefits

439 Future benefits facilitated by the AMI Project but which will require capital expenditures
440 include¹⁰⁸:

- 441 • Distribution Loss Reduction. AMI will allow losses on distribution feeders to be identified
442 more accurately¹⁰⁹, permitting FBC to implement loss reduction capital projects where
443 supported by favourable cost/benefit analyses.
- 444 • Power Grid Voltage Optimization. The AMI project will allow a feeder meter to obtain
445 feedback from individual meters and therefore make it possible for FBC to implement
446 Conservative Voltage Regulation (CVR) techniques at a later date.
- 447 • Outage Management. The AMI system can provide “near” real-time operational data which
448 would allow FBC to respond to power outages more effectively. Implementation of an
449 Outage Management System would allow the proper filtering of such information and
450 coordination with FBC’s other relevant data systems and allow for more effective use of this
451 information¹¹⁰.

¹⁰⁵ BCUC 1.102.2, Tatangelo 1.13 and CEC 2.20.1

¹⁰⁶ BCPSO 1.16.1

¹⁰⁷ CEC 2.2.2

¹⁰⁸ Application, pages 97-104

¹⁰⁹ BCUC 1.10.1

¹¹⁰ BCUC 1.102.2 and 1.102.3

452 • Customer Pre-Pay Tariffs. The AMI Project makes it possible for FBC to implement a pre-
 453 payment system. This is expected to be of interest to customers seeking to have the
 454 security deposit waived and to also have conservation benefits.

455 • Future Conservation Rates. As noted earlier, the AMI project permits the introduction of
 456 time of use or critical peak pricing rates to help reduce power purchase costs.

457 BCPSO notes that CVR techniques are not economic at this time.¹¹¹ Further, information
 458 received from the AMI meters would normally be delayed by several hours.¹¹² As result, there
 459 would appear to be limits on the extent to which expenditures on an Outage Management
 460 System can facilitate FBC’s response to outages in “near” real time. This issue will need to more
 461 fully explored if FBC brings forward its business case for an Outage Management System.

462 The evidence provided in this proceedings highlights a number of issues that will arise and need
 463 to be addressed with any optional TOU program.

464 First, free-rider benefits are likely be greater for customers with higher average monthly use.¹¹³
 465 This means that the customers currently targeted by the Residential Conservation Rates will be
 466 able to escape the impact of the RCR simply by adopting TOU rates. Indeed, the incentive for
 467 lower bills simply by opting for TOU rates may overshadow any inherent incentive in opting to
 468 TOU in the interest of lowering bills through load shifting.¹¹⁴

469 Furthermore, when such customers opt for TOU rates there will be a revenue transfer to FBC’s
 470 other customers – which will increase their rates and bills. The response to CSTS 2.42.1 suggests
 471 that 1,700MW has been achieved in Ontario due to smart meters. This is incorrect. A careful
 472 reading of the referenced material will indicate that the 1,700 MW is mainly due to incentive-
 473 based conservation programs.

474 **2.4 Overall Cost Benefit Analysis**

475 The high level assumptions underlying the analysis include¹¹⁵:

- 476 • Decision by mid-July 2013 such that the Itron contract need not be renegotiated or
 477 cancelled;
- 478 • Implementation begins Q3 2013 and is completed in Q4 2015;
- 479 • Post-AMI manual meter reading no more than 1% of customer base;
- 480 • Customer AMI meter refusals do not exceed 0.5% of customer base; and

¹¹¹ Application, page 101

¹¹² Application, page 46 and BCPSO 1.16.1

¹¹³ BCUC 2.69.1

¹¹⁴ BCUC 2.69.1

¹¹⁵ BCUC 1.53.8

481 • Regulatory costs do not exceed \$2 M.

482 The analysis was performed using an 8% discount rate¹¹⁶ (with sensitivities based on 6% and
483 10%). The 8% is more than FBC's current weighted average cost of capital.¹¹⁷ The study period
484 for the analysis was 20 years – based on the estimate life of the meter¹¹⁸.

485 The analysis was based on the Net Present Value (NPV) of the revenue requirement changes
486 associated with the project. On this basis the Project has a NPV benefit of \$17.6 M without the
487 City of Kelowna¹¹⁹ and \$23.4 M with the City of Kelowna.¹²⁰

488 During the IR process the BCUC Staff requested an economic analysis based on cash flow as
489 opposed to revenue requirement¹²¹. Using an 8% discount rate the NPV benefit is \$18.1 M. FBC
490 also provided the NPV benefit results for a number of scenarios with alternative assumptions
491 regarding future costs and benefits.¹²²

492 BCPSO submits that some of the underlying assumptions contained in the cost benefit analysis
493 may be optimistic. In particular, it appears that the number of refusals (0.5%) and perhaps
494 regulatory costs will prove to be low estimates. The 20 year meter and MDMS life, while used
495 by other utilities also raises considerable uncertainty. Combined with the speculative benefits
496 related to theft reduction discussed above, BCPSO has reservations about accepting FBC's NPV
497 analysis.

498 **2.5 Rate Impacts**

499 Based on FBC's cost benefit analysis, discussed above, the AMI project has a NPV impact on
500 rates of -1 % (excluding City of Kelowna).¹²³ The maximum annual incremental rate impact is
501 1.7% in 2014.

502 For purpose of the rate impact analysis, the remaining unamortized balance for the existing
503 meters is \$9.1 M as of December 31, 2013.¹²⁴ Roughly \$0.5M of this will be charged to
504 depreciation in 2014 while the meters are still in-service and the remaining \$8.6 M will be
505 written off over the 2014 to 2015 period and recovered from customers.¹²⁵

506 *Existing meters*

¹¹⁶ Application, page 75

¹¹⁷ BCUC 1.52.2

¹¹⁸ BCUC 1.52.3 and 1.52.3.1

¹¹⁹ BCPSO 3.2.1

¹²⁰ Exhibit B-1-2, page 3

¹²¹ BCUC 1.96.1

¹²² CEC 1.49.2.1; BCUC 1.58.2; BCUC 1.105.3.1 and BCUC 2.17.1

¹²³ Application, page 77

¹²⁴ Application, page 77 and BCUC 1.6.2.1 & 1.72.4.1

¹²⁵ BCUC 1.72.4

507 FBC proposes to write off the remaining costs of the existing meters over 2014-2015. It
 508 rationale for choosing this amortization period as opposed to a longer one is that the proposed
 509 approach does not require an accounting variance.¹²⁶ However, this approach leads to a higher
 510 rate impact than either of the other two options considered, both of which involved longer
 511 amortization periods but would require an accounting variance from the BCUC.¹²⁷ FBC has
 512 assumed that the cost of removing the existing meters will be offset by their scrap value, but
 513 disposal cost has not be separately costed, and has stated that it would not undertake the
 514 project if the write down of \$8.6M for the existing meters was not recoverable from customers.
 515 ¹²⁸

516 The NPV of the Revenue Requirements under Option 3 is materially better than under the
 517 proposed approach (NPV benefit of \$21.95 M as compared to \$17.63 M under the proposal).¹²⁹
 518 This improvement in NPV benefit demonstrates that the longer amortization period is in the
 519 customers' best interest. On this basis the BCUC should approve Option 3 as the appropriate
 520 accounting treatment for the existing meters, should it grant the CPCN.

521 **3. ALTERNATIVES/OPTIONS CONSIDERED**

522 **3.1 Alternatives to AMI**

523 FBC discussed a number of alternatives it considered. These include (i) the status quo
 524 (continued manual meter reading);(ii) automated meter reading (AMR); and (iii) power line
 525 carrier (PLC) technology.¹³⁰

526 The AMI alternative has higher capital costs than either the status quo or the AMR options.
 527 However, neither these options provides the purported theft benefits or disconnect/reconnect
 528 benefits attributable to AMI and the meter reading savings associated with the AMR option are
 529 substantially less. The lack of these benefits results in both of these options having significantly
 530 higher net present value revenue requirement impact.¹³¹

531 In the case of the PLC option, it provides generally the same benefits as the AMI option but the
 532 capital costs are materially higher¹³² such that its net present value impact on the revenue
 533 requirement is greater and the overall NPV benefit is lower.¹³³

¹²⁶ Application, page 77 and CEC 1.71.1

¹²⁷ CEC 1.71.2 and CEC 1.71.3

¹²⁸ BCUC 1.72.1

¹²⁹ CEC 2.19.1

¹³⁰ Application, page 105

¹³¹ Application, page 121

¹³² BCUC 1.106.3 and BCUC 2.34.2

¹³³ Application, page 121

534 In response to interrogatories, FBC provided costs estimates for using fibre optic cable (either
 535 owned or third party lease) in lieu of an RF mesh LAN solution. Both were determined to have
 536 significantly higher costs and, overall, an unfavourable NPV benefit.¹³⁴

537 **4. AMI COSA TREATMENT**

538 FBC states¹³⁵ that, in its next COSA, the cost of the AMI-enable meters will be allocated to the
 539 classes utilizing the meters. However, it is evident from the project cost benefit analysis that,
 540 the absence of the theft reduction benefits, the AMI project would not be have a positive NPV
 541 benefit.¹³⁶ As the reduction in losses associated with anticipated theft reduction benefits all
 542 customer classes, it is not immediately obvious that the full costs of the AMI meters should be
 543 assigned to these classes. Indeed, contrary to the response to BCUC 2.65.2, the responses to
 544 BCUC 2.85.1¹³⁷ appears to suggest that other customer classes would share in the cost and the
 545 benefits of the AMI project. This is an issue that should be more fully explored during the
 546 review of FBC's next COSA.

547 **5. PRIVACY**

548 The Application understates the privacy implications of the change from collecting semi-
 549 monthly consumption data to collecting hourly consumption data. In reality, this change will
 550 create an enormous pool of information that simply does not exist under the current system.
 551 Once this information is collected, it will potentially be available, not just to the utility, but to
 552 law enforcement, private litigants, insurance companies, marketers, product developers,
 553 criminals and others.

554 In and of itself, the collection of hourly consumption data will allow analysts to detect
 555 variations in household consumption that will reveal, with a high degree of accuracy,
 556 information such as how many people live in a home and their daily routines, such as sleep,
 557 work, and travel patterns. This level of intrusion was acknowledged by the BC Information and
 558 Privacy Commissioner in Investigation Report F11-03 regarding BC Hydro's smart metering
 559 program when she indicated that hourly consumption data could reveal whether people are
 560 home or away:

561 *Given the current state of the smart grid in British Columbia, it is not reasonable*
 562 *to expect that an analysis of hourly consumption information would reveal*
 563 *exactly what appliances are being used and when. However, it could reveal*

¹³⁴ CSTS 1.12.5

¹³⁵ BCUC 2.65.2

¹³⁶ Application, page 69

¹³⁷ See also ICG 1.1.2 and 1.2.1.1 and BCUC 2.90.1

564 *whether people are home or away. Beyond that, any other conclusions would be*
565 *merely speculative.*¹³⁸

566 Further, it is reasonable to suppose that with the anticipated introduction of smart appliances
567 and increased load monitoring capabilities; it will soon become possible to identify the use of
568 specific appliances at particular times, again with a high degree of accuracy. This information,
569 about people's daily routines and equipment usage, will be valuable to numerous parties for
570 purposes unrelated to energy efficiency. To give some examples identified by the Electronic
571 Frontiers Foundation:

572 *It's not hard to imagine a divorce lawyer subpoenaing this information, an*
573 *insurance company interpreting the data in a way that allows it to penalize*
574 *customers, or criminals intercepting the information to plan a burglary.*
575 *Marketing companies will also desperately want to access this data to get*
576 *intimate new insights into your family's day-to-day routine—not to mention the*
577 *government, which wants to mine the data for law enforcement and other*
578 *purposes*¹³⁹.

579 Once this pool of data exists, it will be impossible to prevent it from being accessed pursuant to
580 statute or court order, or with the consent of the affected household where such consent is
581 required as a condition of receiving services from a third party. The inability of FBC to control
582 the use of hourly consumption data is another factor the BCUC must weigh in determining
583 whether the Project is in the public interest.

584 Further, it is not obvious that FBC needs to collect hourly consumption data as part of the AMI
585 Project. All of the financial benefits identified in section 5.3 of the Application can be obtained
586 without such frequent data collection. Although not made in specific response to the FBC
587 Application, the comments of Dr. Schoechle seem apropos:

588 *Meter data is not necessary to the basic purpose of a smart grid (e.g.,*
589 *supply/demand balancing, DR, and renewable integration). The original*
590 *motivation behind remote meter reading (including AMI) was the elimination of*
591 *meter readers and automation of back-office billing systems. Currently, however,*
592 *data is collected primarily because it can be. ...*

593 *... Never explained is how granular personal meter data helps manage the grid. It*
594 *is believed by some that consumer electricity usage behavior data may be useful*

¹³⁸ Exhibit B-9, Attachment 1 (BC OPIC Investigation Report F11-03 regarding BC Hydro), paragraph 49.

¹³⁹ Lee Tien, "New 'Smart Meters' for Energy Use Put Privacy at Risk", Electronic Frontiers Foundation.

595 *to utilities or to consumers. But it is not clear how such data would actually be*
596 *applied, nor is it clear that there are not cheaper and more benign ways to*
597 *acquire it.¹⁴⁰*

598 With respect to the future benefits identified in section 6.0 of the FBC Application, it appears
599 that fine grained consumption data will be useful only for very specific purposes. With respect
600 to distribution loss reduction, the valuable information appears to be the identification of
601 discrepancies between consumption data from groups of individual smart meters and the
602 associated feeder meter. A system that flags these discrepancies, without retaining all hourly
603 consumption data from all meters, appears to better suit this purpose. Similarly, outage
604 management appears to require access to individual meter information only in very limited
605 circumstances. Receipt of data from collector meters would allow FBC to identify and locate
606 power outages with a high degree of accuracy. Data from individual smart meters in the
607 affected area could then be accessed on a case by case basis to locate smaller outages.

608 With respect to the prepay tariff, it may be useful to the affected household to have hourly
609 consumption data so that it can better manage its power usage. However, it is not clear why
610 the utility needs access to this data other than to identify the point at which the prepaid
611 account runs dry. Assuming the IHD can indicate to the household the cost of electricity, hourly
612 electricity usage, and the amount remaining in the prepaid account, there does not appear to
613 be any reason for the utility to also have access to hourly consumption data.

614 Hourly consumption data will undoubtedly be useful to FBC in designing energy conservation
615 programs. However, such programs could be designed on the basis of voluntary participation in
616 the design process. Indeed, if participation in the conservation program itself will ultimately be
617 voluntary, the design data obtained from voluntary design participants may better match the
618 usage patterns of the ultimate program participants.

619 In summary, BCPSO et al. is not persuaded of the need for FBC to collect hourly consumption
620 data from all individual smart meters in order to achieve the anticipated benefits of the
621 proposed AMI Project. In our submission, FBC should collect as little personal information as is
622 reasonably necessary for the purpose for which the information is being collected. Collecting
623 and retaining hourly consumption data from individual meters appears to us to exceed this
624 level. Furthermore, it appears the proposed meters can be configured to transmit less frequent
625 aggregations of data. Mr. Chernikhowsky testified that the “informational functions of the
626 meter such as how frequently it captures data, what sorts of data it captures, and logs” could

¹⁴⁰ Exhibit C9-8, Appendix 6B (Schoechele Report, “Getting Smarter about the Smart Grid”) p17.

627 be altered. The recording frequency could, for example, be set to record only “every two hours
628 or daily”.¹⁴¹

629 In the event FBC is permitted to collect hourly consumption data from individual meters, we
630 make the following submissions with respect to the collection, use and disclosure of this data:

- 631 • Because of the sensitive nature of the data proposed to be collected, it is important that
632 FBC adopt and implement a privacy policy that specifically addresses the collection of
633 hourly consumption data. In particular, FBC should identify the specific purposes for
634 which hourly consumption data is being collected, and should limit the use and
635 disclosure of such data to the specific purposes identified. Generic statements relating
636 to the purpose for which a broad range of “personal information” may be collected
637 (e.g., “to create and maintain an effective business relationship”), as found in FBC’s
638 current privacy policy, are too general to provide a useful limit on FBC’s ability to gather
639 and use hourly consumption data. A sufficiently specific purpose may be, for example:
640 “Where a discrepancy is found to exist between the consumption data of a group of
641 meters and the associated feeder meter, FBC will collect consumption data from
642 individual meters and retain such data for analysis until the source of the discrepancy is
643 identified and the issue resolved.”
- 644 • Although PIPPA does not require private organizations to conduct privacy impact
645 assessments when engaging in a project that has privacy implications¹⁴², FBC could
646 voluntarily adopt a policy of conducting such assessments or the BCUC could impose
647 such a requirement as a condition of granting the CPCN. It seems clear from the FBC
648 Application that it is still early days for the smart grid and that functionality is expected
649 to increase over time. It seems reasonable to suppose that increased functionality will
650 bring with it with an increased ability to identify specific household activities based on
651 energy consumption patterns. Accordingly, it is reasonable to expect FBC to assess the
652 privacy implications of this increasing functionality as it is comes online. Such an
653 assessment is no more than what is being required of BC Hydro.
- 654 • Although the FortisBC Privacy Policy indicates that FBC will not sell, rent or lease
655 personal information to third parties, such “third parties” do not include service
656 providers (including “partners, consultants and suppliers”) who have been engaged by
657 FBC. In our submission, non-FBC personnel should be provided only with de-identified
658 consumption data and only pursuant to agreements placing clear limits on the use to
659 which such data may be put by the third party service provider. Where it is absolutely

¹⁴¹ Transcript volume 3, pp.362-363.

¹⁴² Exhibit B-11, Response to BCSEA IR 1.50.2 (p.97)

660 necessary to provide service providers consumption data linked to specific households,
 661 such information should be provided only with the express consent of the affected
 662 household(s). Our concern is that it is possible to bring almost any third party under the
 663 rubric of “partner, consultant or supplier” if there is incentive to do so.

664 • The storage of information outside of Canada¹⁴³ raises additional issues relating to
 665 privacy. In Canada, legal access to personal information by third parties is subject to
 666 court order. No such protection applies to personal information held in the USA.
 667 Accordingly, even stronger restrictions should be placed on the collection and retention
 668 of personal information where it is proposed that such information be stored outside of
 669 Canada.

670 • BCPSO supports the anticipated submission of BCSEA that the BCUC should not approve
 671 any configuration of the ZigBee board that does not allow the HAN to operate through
 672 an in-home device or gateway in order to allow utility customers to segregate HAN
 673 specific information from aggregate energy consumption data.¹⁴⁴

674 **6. SECURITY**

675 BCPSO makes no submission with respect to the security issues raised in this proceeding.

676 **7. HEALTH**

677 BCPSO notes that the BCUC is primarily an economic regulator, without particular expertise in
 678 medical or scientific research issues. It is therefore not the ideal body to make determinations
 679 about the probable health impacts of AMI. Similarly, BCPSO’s primary concern in this
 680 proceeding is the economic impact of the Project on low and fixed income residential utility
 681 ratepayers. We recognize that, as individuals, utility ratepayers have a variety of interests that
 682 may be impacted by the activities of regulated utilities. In the present application, a segment of
 683 the population has expressed concern about the potential health impacts associated with the
 684 Project. Unfortunately, neither the BCUC nor BCPSO is ideally situated to assess the validity of
 685 these concerns. Accordingly, our submissions in this section will focus on the economic
 686 implications of health-related resistance to the Project and the possibility that adverse health
 687 impacts from smart meters will be established within the 20 year lifespan of the meters.

688 Regardless of the validity of the health concerns expressed, there is no doubt that a percentage
 689 of the population sincerely believes that the Project will adversely affect their health, and

¹⁴³ Exhibit B-9, Attachment 2 (FortisBC Privacy Policy), provision 6.1.

¹⁴⁴ Transcript volume 2, pp.245-246.

690 potentially also affect the well-being of the biological systems upon which we all rely.
691 Accordingly, we expect there will be some resistance to the installation of smart meters in the
692 event the Project is approved. According to the most recent BC Hydro report on the installation
693 of smart meters, approximately 5% of the residences within the BC Hydro service territory
694 continue to resist the installation of smart meters on their premises. In addition, there have
695 been isolated reports of extreme behaviour relating to the installation of smart meters.¹⁴⁵ FBC
696 has based its estimates of Project benefits and costs on a resistance rate not to exceed 0.5%¹⁴⁶.
697 This is only 1/10th of the resistance rate currently being experienced by BC Hydro. Needless to
698 say, resistance to the installation of smart meters will increase the overall installation cost. An
699 inability to bring everyone onto the AMI system will also decrease the benefits associated with
700 implementation of the system.

701 The economic cost associated with an increased level of resistance is difficult for us to quantify.
702 FBC has included a contingency of 6.4% in the overall Project budget. However, we are
703 concerned that this contingency will be insufficient to cover the additional cost of installing
704 smart meters should FBC face significant resistance, especially since the 6.4% contingency must
705 also cover all of the other contingencies inherent in the Project. We also note that the benefits
706 attributed to the Project appear to assume a 99% adoption rate for smart meters, with
707 approximately 1% of FBC customers located in areas that cannot be economically served by
708 wireless networks. In the event that FBC is able to achieve a less than 99% adoption rate, we
709 expect a decrease in the stated benefits commensurate with the number of non-networked
710 premises¹⁴⁷.

711 Further, it appears clear from the evidence presented in this proceeding that research into the
712 potential health impacts of EMF radiation continues to evolve. While we understand that the
713 emissions from the proposed smart meters are very substantially below the standards set by
714 Health Canada's Safety Code 6 and comparable standards set by various international agencies,
715 we think it is likely that these standards will continue to evolve. Given that the estimated
716 lifespan of the Itron meters is 20 years, it is probable that safety standards will change over the
717 life of the meters in response to advances in scientific research. Further, it is possible these
718 standards will change so significantly that the meters become widely accepted to be unsafe.
719 Although we think this less likely than the possibility that advances in technology will render the

¹⁴⁵ <http://bc.ctvnews.ca/b-c-man-uses-bomb-to-fight-smart-meter-installation-rcmp-1.1181522> ;
<http://bc.ctvnews.ca/bc-hydro-cuts-woman-s-power-after-she-ditches-smart-meter-1.1246423>

¹⁴⁶ Exhibit B-6, Response to BCUC IR 1.53.8

¹⁴⁷ By way of illustration, if 1% of FBC customers are not connected to the AMI system, meter reading costs will be approximately \$215,195 (calculated as 1% of 111,500 x a per meter reading cost of \$193). However, if 5% of customers are not connected, meter reading costs will rise to approximately \$730,325 (calculated as 5% of 111,500 x a per meter reading cost of \$131). See Exhibit B-6, Response to BCUC IR 1.33.1.

720 Itron meters obsolete before the end of their expected lifespan¹⁴⁸, as noted above, we do not
721 believe the Commission should ignore this possibility entirely.

722 **8. ENVIRONMENT**

723 BCPSO acknowledges that environmental benefits are likely to accrue if the Project is approved.
724 However, one factor that is notably absent from FBC's analysis of the environmental impact of
725 the project is any consideration of the environmental costs associated with discontinuing the
726 use of existing, fully functional meters and replacing them with new meters. That is, no
727 attempt is made to assess the downside environmental life-cycle costs of replacing existing
728 equipment with new equipment. Such costs would include the environmental cost associated
729 with resource extraction, manufacturing, shipping and installation of the new meters; as well as
730 with the removal and disposal of old meters. In order to provide a more complete picture, FBC
731 should make some effort to quantify the downside environmental costs associated with the
732 Project and to weigh those costs against the probable upside environmental benefit of the
733 Project.

734 **9. FIRE SAFETY**

735 BCPSO accepts that the Project will not increase the fire risk associated with utility meters.
736 Indeed, properly trained installers should be able to detect existing unsafe conditions in meter
737 bases and eliminate some existing fire risks.

738 **10. REMOTE DISCONNECTION**

739 BCPSO submits that FBC's policy on disconnections for nonpayment should be amended to
740 require personal contact with the customer prior to disconnecting service in all but exceptional
741 circumstances. At present, it appears FBC policy requires FBC to make two attempts at contact,
742 but does not require that contact actually be made. Examples given by FBC of attempts to
743 make contact include mailing a notice of disconnection to the customer's address and making a
744 telephone call to the number on file for the customer¹⁴⁹. It seems apparent that FBC could take
745 these actions without the customer actually receiving notice of an impending disconnection
746 and/or without knowing how to respond to such notice in an effective way. There may be
747 exceptional cases in which it is not possible to make personal contact with the customer as, for
748 example, when the customer is intentionally avoiding contact or is absent from the jurisdiction.

¹⁴⁸ The existing meter fleet, which is proposed to be replaced, has an average age of between 12.7 and 14.7 years, as per Exhibit B-6, Response to BCUC IR 1.6.2

¹⁴⁹ Exhibit B-1, p.141

749 However, in our submission, personal contact should be the norm, and disconnections without
750 contact reserved for exceptional circumstances.

751 We also find FBC's suggestion that those customers who are unable to pay their utility bill with
752 cash pay it with their credit card to be unhelpful¹⁵⁰. We encourage FBC to consider
753 implementing programs to help customers deal with financial crises affecting their ability to
754 make utility bill payments¹⁵¹.

755 **11. OPT OUT**

756 In our submission it is necessary for FBC to provide an option for customers to opt out of having
757 a smart meter installed on their premises. The opt out option outlined by FBC in response to
758 BCUC IR 2.50.2 is acceptable to BCPSO with the modifications discussed below. The opt out
759 option outlined by FBC includes¹⁵²:

- 760 • The provision of radio-off AMI meters to those customers opting out. This allows FBC to
761 receive the same data as it would through the LAN and preserve many of the financial
762 benefits of AMI.
- 763 • The customer would be responsible for the incremental costs and lost benefits of opting
764 out. These costs are anticipated to consist of a one-time fee of \$110 and a per-manual
765 meter reading fee of \$22. However, the exact costs are subject to change depending on
766 opt out levels.

767 BCPSO is generally in agreement with charging the cost of opting out to the individual customer
768 electing it. This is in order to avoid imposing the cost of 'opt outs' on the broader customer
769 base and to ensure, as far as possible, that any system implemented is effective for its stated
770 purpose. Imposing an opt out charge is fair to customers and will discourage "frivolous" opt
771 outs.

772 That said, a small fraction of the population either suffers from electromagnetic
773 hypersensitivity disorder or believes they do. A handful of such people may not have the
774 financial means to pay the costs associated with opting out of having a smart meter.
775 Accordingly, BCPSO supports a policy of allowing free opt outs in cases where satisfactory
776 evidence of both medical need and financial hardship is presented.

¹⁵⁰ Exhibit B-6, Response to BCUC IR 1.116.3

¹⁵¹ See, for example, programs offered in New Jersey at <http://www.state.nj.us/bpu/assistance/programs/>

¹⁵² Exhibit B-6, Response to BCUC IR 2.50.2; See also Exhibit B-11, Response to CEC IR 1.50.1 to 1.50.7

777 Having both a paid and, in exceptional circumstances, a free opt out option available may be
778 sufficient to eliminate customer refusals¹⁵³. However, if it is not sufficient, we submit that FBC
779 should adopt a policy regarding the circumstance in which it will or will not discontinue service.
780 To say the situation will be assessed on a case-by-case basis is unhelpful to customers who may
781 be trying to assess whether their circumstances are “exceptional” and is unlikely to lead to
782 equitable treatment of all customers across the utility.

783 **12. NOTIFICATION OF BILLING DATA “ESTIMATION”**

784 FBC’s response to BCUC IR 1.35.4 outlines the need for billing data estimation. In response to
785 BCPSO IR 1.13.5, FBC indicates that it intends to continue to inform customers when their
786 billing is based (in whole or in part) on estimated usage. We submit that any decision by the
787 BCUC to adopt the AMI project should formalize this commitment.

All of which is respectfully submitted
BC Public Interest Advocacy Centre

Original on file signed by:

Eugene Kung
Barrister & Solicitor

Tannis Braithwaite
Barrister & Solicitor

c: Registered Interveners

¹⁵³ FBC has indicated an intention to suspend service to customers refusing installation of a smart meter: see Exhibit B-1, Application at p.42. FBC says the current Terms and Conditions of its Electric Tariff permit the suspension of service under such circumstances: see Exhibit B-6, Response to BCUC IR 1.117.4 and Exhibit B-11, Response to CSTS IR 1.34.2