

**FortisBC
AMI CPCN
Final Submission
by Horizon Technologies**

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Date: June 24, 2008

BCUC Project Number: 3698493

Please find below our final submission for the AMI CPCN Application of FortisBC, Project #3698493.

Although we believe the AMI technology can be of great benefit and potential to FortisBC and its customers, we do not believe that this specific application has appropriately addressed the issues.

- 1.0 We strongly oppose the AMI CPCN Amended Application as it does not make Open Standards mandatory for the Home Area Network.

The evidence in the FortisBC AMI CPCN proceeding shows clearly that the use of open standards is a key and integral characteristic of the Home Area Network (HAN). However, FortisBC is not requiring open standards as a mandatory feature for the HAN. This results in a contradictory conclusion to the evidence provided and is unfair. There is no supporting evidence for FortisBC's position to allow closed standards for the HAN.

We believe that FortisBC must make clear and unequivocal support for open standards for the HAN.

A more complete analysis with references is contained in Appendix A of this document.

- 2.0 We do not support the AMI CPCN Original Application as submitted on December 19, 2007¹.

Throughout the Amended Application, there is ample evidence of the

¹ Exhibit B-6, letter, page 2; [*However, if the Commission does not approve the recommended enhancements, FortisBC respectfully submits that the Original Application as submitted on December 19, 2007, which still provides valuable enhancements to customer service while supporting the BC Energy plan initiatives in a cost effective manner, should be approved.* “]

requirement for adding the Validation, Estimation and Editing (VEE) and Home Area Network (HAN) enhancements² to FortisBC's application.

The enhanced hourly readings are critical for the upcoming rate structures³ and better grid analysis⁴.

An important feature of the AMI in supporting the Energy Plan will be the in-home display⁵ and ability to control and interface to customer loads⁶.

None of these features are in the Original Application, but we submit that these features are crucial for a successful implementation, and therefore, we do not support the Original AMI CPCN application.

- 3.0 In addition, we do not support the AMI CPCN Amended Application for its lack of detail on the required features and functions of the Home Area Network for evaluating the vendors.

The AMI CPCN application includes a table of AMI functions and features, and indicates which are required or optional.⁷ Horizon asked in reference to this table: "*please include a similar table of the functions and features of the HAN that would be used as criteria for vendors*"⁸.

FortisBC directed its response to Exhibit B-11, Horizon IR #3, Q6.8 which states: "*Detailed requirements such as those described in this Section 6.0 will be developed, defined and evaluated after the approval of the Amended Application . . .*"⁹

We submit that Intervenor and BCUC need to know the features and functions for the HAN before they can decide whether or not to support the CPCN application. The HAN features and functions table could very well be of the same size as for the AMI. It should be explained in sufficient detail to understand what would be expected from the HAN. Without the HAN table, Intervenor and BCUC would not know what to expect from the HAN – the result could be a communications module with great potential that is never used.

² Exhibit B-6, page 5-11

³ Exhibit B-6, page 6 to 9; Exhibit B-11, Horizon IR#3, Q3.5, page 5

⁴ Exhibit B-11, BCUC IR#3, Q45.1, page 30-31

⁵ Exhibit B-11, Horizon IR#3, Q14.1, page 29

⁶ Exhibit B-11, Horizon IR#3, Q3.5, page 5

⁷ Exhibit B-6, Section 4, page 11

⁸ Exhibit B-11, Horizon IR#3, Q8.1, page 22

⁹ Exhibit B-11, Horizon IR#3, Q6.8, page 19

- 4.0 We note the latest correspondence from the Dominion Radio Astrophysical Observatory and their concern on potential radio frequency interference¹⁰ and the response of FortisBC¹¹.

We concur that radio frequency emissions should be considered in the implementation for AMI systems. Recently, we have been informed that Industry Canada is planning an updated version of regulations for the allowable emission levels for powerline systems to deal with broadband power line implementations (Ludo Bertsch spearheaded the industry's involvement in the first version of Industry Canada's powerline system regulations).

We suggest that FortisBC not only consider the existing radio frequency emission regulations, but also consider the upcoming requirements.

¹⁰ Exhibit E-1

¹¹ Exhibit B-12

Appendix A

A1.0 Open Standard for HAN

A1.1 Horizon's submission

We submit that "Open Standards" must be a required mandatory criteria for the Home Area Network (HAN).

A1.2 Evidential support for Open Standards for the HAN in the FortisBC AMI application

The evidence in the FortisBC AMI application clearly supports that the HAN is to be an open standard, while revealing the issues and problems if the HAN is not an open standard.

Home Area Network Workshop presentation¹²

A Information Request from BCUC requested the following: *"Please provide any case studies FortisBC is aware of for other utilities illustrating the costs and benefits of HAN functionality"*¹³

FortisBC responded with *"FortisBC is not aware of any case studies illustrating the costs and benefits of HAN functionality. However, the Company has provided the information attached as BCUC Appendix 59.5 which describes a discussion of the benefits of HAN functionality."*¹⁴

The BCUC Appendix 59.5 contains the *"Home Area Network Workshop"*¹⁵ presentation supported by Smart Metering Canada, UCA International User Group, EnerNex Corporation and Utility AMI.

The context setting for the presentation is established by describing the *"EPRI Consumer Portal Project"*¹⁶, presented by EPRI (Electric Power Research Institute) and IntelliGrid.

A consumer portal is defined as *"A combination of hardware and software that enables two-way communication between energy service organizations and equipment within the consumer's premises."*¹⁷.

¹² Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5

¹³ Exhibit B-11, BCUC IR#3 Q59.5

¹⁴ Exhibit B-11, BCUC IR#3 A59.5

¹⁵ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, pages 1 to 29

¹⁶ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 2

¹⁷ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 5

A “*virtual device*”¹⁸ may located in meters or thermostats.

In answer to the question “*How could a portal be used?*”¹⁹ the presentation suggests one example is that “*portal adjusts load when the new rate hits*” and therefore “*increases thermostat setting*” and “*turns off water heater*”²⁰.

The diagram labeled “*portal in a meter*”²¹ clearly shows a meter interfacing between the PLC network and a hot water heater and thermostat.

These definitions, examples, and diagrams (mentioned above) in the HAN workshop presentation are clearly the same as AMI system described by FortisBC AMI CPCN; for example, the “*AMI Communications Network (HAN, LAN and WAN)*” drawing²². It should be noted that the date referenced on the workshop presentation slides is shown as 2005, which was before the “*Home Area Network*” term was prevalent in the marketplace.

The HAN workshop presentation discusses “*why are we talking about portals?*”²³ The first issue discussed is “*Frustration*”²⁴ and one of the frustrations includes “*proprietary systems*”²⁵ and “*unable to deploy on large enough scale*”²⁶.

One of the “*lessons learned from dozens of past attempts*”²⁷ is to “*Standardize*”²⁸. In dealing with this issue, it goes on to say: “*don’t try to ‘lock in’ customers to proprietary systems*”²⁹ and “*achieve the economies of scale and reduce costs*”³⁰

The presentation goes on to indicate “*what could a portal look like?*”³¹ The presentation indicates that the virtual device “. . . **must be standardized** . . . to ensure Interoperability between vendors, reduction in cost due to economies of scale”³² [**emphasis in original document**]

It indicates that “Some vendors already provide portal-like devices, but they

¹⁸ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 6

¹⁹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 11

²⁰ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 11

²¹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 26

²² Exhibit B-11, Horizon IR#3, A6.1, Figure A6.1

²³ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 7

²⁴ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 7

²⁵ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 7

²⁶ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 7

²⁷ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 24

²⁸ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 24

²⁹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 24

³⁰ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 24

³¹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 25

³² Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 25

are ***not standard*** and ***not interoperable***.³³ [*emphasis in original document*]

The second topic of context setting for the Home Area Network Workshop is shown through the “*California Influence – AMI Reference Design*”³⁴ (CEC Reference Design) presented by the California Energy Commission and PIER (Public Interest Energy Research).

The “*Characteristics of Infrastructure*”³⁵ includes “*Cost effectiveness*”, “*standards*” and “*openness*”.

The principles and goals of the Demand Response Infrastructure (DRI) include: “*The DRI must promote interoperability and open standards*”³⁶

A “*Demand Response Reference Design*”³⁷ diagram is included which shows that “*Customer Applications*” of “*Load Control*” and “*Appliance Optimization*” are part of the “*Domain of ‘Open Systems’*”.

The “*Industry Response*”³⁸ is then described in the HAN workshop presentation. The first industry response is the OpenAMI project³⁹.

“*OpenAMI accepted CEC reference design document as a starting point*”⁴⁰ which as previously discussed contains open standards as a core component.

In describing the OpenAMI Accomplishments it is stated that: “*Vendors agreed to open systems principles*”⁴¹

The mission statement for the OpenAMI Task Force states that its work will be “. . . *through the development of an open standards-based reference design & data model*”⁴² to accomplish five objectives⁴³ including to “*define what ‘open standards’ means for advanced metering and demand response*”⁴⁴ and “*foster industry innovation, efficiency and lower cost solutions*”⁴⁵.

³³ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 25

³⁴ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 2

³⁵ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 34

³⁶ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 35

³⁷ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 37

³⁸ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 39

³⁹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 39

⁴⁰ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 40

⁴¹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 42

⁴² Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 43

⁴³ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 43

⁴⁴ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 43

⁴⁵ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 43

The second industry response described in the HAN workshop presentation is the UtilityAMI project⁴⁶.

One of the tasks for the UtilityAMI Working Group is a “*Glossary and Common Language Framework*”⁴⁷. The definition of AMI is stated: “*such an infrastructure is considered ‘advanced’ because it not only gathers customer data automatically but does so securely, reliably, and in a timely fashion while adhering to published, **open standards** . . .*”⁴⁸ [**emphasis in original document**]

The presentation expands the definition: “*a well-deployed advanced meeting infrastructure enables a variety of utility application to be performed more accurately and efficiently including time-differentiated tariffs, demand response, outage detection, theft detection, network optimization, and market operations.*”⁴⁹

2007 Federal Energy Regulatory Commission staff report on Assessment of Demand Response and Advanced Meters⁵⁰ (2007 FERC staff report)

BCUC asked: “*would FortisBC please indicate if the following functionality has been included in their RFP specification?*”⁵¹ within the context of the 2007 FERC staff report. One specific topic included: “*The ability to extend AMI and smart grids to multiple in-home appliances connected together as part of a home-area network (HAN).*”⁵² The response of FortisBC: “*Yes, FortisBC will require the communications infrastructure to be in place to support load control devices and in-home displays.*”⁵³

It is very clear that the Federal Energy Regulatory Commission (FERC) considers open standards as a key feature of Home Area Network (HAN).

The HAN appeared for the first time in the 2007 edition of FERC’s Assessment of Demand Response and Advanced Meter staff report⁵⁴: “Two

⁴⁶ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 39

⁴⁷ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 51

⁴⁸ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 53

⁴⁹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 54

⁵⁰ Exhibit B-11, BCUC IR#3, BCUC A36.1, 2007 Assessment of Demand Response and Advanced Metering, page 25

⁵¹ Exhibit B-11, BCUC IR#3, Q46.9.1, page 35

⁵² Exhibit B-11, BCUC IR#3, Q46.9.1.15, page 39

⁵³ Exhibit B-11, BCUC IR#3, Q46.9.1.15, page 39

⁵⁴ Exhibit B-11, BCUC IR#3, BCUC A36.1, 2007 Assessment of Demand Response and Advanced Metering, page 25

notable AMI requirements added to the list of specifications in RFPs since the last report are remote connect/disconnect capability and connectivity between the grid and **HANs**.⁵⁵ **[emphasis added]**

In describing HAN for the first time, FERC clearly states: “a significant issue associated with enabling device interconnection is choosing and configuring a particular **open-standard** HAN connectivity solution”⁵⁶ **[emphasis added]**. This leaves no doubt about requiring an open-standard for HAN – open-standards are a given; only its final choice is up for debate.

A1.3 Interpretation of FortisBC’s position regarding Open Standards for HAN

Exhibit B-11, Horizon IR#3, Q6.4.2, page 15

In the Information Request to FortisBC; Exhibit B-11, Horizon Q6.4.2 the following question was asked:

“Assuming 3rd party manufacturers are allowed to supply the display devices, please indicate if an ‘open standard’ is to be used for the HAN data communications link?”⁵⁷

The answer from FortisBC was:

“FortisBC expects the HAN communication link to be an ‘open standard’ but the detailed requirements around which standard(s) will be defined and evaluated through the RFP process.”⁵⁸

FortisBC stated that it “**expects** the HAN communication link to be an ‘open standard” **[emphasis added]** but does not require the use of open standards for the HAN. The use of the word “expects” is not the equivalent of “mandatory”, and can allow proprietary standards to be used for the HAN, which is contradictory to the meaning of the HAN. The use of proprietary standards for the HAN is not supported by evidence in this proceeding – as discussed above, open standards are an important integral part of the HAN.

Exhibit B-11, Horizon IR#3, A6.4.2.3, page 16

In answer to another Information Request, Exhibit B-11 Horizon A6.4.2.3, FortisBC states: “FortisBC intends to use open standards with respect to HAN

⁵⁵ Exhibit B-11, BCUC IR#3, BCUC A36.1, 2007 Assessment of Demand Response and Advanced Metering, page 25

⁵⁶ Exhibit B-11, BCUC IR#3, BCUC A36.1, 2007 Assessment of Demand Response and Advanced Metering, page 27

⁵⁷ Exhibit B-11, Horizon IR#3, Q6.4.2, page 15

⁵⁸ Exhibit B-11, Horizon IR#3, Q6.4.2, page 15

communications.⁵⁹ This statement indicates only FortisBC's intention. This again allows for proprietary solutions – it does not require open standards.

Exhibit B-6, Horizon Amended IR#2, Q1.3, page 99

Horizon asked: "*will the 'usage data and electricity costs' be available in an open standard form useful for third party developers?*"⁶⁰. In response, FortisBC stated: "*In addition, the AMI system will have Home Area Network (HAN) capabilities to support the future addition of in-home display units. Although not specified as a requirement in the Application, the availability of this information in an open standard will be considered providing this does not add additional cost to the project and provided that the security is in place to ensure confidentiality of customer data.*"⁶¹

This response clearly shows that FortisBC is not committed to open standards and using "closed standards" or "proprietary standards" are a distinct possibility.

Exhibit B-11, Horizon IR#3, Q10.2, Page 24

Horizon asked: "*Please discuss the ramifications of using a 'closed standard'*"⁶² FortisBC replied: "*FortisBC defines the term 'closed standard' to mean 'a specification controlled by a single organization'. Closed standards, or proprietary standards, would not be as desirable as compared to open standards if they resulted in a restriction of customer choice or HAN device portability without providing other benefits.*"⁶³

This statement does very little to restrict the use of closed standards. A closed standard could be used (or be considered to be more desirable than open standards) – simply by providing some other benefits (as yet undefined, and could even be inconsequential); even if the closed standard restricted customer choice and HAN device portability.

A1.4 Conclusion

The evidence in the FortisBC AMI CPCN proceeding shows clearly that the use of open standards is a key and integral characteristic of the Home Area Network (HAN) (see Section A1.2). However, FortisBC is not requiring open standards as

⁵⁹ Exhibit B-11, Horizon IR#3, A6.4.2.3, page 16

⁶⁰ Exhibit B-6, Horizon Amended IR#2, Q1.3, page 99

⁶¹ Exhibit B-6, Horizon Amended IR#2, Q1.3, page 99

⁶² Exhibit B-11, Horizon IR#3, Q10.2, Page 24

⁶³ Exhibit B-11, Horizon IR#3, Q10.2, Page 24

a mandatory feature for the HAN (see Section A1.3). This results in a contradictory conclusion to the evidence provided, and is unfair and arbitrary. There is no supporting evidence in the AMI CPCN proceeding for FortisBC's position to allow closed standards for the HAN.

If a closed standard was used for the HAN, this could result in higher costs due to less competition of products. The open standards on the other hand promote "*lower cost solutions*"⁶⁴, as indicated in the AMI CPCN evidence.

Similarly, a closed standard could restrict the range of products and future applications. AMI CPCN evidence itself shows that open standards help "*facilitate the broad adoption of advanced metering*"⁶⁵ and "*foster industry innovation*"⁶⁶ which results in a wider range of products and applications.

The support for open standards for this portion of the AMI system - the Home Area Network - is particularly important, as it is the part of the system that interfaces directly to the customer (who will demand selection and low prices) and is expected to continue to grow with an ongoing demand for new and improved products.

FortisBC has not dealt with ownership issues of the HAN. It has not specifically committed that 3rd party display devices would be permitted by the HAN system⁶⁷. FortisBC has also not determined yet how or what devices can be allowed to connect to the HAN system⁶⁸.

In order to support open standards, it must be mandatory requirement – or else vendors could supply their proprietary products at reduced rates for the first phase, in anticipation of being "*locked-in*"⁶⁹ as the exclusive supplier for future add-on products (such as display units and thermostats) at inflated prices (and limited selection).

FortisBC should make clear and unequivocal support for open standards for the HAN, which would signal vendors that they must make their products interoperable and low cost, and it would encourage innovation. The direction of the HAN market is already supporting open standards and continues to bolster that direction. FortisBC should also clearly define open standards as it relates to their situation.

⁶⁴ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 53

⁶⁵ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 53

⁶⁶ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 53

⁶⁷ Exhibit B-11, Horizon IR#3, Q6.4.1, page 14; B-11, BCUC IR#3, Q42.1, page 27-28

⁶⁸ Exhibit B-11, Horizon IR#3, Q6.4.4, page 17

⁶⁹ Exhibit B-11, BCUC IR#3, BCUC Appendix 59.5, page 24