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BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-168-08

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IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

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

BEFORE: A.A. Rhodes, Commissioner
A.W.K. Anderson, Commissioner November 12, 2008

O R D E R

WHEREAS:

A. On December 19, 2007 FortisBC Inc. ("FortisBC") applied to the British Columbia Utilities Commission (the "Commission") for a Certificate of Public Convenience and Necessity ("CPCN") pursuant to Sections 45 and 46 of the Utilities Commission Act for the Advanced Metering Infrastructure ("AMI") Project (the "Project") (the "Application"); and

B. The Project consists of replacing FortisBC's existing meters with AMI-enabled meters and installing AMI throughout FortisBC's service territory; and

C. FortisBC estimated that the Project would cost $31.3 million and would result in reduced operating costs and enhanced customer service, largely due to the remote meter reading capability of the AMI-enabled meters; and

D. The Project was scheduled to commence in 2008 and to be completed by the end of 2010; and

E. On January 3, 2008 the Commission issued Order G-1-08 which established a Written Public Hearing process and Regulatory Timetable for the regulatory review of the Application; and

…/2

F. On March 25, 2008 the Commission postponed the Regulatory Timetable to allow FortisBC to amend the Application to include the additional functional enhancements of Home Area Network ("HAN") capability to allow for in-home display units at some future date and Validation, Estimation and Editing ("VEE") and hourly reading capability to the Meter Data Management Repository to the original AMI capability (the "Amended Application"); and

G. On March 28, 2008 FortisBC filed the Amended Application. The Amended Application added $6.0 million to the previously estimated cost of $31.3 million for a total estimated cost of $37.3 million; and

H. The Written Hearing Process was complete on June 27, 2008; and

I. The Commission Panel has reviewed the Application, the Amended Application and the evidence and submissions of the parties.

NOW THEREFORE the Commission orders that the Application and the Amended Application for a CPCN for the AMI Project are denied at this time for reasons which will follow this Order.

DATED at the City of Vancouver, in the Province of British Columbia, this 12th day of November 2008.

BY ORDER

Original signed by

A.A. Rhodes
Commissioner

IN THE MATTER OF

FORTISBC INC.

AND

AN APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR ITS ADVANCED METERING INFRASTRUCTURE

REASONS FOR DECISION TO ORDER G-168-08

December 3, 2008

Before:

Alison A. Rhodes, Commissioner
A.W. Keith Anderson, Commissioner

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1.0 THE APPLICATION

On December 19, 2007 FortisBC Inc. ("FortisBC") filed an application ("the Application") with the British Columbia Utilities Commission ("the Commission" or "BCUC") for a Certificate of Public Convenience and Necessity ("CPCN") pursuant to subsections 45 and 46 of the *Utilities Commission Act*, RSBC 1996 c.473 (the "UCA") to replace its existing 108,000 electric meters with Advanced Metering Infrastructure ("AMI")-enabled meters (the "AMI Project").

FortisBC is an investor-owned, integrated public utility engaged in the business of generation, transmission, distribution and sale of electricity in the southern interior of British Columbia. It serves over 152,000 customers directly and indirectly. (Exhibit B-1, p. 7) Its service territory is large, with low customer density and variable terrain and weather conditions.

FortisBC identified three types of benefits flowing from the AMI Project, being: (1) operational cost savings, (2) soft benefits, which are difficult to quantify and basically involve elements of improved customer service, and (3) future benefits, which relate to the potential future ability to institute different pricing mechanisms and other measures to promote Demand Side Management ("DSM"). These potential future benefits will involve further expenditures which had not been fully quantified at the time of the Application, but which will be significant. (Exhibit B-1, pp. 4, 22)

The estimated capital investment in the AMI Project as described in the original Application was $31.3 Million.

1.1 The Amended Application

On March 28, 2008 FortisBC amended the Application to include additional functional enhancements (the "Amended Application"). These enhancements included requirements for the AMI Project system to have Home Area Network ("HAN") capability to allow for in-home display units in the future, and for the Meter Data Management Repository ("MDMR") to be upgraded to include Validation, Estimation and Editing ("VEE") technology and hourly meter reading

capabilities. FortisBC takes the position that the Amended Application will allow the implementation of more flexible rate structures without further investment in the AMI system, (although additional investment may be required in FortisBC's Information Technology ("IT") system), and that in-home display and load control will require less additional investment to implement than would have been the case under the Application, as originally filed. (Exhibit B-6, BCOAPO 1.1.1 Amended)

The cost of the AMI Project as set out in the Amended Application increased by $6.0 Million to $37.3 Million. As was the case in the Application, the AMI Project costs do not include the costs associated with the design or implementation of any future rate structures, the cost to purchase and install load control devices for any customer appliances, the cost to purchase and install remote disconnect/reconnect collars, the cost to implement monthly billing or the cost to purchase and install in-home display units. (Exhibit B-6, BCUC 1.16.2 Amended)

FortisBC states that it "will not have the ability to estimate the effect of in-home displays and load control devices prior to the implementation of AMI" but estimates the "cost of implementing appliance controllers (load controls) is estimated to be $75.00 per load control device, and in-home display units range from $75.00 to $300.00 depending on the complexity of the unit and its degree of integration with heating and appliances." (Exhibit B-11, BCUC 3.42.1)

2.0 THE PROCESS

The Commission issued Order G-1-08 on January 4, 2008 establishing a Written Public Hearing Process and Regulatory Timetable for the Application.

Two rounds of Information Requests ("IRs") were conducted in February and March, 2008.

On March 28, 2008 FortisBC filed its Amended Application which increased the project costs by approximately 20 percent. On March 31, 2008 Bill 15-2008 (the Utilities Commission Amendment Act) ("Bill 15") was announced (with Royal Assent subsequently granted on May 01, 2008.)

On April 2, 2008 the Commission issued a letter to FortisBC and Registered Intervenors requesting comments on the Amended Application as well as Bill 15 and on any issues arising with respect to the Regulatory Timetable.

Following receipt of comments, the Commission established an Amended Regulatory Timetable on April 30th, 2008 by Order G-62-08. The Amended Regulatory Timetable included one additional round of IRs limited to issues raised by the amendments in the Amended Application.

The Final Argument of FortisBC was received on June 13, 2008. Arguments were also received by Registered Intervenors as follows:

B. Goodman - June 17, 2008

Alan Wait - June 19, 2008

Coalition to Reduce Electropollution ("CORE") - June 22, 2008

B.C. Old Age Pensioners' Organization et. al. ("BCOAPO") - June 24, 2008

Horizon Technologies - June 24, 2008

The Reply Argument of FortisBC was received on June 27, 2008.

3.0 POLICY CONTEXT

The B.C. Energy Plan: A Vision for Clean Leadership 2007 (the "B.C. Energy Plan") contains "Policy Actions" that include a "Commitment to Conservation". The B.C. Energy Plan also "… supports utilities in British Columbia and the BC Utilities Commission pursuing all cost effective and competitive demand side management programs. Utilities are also encouraged to explore and develop rate designs to encourage efficiency, conservation and the development of renewable energy."

A further policy action is to "(e)nsure a coordinated approach to conservation and efficiency is actively pursued in British Columbia."

The BC Energy Plan also states, in part:

> "Future energy efficiency and conservation initiatives will include:
>
> - Continuing to remove barriers that prevent customers from reducing their consumption.
> - Building upon efforts to educate customers about the choices they can make today with respect to the amount of electricity they consume.
> - Exploring new rate structures to identify opportunities to use rates as a mechanism to motivate customers to either use less electricity or use less at specific times.
> - Employing new rate structures to help customers implement new energy efficient products and technologies and provide them with useful information about their electricity consumption to allow them to make informed choices."
>
> (BC Energy Plan, p. 5; Exhibit B-11, Horizon 3.1.1)

Bill 15 amended s.46 of the UCA, which deals with the procedure for applying for a CPCN by adding subsection (3.1), which states, in part: "In deciding whether to issue a certificate under subsection (3), the commission must consider (a) the government's energy objectives…".

The "government's energy objectives" is a defined term which includes the objectives: "(a) to encourage public utilities to reduce greenhouse gas emissions" and "(b) to encourage public utilities to take demand-side measures." "Demand-side measure" is also a defined term and "means a rate, measure, action or program undertaken (a) to conserve energy or promote energy efficiency, (b) to reduce the energy demand a public utility must serve, or (c) to shift the use of energy to periods of lower demand."

Bill 15 also added section 64.04 to the UCA, which states in part: "(4) If a public utility, other than the authority, makes an application under the Act in relation to advanced meters, the commission, in considering that application, must consider the government's goal of having advanced meters and associated infrastructure in use with respect to customers other than those of the authority." No timeline is prescribed for utilities, other than BC Hydro and "advanced meters" is not a defined term.

In addition, section 64.04 requires B.C. Hydro to "install and put into operation smart meters in accordance with and to the extent required by the regulations" by the end of calendar 2012. A "Smart Meter" is a meter that "meets the prescribed requirements and includes related components, equipment and metering and communication infrastructure that meet the prescribed requirements." Section 125.1 of the UCA, as amended by Bill 15, further provides that: "…(4) (t)he minister [responsible for the administration of the Hydro and Power Authority Act] may make regulations …(n) for the purposes of section 64.04, respecting smart meters and their installation, including, without limitation, (i) the types of smart meters to be installed, including the features or function each meter must have or be able to perform, and (ii) the classes of users for whom smart meters must be installed, and requiring the authority to install different types of smart meters for different classes of users."

No regulations have yet been issued concerning Smart Meters and their installation. While the regulations, when issued, will apply specifically to BC Hydro, the Commission Panel is of the view that it would be prudent to consider the regulations before FortisBC proceeds with its AMI Project.

4.0 PROJECT DESCRIPTION

4.1 Existing System

FortisBC states that over 99 percent of its meters are currently read manually, which involves an on-site attendance by a meter reader at each meter location. The meter read data is stored in a hand-held unit. At the end of each day the meter reader uploads the data from the hand held unit into the Customer Information System (i.e. billing system) ("CIS") at an office location. Most meters are read bi-monthly. (Exhibit B-1, pp. 9, 23)

Additional readings, also known as "soft reads" are taken when customers move in or out of their premises, or for verification or correction purposes. FortisBC states that the cost of the soft read process represents approximately 10 per cent of the total meter reading costs.

FortisBC's meter reading department employs 20 people, 19 of whom require a company vehicle. The vehicular requirement is due in large measure to the low density of the customer base. FortisBC takes the position that meter reading costs are subject to higher-than-average inflationary pressures due to the large proportion of labour and fuel costs contained in those costs.

FortisBC notes that overall, the meter reading process as it currently exists is reliable and provides adequate results for its customers.

(Exhibit B-1, pp. 9-10)

4.2 Proposed AMI

FortisBC proposes to replace its 108,000 existing meters with AMI-enabled meters over a three year period (one year for approval and the Request for Proposal process ("RFP") and a two year deployment). The Project also includes establishment of the requisite network infrastructure to

transmit meter readings to a central data repository and integration of the system into FortisBC's existing CIS. (Exhibit B-1, p. 12) A number of IT upgrades are also required, including enhancements to the CIS. (Exhibit B-1, pp. 30, 32)

The Project as described in the Amended Application includes the following additional functional enhancements:

- An explicit requirement for the AMI Project system to have HAN capabilities to support in-home display devices;
- An increase in the reading frequency requirement to a minimum of hourly reads; and
- An upgrade to the MDMR to include VEE capabilities.

(Exhibit B-6, p. 3)

The HAN is defined for the purposes of the Amended Application as "the technology to communicate with in-home display devices". The HAN capability for the AMI Project does not include the in-home display devices themselves. The HAN feature was not included in the original Application which meant that customers would have to access the internet to obtain information on their daily consumption. (Exhibit B-6, p. 5)

VEE is an enhancement to the MDMR which provides a validation function for meter readings and also provides estimates for any gaps due to missing hourly readings. (Exhibit B-6, p. 8)

FortisBC considers that these additional features will provide better consumption information which will facilitate the development of future rate structures to encourage customers to use less electricity or to use less electricity at specific times. (Exhibit B-6, p. 6)

4.3 AMI Technologies

Two data transmission communication technologies, Power Line Carrier ("PLC") and Radio Frequency ("RF"), were examined by FortisBC for use in the AMI Project, resulting in three possible solutions being identified for transferring data from meters to the MDMR system. The three possible solutions are: PLC, RF, and a Hybrid Solution, being a combination of the PLC and RF technologies. The features of the technologies can be summarized as follows:

- In a PLC AMI system, metered data is transmitted over the electrical distribution network and received by collectors which are generally located in distribution substations. The data is then transmitted to the main data repository at the utility through a separate communication network. A PLC based system can generally reach all endpoints serviced by the utility. (Exhibit B-1, Appendix A, p. 44)

- In a RF system, "the signal is transmitted from each endpoint to a master data meter using wireless radio frequency transmission. Once at the master meter, the data is transmitted via a licensed radio frequency wide area network back to the utility computer." (Exhibit B-1, Appendix A, p. 46)

FortisBC states that "[t]he main advantage of a hybrid solution is that it allows customers to be served by the most cost effective technology." The main disadvantage of the hybrid solution is the complexity of the two technologies having to work in tandem to provide readings at the appropriate intervals to the main billing system. FortisBC notes that there are vendors that will provide "turn-key integrated hybrid solutions." (Exhibit B-1, Appendix A, p. 47)

FortisBC is proposing a hybrid communication technology, but has not considered the optimum mix as between the RF and PLC technologies and has stated that it intends to leave this up to the vendors to suggest. (Exhibit B-3, Wait 2.4) FortisBC also states: "[u]ntil the RFP process is completed, it is unknown which technology (PLC, RF or Hybrid) will be the most cost effective based on the required functions." (Exhibit B-3, Wait 2.8) FortisBC has only prepared estimates for the cost per end point of the PLC technology ($346 per meter) and RF technology ($337 per

meter). However, "[a] detailed estimate was not created for the hybrid solution." (Exhibit B-6, BCUC 1.18.1 Amended) FortisBC also notes: "[w]hile the basic meter functions for each type are the same, the difference [between RF and PLC meters] is in the communications module within the meter. In most cases, if a customer was switched from PLC to RF or vice versa, the meter would have to be removed, the communications module changed and the meter re-sealed." (Exhibit B-3, Wait 2.6)

FortisBC has also confirmed that the PLC technology is completely adequate for all meter readings presently conducted. (Exhibit B-3, Wait 2.1)

As discussed above, B.C. Hydro will be implementing "Smart Meters" province-wide by the end of 2012 as mandated by the B.C. Government. BC Hydro is expected to require in excess of 1.4 million meters. (Exhibit B-11, BCUC 3.50.12)

The Commission Panel is of the view that there could be significant potential cost and other advantages if FortisBC were able to coordinate its AMI project with B.C. Hydro's "Smart Meters" development project, particularly with respect to timing and technology selection. B.C. Hydro and FortisBC will both be looking at a combination of different technologies, which may enable economies of scale for the different technologies.

The Commission Panel encourages FortisBC to explore coordinating its meter technology selection with that of BC Hydro with the objective of achieving a cost advantage based on the combined purchasing power of the two utilities.

FortisBC states that "B.C. Hydro and FortisBC agree that the most probable requirement of compatibility between the two utilities relate (sic) to devices that connect to the HAN. Ideally, customers will be able to use devices purchased for use in B.C. Hydro service territory and use them without modification in FortisBC territory." (Exhibit B-11, BCUC 3.51.5.1)

It is the view of the Commission Panel that any technology such as HAN should be transferable between/amongst utility service areas, reinforcing the view that FortisBC and BC Hydro should coordinate their efforts to develop AMI/Smart Meter technology infrastructures projects.

FortisBC has also stated: "The Advanced Metering Infrastructure project includes only the collection and communication of electric meter information, *although it does specify that the system must be compatible with reading gas and water meters."* (emphasis added). No evidence was tendered indicating a collaborative effort with relevant gas and/or water utilities in the FortisBC area other than to inform them about the Project. FortisBC states that it "has not had detailed discussions with other utilities within [its] service territory regarding the sharing of AMI communications infrastructure and cost." (Exhibit B-2, BCUC 1.38.1)

FortisBC states that "[f]or most AMI technologies (RF in particular), there is no additional capital cost since the meter is already equipped with an RF module capable of communication with gas and water meters. For some AMI technologies (PLC in particular), the capital cost of including a module that can communicate directly with gas and water meters is approximately $30 per meter. This is the cost of installing an RF communications module into the AMI meter that would be able to read the gas and / or water meter on the same premise [sic]." However, "[i]f the additional capital expenditures were required and incurred after initial deployment, the affected meters would need to be removed, modified, resealed and re-installed at a cost of approximately $295 per meter (including the cost of the RF module)." (Exhibit B-3, BCUC 2.4.1, 2.4.8)

The Commission Panel notes that one of the policy actions contained in the B.C. Energy Plan is to "ensure a co-ordinated approach to conservation and efficiency is actively pursued in British Columbia." (Exhibit B-11, Horizon 3.1.1, p. 39)

The Commission Panel is of the view that it is important to the public interest that there be minimal duplication of infrastructure necessary for data reading, gathering, transmission and storage, and that utilities consider a coordinated approach where there is the potential to avoid duplication of costly infrastructure.

In the Application FortisBC indicated its views that: "…only daily readings are required to support the benefits claimed within the application. Therefore, hourly readings have been listed as optional." With respect to the VEE function, which is now included in the Amended Application, the original Application stated: "This functionality is only required if the utility will be calculating time-of-use rate buckets with the MDMR rather than at the meter. Since FortisBC intends at this point to support time-of-use rates by utilizing buckets stored within the meter, this functionality is not required." (Exhibit B-2, BCUC 1.31.4)

The evolving nature of the AMI Project seems to the Commission Panel to reflect an environment where the technology may not be static, but rather is continuing to change.

The Commission Panel considers that the application of the AMI technologies/protocol, and the opportunities for co-ordination to achieve optimal cost effectiveness have not been developed in these Applications to the point where the Commission Panel has sufficient evidence before it to assess the merits of the AMI Project.

4.4 AMI Project Capital Costs and Operating Expenses

Based on the functionality described in the original Application, the capital cost of the AMI Project is $31.3 million. (Exhibit B-1, p. 28) The AMI Project would have annual operating costs of $524,000. (Exhibit B-1, p. 16)

With the additional functionality proposed in the Amended Application, the capital cost of the AMI Project would increase by $6.0 million to $37.3 million. (Exhibit B-6, p. 13) Annual operating costs would increase to $727,000. The additional VEE and HAN capabilities account for about $3.5 million and about $2.5 million of the additional capital costs respectively, and $200,000 per year of the additional operating costs. (Exhibit B-11, BCUC 3.41.3, 3.41.4)

The costs of in-home displays, load control devices and new rate designs are not included in the AMI Project costs. The cost of these items would then be subject to future approvals and subject to a business case that considers the incremental costs and benefits of any future additions or changes to the system. (Exhibit B-6, BCUC 1.16.2 Amended)

The capital costs of the Application and the Amended Application are summarized by FortisBC in the following table:

Table 1

(Amended Table 6.3: Summary of Capital Costs)

	Costs Original Application ($000s)	Costs Amended Application ($000s)
(i) Meters and Modules	19,507	20,684
(ii) Network Infrastructure	6,700	7,771
(iii) IT Infrastructure and Upgrades	1,483	5,014
(iv) Project Management	2,701	2,701
AFUDC	950	1,130
Total Capital Cost	**31,341**	**37,300**
(v) Non-Project Costs		
Incremental Meter Costs	1,336	1,444
Avoided Future Capital Costs	(1,250)	(1,250)

(Exhibit B-6-3, p. 13, April 22, 2008 Erratum)

4.5 Consultations

FortisBC states that "The Company has contacted the utilities operating in its service territory, including Terasen Gas Inc. and the municipal utilities served as wholesale customers. The municipal customers were also provided with information on the AMI Project as requested, with none indicating any concerns." (Exhibit B-1, p. 26)

The Company also states that "FortisBC has issued a letter to First Nations within the service territory and will continue to inform them of the scope and goals of the Project prior to implementation on First Nations land." (Exhibit B-1, p. 25)

FortisBC also states that it "continues to consult with BC Hydro to share information in regards [sic] to their respective AMI projects". FortisBC provided a letter from BC Hydro stating BC Hydro's position that FortisBC's AMI and BC Hydro's Smart Metering Infrastructure projects are supported by the B.C. Energy Plan, specifically Policy Action No. 4 which encourages utilities to explore, develop and propose innovative rate designs, conservation programs, and clean and renewable energy initiatives. BC Hydro further notes it has and will continue to exchange information with FortisBC in order leverage both companies' knowledge. (Exhibit B-6, BCUC 2.21.7 Amended) The Commission Panel notes that the BC Hydro letter does not address any initiatives on the part of either utility to collaborate, co-ordinate or attempt to integrate the development of AMI technology on a province wide basis.

Sections 45 and 46 of the UCA authorize the Commission to issue, refuse to issue, or issue with conditions, a CPCN for a project such as the AMI Project. In deciding whether to issue a CPCN, the Commission must determine whether a project meets the test of public convenience and necessity, and properly conserves the public interest. The UCA does not define public convenience and necessity, or public interest.

As noted above, the Commission is also required to consider "the government's energy objectives" in making its decision on the issuance of a CPCN. Consideration of the government's energy objectives is discussed in Section 3.

The Commission has considered the issue of what constitutes the public interest and public convenience and necessity in several recent decisions. In the Vancouver Island Generation Project Decision dated September 8, 2003 ("VIGP Decision"), the Commission concluded that "the test of what constitutes public convenience and necessity is a flexible test" (VIGP Decision, p. 76). In the

Vancouver Island Transmission Reinforcement Project Decision dated July 7, 2006 ("VITR Decision"), the Commission stated: "…there is a broad range of interests that should be considered in determining whether an applied-for project is in the public convenience and necessity" and found "that it is both impractical and undesirable to attempt a precise definition of general application as to what constitutes public convenience and necessity" (VITR Decision, p. 15). In the BC Hydro filing of its Energy Supply Contracts with Alcan Inc. LTEPA Amending Agreement - Amended and Restated Long-Term Energy Purchase Agreement Decision dated February 2, 2007 ("LTEPA+ Decision"), the Commission reiterated the foregoing conclusions and added that it "should not exclude from consideration in determining the public interest any class or category of interests which form part of the totality of the general public interest" (LTEPA+ Decision, p. 29).

In the AMI Project application(s) process, there were no comments or debate which specifically addressed the scope of the public interest. Consistent with previous decisions, the Commission Panel accepts that there is a broad range of interests that should be considered in determining whether the AMI Project is in the public interest.

The Commission Panel considers that FortisBC has not been sufficiently proactive in conducting consultations and research to determine the extent to which its AMI Project can or will be coordinated and/or compatible with other utilities, including BC Hydro, the distribution utilities within FortisBC's service area and with its own sister utilities in the natural gas distribution sector. The Panel does not consider that distributing and/or exchanging information and not hearing any indication of concerns is adequate to address and reach a conclusion with respect to the opportunities and challenges attendant with implementing this type of technology to the benefit of utility customers within the FortisBC franchise and the broader public interest across the Province.

5.0 STATUS OF AMI

On March 31, 2008 the National Association of Regulatory Utility Commissioners in the U.S. ("NARUC") appointed sixteen state commissioners to serve on the joint federal-state "Smart Grid Collaborative". FortisBC states that it "assumes that the NARUC Collaborative will consider elements of AMI systems that directly impact residential customers. In particular, the Home Area Network and the associated devices, including in-home displays, programmable thermostats, load control devices and smart appliances will have direct impact on consumers. Interoperability and quality of devices that connect to the HAN would be of some concern to FortisBC customers." (Exhibit B-11, BCUC 3.51.5.1)

FortisBC notes that it has discussed AMI with a number of utilities and states that it "is satisfied that the technologies and requirements proposed…are field proven and consistent with other utilities' proposals". (Exhibit B-1, p. 26) FortisBC also states that it will be requiring vendors to demonstrate their technology is field-proven as part of the RFP process. (Exhibit B-2, BCUC 1.12.1)

FortisBC has further confirmed that, at this point in time, it is not aware of any other utilities having reported positive, tangible results for any DSM, Annual Peak Demand or Energy Load Control programs resulting from AMI, noting that most deployments are multi-year efforts and programs are not yet fully implemented. (Exhibit B-3, BCUC 2.8.1)

The Commission Panel considers that the issues discussed above are further indications of a need to proceed with caution rather than haste in reaching a conclusion with respect to the development of an AMI program.

FortisBC has also indicated that, in its view, there are two major developments which are serving to create a slight downward pressure on the costs of AMI systems, being the availability of wireless mesh technology in the wireless AMI market and the general growth in AMI deployment which has resulted in increased production and resultant economies of scale. FortisBC cautions, however,

that the cost reductions realized through increased volume are likely to be tempered in the near term by a relatively tight supply of AMI products relative to demand. FortisBC also takes the position that technical designs have stabilized for many AMI systems and the endpoint market is now exhibiting some price stability, while at the same time, prices for factor inputs, such as copper, have continued to rise. FortisBC is of the view that recent large volume purchases have driven down component prices to their lowest possible levels. (Exhibit B-3, BCUC 2.3.1, 2.3.2)

FortisBC also notes, however, that: "[w]hile it is true that a number of utilities…are moving forward with AMI implementation, there is no evidence that this trend is creating significant upward pressure on prices. In fact, it appears that the opposite is true. Most of the major meter manufacturers, for example, have announced expanded manufacturing capacity to accommodate what has been an ongoing growth trend over the past 2-3 years. In the past few years, [a number of companies] have all developed residential solid state meters that are commercially available today. This appears to have actually created some downward pricing pressure due to the increased competition and economies of scale." (Exhibit B-3, BCUC 2.9.1)

As noted above, the Bill 15 amendments to the UCA require that B.C. Hydro implement "Smart Meters" in its service territory by the end of calendar 2012. B.C. Hydro is estimated to require approximately 1.4 million meters, however its project scope is not yet finalized, and still subject to change. (Exhibit B-11, BCUC 3.50.1.2, 3.51.1)

FortisBC suggests that "BC Hydro will likely have to utilize more than one technology in its Smart Metering implementation due [to] the fact that BC Hydro's service territory encompasses areas ranging from very dense urban to very sparse rural. This need for a number of AMI technologies to serve the Province of British Columbia would likely reduce any advantages from economies of scale for AMI implementations." (Exhibit B-3, BCUC 2.21.8)

Fortis BC has supplied a copy of a National Regulatory Research Institute ("NRRI") report dated February 13, 2008 entitled "Advanced Metering Infrastructure: What Regulators Need to Know About Its Value to Residential Customers" and makes comments thereon with respect to pricing pilot studies undertaken by three utilities. (Exhibit B-11, BCUC 3.37.1)

In its Amended Application, FortisBC states: "The HAN that supports in-home display would also support future smart grid applications." (Exhibit B-6, p. 5) However, Fortis BC notes that "the concept of a "Smart Grid" is still evolving" and the additional costs of potential Smart Grid implementations could vary anywhere between $1.0 Million and $50.0 Million. (Exhibit B-11, BCUC 3.51.2.1)

The Commission Panel notes that the NRRI report contains a number of observations in its Recommendations section (Exhibit B-11, BCUC Appendix 37.1, pp. 85-89) which are worthy of note in considering the FortisBC AMI Project, including:

- "Further, there remains uncertainty about the useful lives of AMI components, and thus the net present value of AMI costs." (p. 85);
- "There are two ways a regulator can resolve these uncertainties and decide what action to take: go ahead with AMI approval, or wait until experience elsewhere answers some of the questions about AMI's useful life . . . ."; (p. 85) and;
- "Doing nothing about demand response is not an option, in light of the enormous costs that a small amount of peak load shaving can avert." (p. 87)

The Commission Panel is of the view that, particularly in light of the nascent nature of the AMI technology, the relatively small size of FortisBC and the concurrent development of the BC Hydro "Smart Meter" program, FortisBC should take a more measured and cautious approach to the timing of the AMI Project, and proactively explore opportunities to collaborate and coordinate a province wide approach to the implementation of this new technology.

The Commission Panel is also of the view that, since both BC Hydro and FortisBC plan to implement hybrid technologies, there may, in fact, be economies of scale available through collaboration.

6.0 PROJECT BENEFITS

FortisBC relies on quantifiable operational savings as its primary justification for the AMI project. Soft and future benefits are seen as simply increasing the net benefit arising from immediate and quantifiable benefits. The following section summarizes the benefits of the Application and the additional benefits put forward by FortisBC in the Amended Application.

6.1 Quantifiable Operational Savings

FortisBC supports the Application and Amended Application on the basis of the cost savings available from AMI. It also notes that there are other potential soft and future benefits. The meter reading savings are associated with the elimination of manual meter reading with the adoption of AMI. Transmission and Distribution savings arise from eliminating the need to have existing meters exchanged to allow for testing at years 10 and 16 and through improved outage management. Customer service cost savings are expected to arise with the improved accuracy of the AMI meter read data.

Operating expenses are estimated to increase by $524,000 and $735,000 in the Application and Amended Application, respectively, to support the AMI system. (Exhibit B-1, pp. 13-16; Exhibit B-6, p. 12)

The table below summarizes the net cost savings from the AMI Project. FortisBC did not assume any additional quantifiable operating cost savings arising from the Amended Application. Since the operating expenses of the Amended Application are higher than the Original Application, the net savings are lower.

Table2
(Amended Table 4.1.1: Total AMI Cost Savings)

Category	Annual Savings Original Application ($000s)	Annual Savings Amended Application ($000s)
Meter Reading	2,491	2,491
T&D Operational	318	318
Customer Service	307	307
Operating Expenses AMI	(524)	(735)
Total Net Annual Savings	**2,592**	**2,389**

(Exhibit B-6-3, p. 12; April 22, 2008 Erratum)

In each case, the meter reading costs account for the vast majority of the cost savings.

6.2 Soft Benefits

FortisBC also expects to obtain a number of additional benefits which are difficult to quantify, known as "soft benefits". These include: elimination of the need for estimated bills, elimination of the need to access customer premises for meter reading purposes, better consumption data to help to resolve issues surrounding high bills, promote energy efficiency and assist in system modeling, etc., the ability to provide consolidated bills to customers with more than one location, the ability to provide flexible billing dates, reduced billing errors and numerous related benefits. (Exhibit B-1, pp. 17-22)

6.3 Future Benefits

FortisBC identifies and briefly describes a number of benefits, listed below, which are expected to be available after implementation of the AMI Project, and also notes that the costs for implementation of the future benefits are not included the AMI Project estimates. (Exhibit B-1, pp. 22, 23)

- Innovative Rate Structures
- Load Control
- Remote Disconnect / Reconnect
- Meter Reading Frequency
- Avoided Handheld Upgrades

FortisBC has indicated that it "intends to study a variety of DR [Demand Response] and DSM [Demand Side Measure] tools after the implementation of AMI…" and also that "design and implementation of effective DR and DSM programs is likely to require additional analysis, expenditures and the implementation of time-based rates." (Exhibit B-11, BCUC 3.39.3.1)

6.4 Environmental Benefits

FortisBC states that "based on preliminary reviews" it has identified no negative environmental impacts and at least one environmental benefit from implementing AMI. FortisBC estimates an annual reduction in greenhouse gas ("GHG") emissions of approximately 217.6 tonnes due to the elimination of the need for vehicle use to read meters. (Exhibit B-1, pp. 5, 24, 25)

FortisBC did not include any value for GHG reductions in its Economic or Rate Impact Analyses.

6.5 Additional Benefits of Amended Application

It is FortisBC's position that the additional features proposed in the Amended Application

> "…support several policy actions within the BC Energy Plan including conservation requirements, cost effective DSM opportunities and the exploration of new rate structures that encourage energy efficiency and conservation." FortisBC believes the enhancements "…are in the best interest of customers, and offer more flexibility and support for the BC Energy Plan at a reasonable cost." (Exhibit B-6, p. 4)

FortisBC believes that the Amended Application, including a HAN and hourly consumption data in a VEE-capable MDMR, is appropriate and in the interest of its customers for the following reasons:

- Hourly reading data with VEE provides the utility with more detailed information about consumption patterns;
- Paired with the HAN, hourly readings and VEE provide customers with more detailed information which can be used to encourage customers to change to the desired consumption behaviour; and
- The HAN and hourly data through the VEE MDMR create more flexibility in the implementation of innovative rate structures and allow for more flexible options in designing these rates. (Exhibit B-6, p. 16)

It is FortisBC's evidence that if HAN and hourly reading capabilities are not included in the initial implementation of AMI, it may not be possible to upgrade the system at a future point in time and, in any event, the cost would be prohibitive. (Exhibit B-11, BCOAPO 3.26.1)

FortisBC states that Time of Use ("TOU") and other pricing structures such as Critical Peak Pricing ("CPP") will be facilitated with the more elaborate technology envisioned in the Amended Application. (Exhibit B-6, BCOAPO 1.2.2 Amended)

The Commission Panel notes FortisBC's evidence concerning the estimated cost savings associated with the AMI Project. However, the Commission Panel is concerned, as discussed elsewhere, that the AMI Project has not been completely scoped and the additional cost implications associated with the full scale implementation of an AMI program are largely unknown. The Commission Panel considers that the risk of exposure to unknown costs of future elements of the program outweighs the value of any savings associated with the current AMI Project applications.

7.0 RATE IMPACTS, ECONOMIC ANALYSIS AND AMORTISATION

Rate Impacts

FortisBC states that the AMI Project as described in the original Application would result in a decrease in the net present value of rates over a twenty-five year period by 0.09 percent, absent any accelerated depreciation of existing meters. The maximum incremental annual rate impact would be 0.40 percent in 2010. By the year 2016, FortisBC notes the AMI project as described in the original Application would reduce rates. (Exhibit B-1, p. 36) FortisBC provided the revenue requirements analysis in Appendix B of the Application (Exhibit B-1).

FortisBC states that implementation of the AMI Project as set out in the Amended Application would increase the net present value of rates over a twenty-five year period by 0.10 percent. The maximum incremental annual rate impact is 0.46 percent in 2010. The Project as described in the Amended Application will not reduce rates until the year 2022. (Exhibit B-6, p. 14) FortisBC provided the amended revenue requirements analysis in Appendix A of the Amended Application.

The Application for the AMI Project reflects a break-even point for ratepayers of 23 years using constant 2011 dollars, and factoring in only customer growth and meter reading cost savings. (Exhibit B-2, Wait 1.20) The Amended Application reflects increases in costs for the expanded scope elements such that the AMI Project as described in the Amended Application, will not break even over the 25 year modeling term. (Exhibit B-6, Wait 1.20 Amended)

Economic Analysis

FortisBC filed a variety of scenarios for its economic evaluation based on real and nominal dollars, different discount rates, alternative project timing, and different capital cost assumptions. FortisBC stated it is of the opinion that the Commission should rely on the analysis in nominal dollars. (Exhibit B-11, BCUC 3.65.1)

The results of the economic analysis in nominal dollars suggest a net present benefit for the Original Project of approximately $7.6 million ($2007) over 25 years at a nominal discount rate of 8 percent (Exhibit B-2, BCUC 1.20.0).

The results of the economic analysis in nominal dollars suggest a net present benefit for the Amended Application over 25 years of approximately $ 930 ($2007) at a nominal discount rate of 8 percent. (Exhibit B-6, BCUC 1.12.0 Amended) An evaluation period of only 20 years results in a net present cost for the Amended Project. (Exhibit B-6, BCUC 2.10.2)

Amortisation and Deferral Accounts

The Net Book Value of the existing meters, which would be replaced and disposed of as no longer "used and useful" if the AMI Project proceeds, is $8,847,491 (as at December 31, 2007). No salvage value is expected. (Exhibit B-2, BCUC 1.14.1)

FortisBC takes the position that the cost of the existing meters is entirely recoverable from ratepayers. (Exhibit B-11, BCUC 3.47.1) FortisBC proposes to set up a deferral account to amortise the remaining net book value of retired meters at 3.5 percent per annum. (Exhibit B-1, pp. 6, 35) FortisBC proposes this method as a means to avoid rate shock.

An alternative method would be to expense the net book value of the retired meters over the two year replacement period, consistent with the Generally Accepted Accounting Principle (GAAP) requirements for non-regulated enterprises. This treatment would result in a significant increase in rates over the period of the disposal of approximately 1.3 percent in 2009 and 2.3 percent in 2010, respectively. (Exhibit B-1, p. 34) It is also noted that there are potential issues respecting the prospective introduction to Canada of International Financial Reporting Standards.

FortisBC submits that the time period chosen for amortising the remaining balance of the existing meters is discretionary and notes that a five year amortisation period would reduce the NPV of the revenue requirements to approximately $400,000. (Exhibit B-1, p. 35)

Depreciation of AMI-Enabled Meters

FortisBC estimates the life expectancy of the AMI system meters to be 25 years. (Exhibit B-2, BCUC 1.29.1) However, FortisAlberta has used a depreciation rate of 5.72 percent suggesting an approximate 17.5 year life expectancy and Hydro One Brampton Networks Inc. is applying a 15 year depreciation period. Certain utilities in the U.S. are using 20 to 30 year expected useful lives. (Exhibit B-3, BCOAPO 2.21.3, 2.21.4) Using a 15 year amortisation period and assuming a 1 percent real escalation rate on labour and a 3 percent real escalation rate on vehicle costs results in a real NPV cost of the Project as described in the original Application of approximately $138,000 (Exhibit B-3, BCOAPO 2.21.5) and a real NPV cost of the Project as described in the Amended Application of approximately $8.8 Million (Exhibit B-6, BCOAPO 2.21.5 Amended)

FortisBC also assumes a service life of 25 years for the network and IT infrastructure associated with the Project (Exhibit B-2, BCOAPO 1.7.2), although the proposed amortisation period for these components is 16.7 years (Exhibit B-2, BCUC 1.15.1)

Commission Determinations

The Commission Panel, as discussed elsewhere in this decision, is not approving either the Application or the Amended Application, and accordingly does not make any determinations with respect to the rate impacts, economic analysis or amortisation/deferral account issues in the applications. However, the Commission Panel considers that there has been insufficient evidence with respect to the life expectancy of the AMI system meters, network and IT infrastructure to support the 25 year amortisation period estimated by FortisBC.

The Commission Panel is of the view that economic evaluation is a relevant consideration and would expect this to be part of any new Application. The Commission Panel also considers that the selection of discount rates and evaluation periods are matters of judgment, and encourages FortisBC to provide expanded justification for the base assumptions used in its analyses.

The Commission Panel also notes the comments in the NNRI report concerning the existing uncertainty as to the useful lives of AMI components and expects any future Application to also address this issue.

8.0 POSITIONS OF THE PARTIES

FortisBC argues that a CPCN should be issued based on its Amended Application but in the event that it is not accepted, then a CPCN should be issued based on the Application, as originally filed. FortisBC argues that the AMI project "is justified because it provides benefits that will yield immediate cost savings, has other operational, customer service, and environmental benefits, and will provide the backbone infrastructure which is necessary for FortisBC to meet the government's energy objectives as defined in the UCA…" (FortisBC Final Argument, para. 17)

Mrs. Buryl Goodman's argument supports the AMI project as one "whose time has come".

Mr. Alan Wait argues that the Amended Application is premature and there may be better technologies at lower cost available in the future.

BCOAPO argues that there is no "need" for the AMI Project at this time as FortisBC can provide reliable service with its existing meters and could also engage in DSM through rate design, without installing the AMI. BCOAPO also argues that utilities can engage in direct load control demand response programs without AMI, as the two are separate and can be independent systems.

BCOAPO also argues that AMI, by itself, will not allow for remote disconnections or connections without the purchase and installation of additional "collars". BCOAPO recommends that FortisBC create and adopt policies dealing with remote disconnects for vulnerable customers. BCOAPO also argues that the cost of load control devices such as programmable thermostats and hot water tank

controls are not included in the costs of the Amended Application and may be too expensive for all but high income ratepayers who might not use them. BCOAPO further argues that the benefits of DSM may not accrue to all customers and low-income consumers may not benefit. BCOAPO suggests that FortisBC be required to specifically consider the effects of future DSM programs and expenditures on low-income ratepayers and develop means to protect them. BCOAPO argues that FortisBC has provided no details on time of use rates, conservation rates, timing of implementation of rates and the effect of the various rates on the electricity bills of low-income ratepayers, or any analysis of the potential reduction in demand for electricity due to the implementation of the AMI project. BCOAPO therefore proposes that FortisBC either:

(a) Wait until the UCA regulations regarding Smart Meters are in place and BC Hydro has clarified its plans and then re-apply to the Commission with additional information as to likely economic benefits flowing from the AMI project, or

(b) Exclude half of the incremental capital costs of the Amended Application from the rate base recovery until such time as the benefits can be clearly shown through DSM and conservation rate programs.

CORE opposes the project on several grounds including a concern that no information has been provided concerning testing of the AMI by the Canadian government in relation to radiofrequency emissions/possible harmful medical effects and argues that electromagnetic sensitivity is an environmental health issue which needs to be accommodated. CORE also argues the project will involve a rate increase in the time of an “ongoing recession”.

Horizon Technologies does not support the Amended Application in the absence of open standards for the Home Area Network and without further information on the specifications/requirements for the Home Area Network. Horizon Technologies does, however, support the need for the additional features included in the Amended Application and therefore does not support the original Application.

In its Reply, FortisBC argues that the AMI project is not premature and that it has provided evidence that the cost of the meters is not likely to decrease in the future.

In response to the BCOAPO suggestion that there is no "need" for the AMI project, FortisBC argues that "need" is not necessarily determinative of the public interest or what constitutes "public convenience and necessity", which is a flexible test. FortisBC further argues that there is "a strong regulatory and legislative basis to approve the Project." FortisBC also argues that, although some rate designs to encourage conservation can be implemented in the absence of AMI, there is a broader range of potential structures available with the interval data made available through AMI.

FortisBC states, in reply to the concerns expressed by BCOAPO that low income customers may not have the ability to participate and benefit from the AMI project, that areas where all customers benefit have been identified. FortisBC also states in its reply argument that "there is no evidence that conservation or rate design measures developed subsequent to AMI implementation will impose costs on low-income ratepayers….[as] it has not been determined whether the devices would be provided by the utility or would be the responsibility of the ratepayers". FortisBC does confirm, however, that it will consider the impact on low-income customers in any future application to implement time-based rates.

With respect to BCOAPO's suggestion that half of the incremental costs of the amendments in the Amended Application be excluded from rate base until such time as the benefits can be shown through DSM and conservation rate programs, Fortis takes the position that it will only proceed with the AMI project if all costs are recoverable in rates.

In response to CORE's concerns regarding radiofrequency emissions, FortisBC "confirms that the AMI project will be fully compliant with all relevant legislation".

FortisBC argues in reply to Horizon's position that Horizon is itself a vendor of the home technology, and therefore represents a private interest. The Commission Panels considers that Horizon representing a private interest does not, of itself, negate any position which Horizon may take.

A Letter of Comment dated June 18, 2008 was received from the National Research Council of Canada ("NRC") cautioning on the use of wireless technology close to its Observatory. The NRC advised that it had been in contact with FortisBC and is prepared to work with FortisBC to find a suitable solution. NRC asks that the Commission direct FortisBC to commit to a solution which protects the Observatory while enabling the AMI project. (Exhibit E-1)

FortisBC, in response, has confirmed that its approach to implementation of the AMI project contemplates the use of different technologies, including hybrid solutions, as may be required, due to a number of considerations including topography and other potential restrictions. FortisBC states that implementation of a hybrid solution is already contemplated within the [Amended] Application and so will not impact the scope, timing or cost of the project. (Exhibit B-12)

9.0 COMMISSION DETERMINATIONS

The Commission Panel acknowledges the initiative of FortisBC in developing plans and applying for a CPCN for the AMI Project. The Commission Panel is also cognizant of the government's goal of having advanced meters and associated infrastructure in place for all utilities in British Columbia in the future. However, in summary, the Commission Panel is of the view that the Application and the Amended Application are incomplete and premature.

The Commission Panel considers the AMI Projects being proposed in the Application and the Amended Application (the "Applications") to be incomplete at this time in that plans for the development and implementation of a comprehensive program including downstream usage and applications for the data collected have not been presented. The Applications as presented comprise only the first few steps toward an end which has yet to be identified in any meaningful way other than to claim alignment with the B.C. Energy Plan and Bill 15.

In order for FortisBC to pursue "cost-effective and competitive demand side management programs" as contemplated by the Energy Plan, it is proposing to spend over $37 Million to install meters and develop a MDMR as first steps. Very little information has been presented concerning the components (and their cost) which will be required to complete the associated infrastructure in order to make effective use of the AMI Project.

FortisBC has indicated that it "intends to study a variety of DR [Demand Response] and DSM [Demand Side Measure] tools after the implementation of AMI…" and also that "design and implementation of effective DR and DSM programs is likely to require additional analysis, expenditures and the implementation of time-based rates." (Exhibit B-11, BCUC 3.39.3.1)

The Commission Panel is of the view that there is insufficient information in the Application and/or Amended Application to allow it to conclude that the expenditures being proposed will, in fact, facilitate development of cost-effective demand side measures. This view is driven primarily by the dearth of information concerning the definition, scope and estimated costs to complete a full and comprehensive package for the required infrastructure and technology to achieve the objectives of the program.

After due consideration of the evidence and arguments of all parties participating in this proceeding, the Commission Panel concludes that the Applications for the AMI Project have not provided adequate evidence to support the conclusions that a comprehensive overall plan is in place and that a cost effective solution has been demonstrated to justify the approval of a CPCN at this time.

The Commission Panel is concerned that no overall 'vision' of the complete program for the implementation and use of AMI has been adequately articulated in either the Application or the Amended Application and that there is insufficient evidence with respect to the feasibility and cost effectiveness of the ultimate end product/result of the program. The Commission Panel concludes that the scoping, planning, and overall cost estimates of the AMI Project are not sufficiently

complete and advanced to determine whether the end product of the AMI program, including the instant Applications, can be assessed as to the cost effectiveness, appropriateness and ability to qualify for approval of a CPCN.

The Commission Panel encourages FortisBC to continue its efforts to develop and, in due course, reapply for approval of a comprehensive and complete program for the installation and implementation of Advanced Metering Infrastructure and related technologies. The Commission Panel further encourages FortisBC to coordinate its efforts with those of other utilities.

The Commission Panel has concluded that the balancing of the interests and concerns of the public and rate payers is best served by the following determination:

> The Applications of FortisBC for a Certificate of Public Convenience and Necessity for the Advanced Metering Infrastructure Project are denied.