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VIA E-MAIL

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January 25, 2008

**FORTISBC INC.
AMI PROJECT**

EXHIBIT A-2

Mr. David Bennett
Vice President, Regulatory Affairs & General Counsel
Regulatory Affairs Department
FortisBC Inc.
1290 Esplanade
PO Box 130
Trail, B.C. V1R 4L4

Dear Mr. Bennett:

Re: FortisBC Inc.
Project No. 3698493/Order No. G-1-08
Certificate of Public Convenience and Necessity Application
for the Advanced Metering Infrastructure Project

Further to Commission Order No. G-1-08, which established a Regulatory Timetable with respect to the above noted Project, please provide a response to the enclosed Commission Information Request No. 1 by Tuesday, February 26, 2007. Please file the responses as per the filing instructions set out in the B.C. Utilities Commission Document Filing Protocols, effective May 16, 2005.

Yours truly,

Original signed by:

Erica M. Hamilton

DJF/rt
Enclosure
cc: Registered Intervenors (*FBC-AMIPProject-RI*)

**FortisBC Inc. (“FortisBC”)
Certificate of Public Convenience and Necessity
for the Advanced Metering Infrastructure Project (“Application”)**

1.0 Executive Summary

Reference: Exhibit B-1, Executive Summary, pp. 4-5

- 1.1 FortisBC intends to reduce the O&M component of its revenue requirements by the full amount of operational savings that result from AMI implementation. What mechanism(s) will FortisBC put in place to track and report on these reductions and compliance with this statement?
- 1.2 FortisBC intends to provide customers access to consumption information to raise awareness and provide the tools necessary to conserve energy. Does the metering technology envisioned by FortisBC provide a real-time display of electricity prices and/or system consumption (with the purpose of highlighting periods when the system is under stress) to consumers? If not, why not?

2.0 Project Need

Reference: Exhibit No. B-1, 3. Project Need, Section No. 3.1, Description of the Existing System, p. 10

- 2.1 Please provide the annual cost for technical support of the existing hand held meter reading units.
- 2.2 Please provide the annual cost for support from internal IT resources.
- 2.3 Please provide the meter reading cost per unit.
- 2.4 What is the increase in accuracy of the meter readings and will this increased accuracy reduce costs to the customer?
- 2.5 What is the annual amount of decreased cost due to increased accuracy of the meter readings?

3.0 Project Need

Reference: Exhibit No. B-1, 3. Project Need, Section No. 3.2, Customers Served, p. 10

- 3.1 Please provide in table format a listing, by rate schedule affected, of the number of meters to be deployed.

4.0 Project Need

Reference: Exhibit No. B-1, 3. Project Need, Section No. 3.3, Summary, p. 11

“The primary limitations of the existing process are ... Existing meters are not capable of adapting to non-standard rate structures”

- 4.1 Please explain the term “non-standard rate structures”.

5.0 Project Need

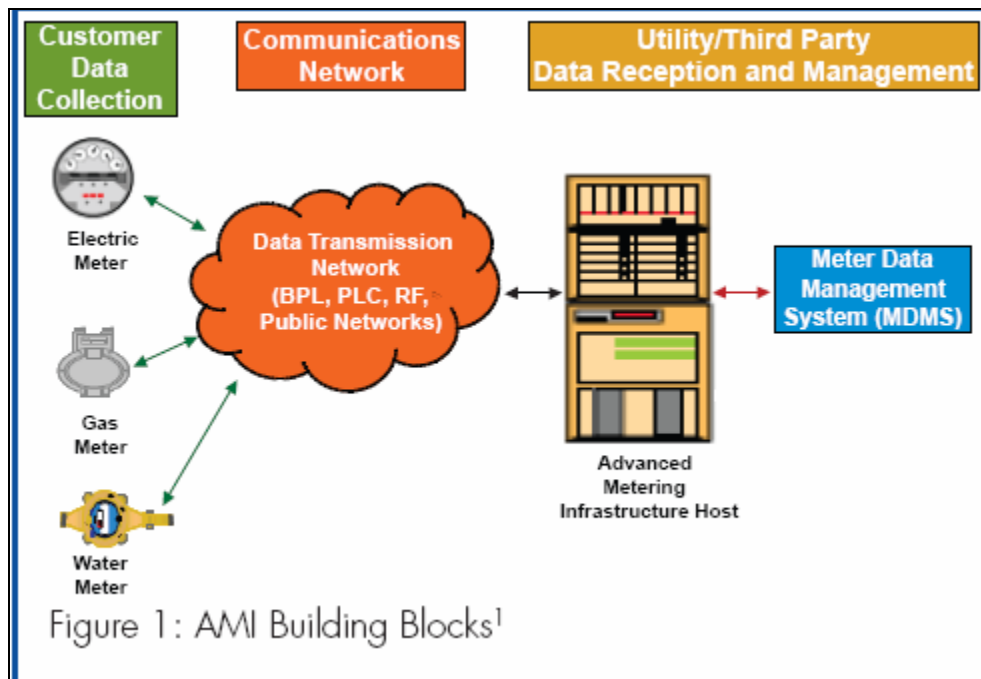
Reference: Exhibit B-1, Section 3.3, p. 11
Project Need - Summary

- 5.1 FortisBC states: “The costs of AMI technologies have declined to a point where these limitations can now be addressed with an AMI implementation.” Please provide more information on how the costs of AMI technologies have evolved in recent years and anticipated future trends in the costs of AMI technologies.

6.0 Project Description

Reference: Exhibit No. B-1, 4. Project Description, Section No. 4.1.1, AMI Benefits Yielding Operational Cost Savings, pp. 12-14

- 6.1 Is the FortisBC proposed system architecture diagram similar to the EPRI one below?



- 6.2 Provide a system architecture diagram showing the software and hardware interfaces.
- 6.3 In Figure 1, the meter data is received by the AMI host system and then sent to the Meter Data Management System (“MDMS”) that manages data storage and analysis to provide the information in useful form to the utility. Would FortisBC please explain how it proposes to provide the MDMS function within its current Application?
- 6.4 Since the ratepayers fund the project cost, please explain why these Total Net Annual Savings of \$2.592 million should not be encumbered against the Operating and Maintenance budget for the duration of the payback period identified in the Application and then shared with the customer base on a 50/50 basis after the completion of the project payback.
- 6.5 Please explain in detail if the commitment of page 4 of the Application to rebase O&M component will eliminate this issue.

- 6.6 No system or line loss savings have been identified. Please explain as there was some linkage with this issue in the Application for the Distribution Substation Automation Program.
- 6.7 Did FortisBC use Life-Cycle Costing (“LCC”) to calculate the Annual Savings?
- 6.7.1 If yes, please provide the calculation.
- 6.7.2 If no, please provide the calculation and complete the table below.

	LLC of existing	LLC of AMI	Annual Savings (\$000s)
Total Operating Labour (Incl. Benefits)			1,864
Total Non-Labour Operating			136
Vehicle Expenses			462
Handheld Support			29
Total Meter Reading Annual Cost Savings			2,491
Reduced Meter Exchanges			293
Outage and Restoration			25
Total Operations Annual Cost Savings			318
Reduced Calls Due to Billing Issues			169
Reduced Billing Errors Requiring Correction			96
Data Entry for Soft Reads			42
Total Customer Service Annual Cost Savings			307

7.0 Project Description

Reference: Exhibit No. B-1, 4. Project Description, Section No. 4.1.1.4 1 Operating Expenses AMI, p. 16

“Two additional IT resources will be required once the AMI deployment is complete. One resource will be responsible for maintaining the AMI database and producing reports and the other will be responsible for maintaining the communications infrastructure.” ...“Ongoing communications costs relating to getting the AMI data back from the meters is expected to be approximately \$142,000 per year.”

- 7.1 Please justify in detail why two additional IT resources are required and especially why one will be maintaining the communications infrastructure when there are already ongoing communications costs of \$142,000 per year identified.

8.0 Project Description

Reference: Exhibit B-1, Section 3.1 (Description of Existing System), p. 10

FortisBC states that the current meter reading process has been reliable and has produced adequate results for customers. However, the implementation of an AMI system will allow the Company to achieve more accurate readings and reduce costs, while also providing further benefits to customers in the future.

- 8.1 What metrics does (and will) FortisBC use to establish the reliability and adequacy of its metering results for customers?

9.0 Project Description

Reference: Exhibit B-1, Section 4.1.3 (Future Benefits), pp. 22-23

- 9.1 Please provide any information available to FortisBC regarding the results of demand-side management programs implemented in conjunction with AMI programs.

- 9.2 Based on this information, has FortisBC estimated the likely reduction in annual peak demand and/or energy that could be expected through this program?

- 9.3 Please describe the results achieved with real-time load control by other implementers of AMI technology.

10.0 Project Description

Reference: Exhibit B-1, Section 4.1.3, p. 22
Project Description - Future Benefits

- 10.1 Please provide examples of specific rate structures that would be possible following implementation of the AMI Project and some commentary on their likely relevance and benefits in the B.C. context.

11.0 Environmental and Social Impact

Reference: Exhibit B-1, Section 5.7, p. 26
Environmental and Social Impact – Other Jurisdictions

- 11.1 Please provide copies of any cost–benefit analyses and/or rate impact analyses conducted to support implementation of the AMI Projects in Alberta and Ontario.

12.0 Project Cost

Reference: Exhibit B-1, General
Economic Analysis

The Commission’s recently published Decision concerning BC Hydro’s 2006 IEP/LTAP states at pages 200-201:

“Typically the end result of a project evaluation is the expression of a PV or a levelized cost of energy or capacity. Both calculations require the use of a discount rate, and both calculations require a stream of cash flows to apply the discount rate to.

The Commission Panel accepts BC Hydro’s argument that two tests may be considered for use in project evaluation. The first, and the more important, is an economic analysis of a project, which should only use the incremental cash flows disbursed by BC Hydro as its key input. The second, and less material test is a ratepayer impact analysis which examines how BC Hydro will recover a project’s costs from its ratepayers and which may include items typically not found in a conventional economic analysis such as sunk costs, interest during construction and costs allocated from other departments of BC Hydro.”

Please prepare and file an economic analysis (based in MS Excel) of the net benefits of the AMI Project relative to the status quo option. The economic analysis should include only *expected* annual cashflows over the life the project, with emphasis on cashflows that are expected to vary between the status quo and the AMI Project.

Ideally, the analysis should focus on the costs of each option. That is, savings should be derived implicitly in the comparison of the two sets of cashflows. For example, operating costs associated with meter reading should be estimated for the status quo and for the AMI Project. The difference would then reflect the savings, if any, attributable to the AMI Project. Where this is not possible or overly cumbersome, FortisBC may in limited cases include savings as reductions to the AMI Project cashflows, but these should be broken out separately, reflect only incremental savings by year and input assumptions should be explicit. In all cases, the analysis should be structured to facilitate the sensitivity analyses described below.

The distinction is not critical, but capital costs should reflect costs that would normally be capitalized. Operating costs should reflect costs that would normally be expensed in the year in which they are incurred.

FortisBC may establish relevant categories of annual cashflows in preparing the model, but at a minimum, should be disaggregated into, but not limited to, the following categories:

Capital costs

- Meter costs
 - o Replacement
 - o New
- Meter reading equipment
- Network infrastructure
- IT infrastructure and upgrades
- Project management

Operating costs

- Meter reading

- Labour
- Non-Labour
- T&D operating cost
- Customer service
- Income taxes. This may be incorporated as any significant incremental income taxes/savings (calculated on a flow-through "cash taxes" basis for simplicity) associated with the AMI Project.

The capital costs of meters and other equipment should reflect expected additions and ongoing replacement costs, including consideration of the likely failure rate of different meters.

Meter reading costs under the AMI Project alternative should include any allowance for ongoing manual meter reading in early years, as well as any reasonable ongoing allowance for temporary manual meter reading labour.

Include a separate column in the model for annual GHG reductions associated with the AMI Project and the ability to attach an implicit value to these savings on a \$/tonne basis which may then be deducted from other expenses (in sensitivity analyses).

All cashflows should be in real \$2008 or any other suitable but common benchmark year.

Total capital expenditures should be included in the year in which they are expected to be incurred.

No financing or depreciation expenses should be included in the analysis.

Cashflows associated with the status quo should be estimated, together with cashflows associated with the AMI Project. The present value of all cashflows associated with each scenario should be calculated and the difference should indicate the net economic benefit associated with the AMI Project over the project life.

The discount rate should be a separate input to the model that can be changed to test alternative assumptions.

The timeframe for the analysis should encompass the expected life of the AMI system meters. A terminal value may be included to reflect any residual or salvage value of assets at the end of the period. The assumptions used to derive any terminal value should be clearly stated in the commentary that accompanies the model.

The analysis should not include any sunk costs (e.g., depreciation expenses associated with existing meters), but may include capital replacement or upgrade costs (e.g., meter replacement costs in the status quo scenario).

The analysis should include likely changes in real cashflows over time, if any. Ideally, real escalation rates for key categories of costs would be specified outside the model so that these assumptions can be altered in sensitivity analyses.

The NPV analysis should be prepared using a real discount rate. The base case would use an ~8% discount rate (based on the 10% discount rate used in the Application and 2% general rate of inflation).

A brief commentary should be prepared to accompany the model that summarizes key input assumptions (e.g., labour rates and overheads, estimate of terminal values, etc.). The model should be structured to allow changes in key input assumptions for sensitivity analysis.

Prepare a base case analysis that reflects the relevant assumptions in the Application. Prepare also preliminary sensitivity analysis based on:

- Deferring the AMI project one, three and five years. This analysis would include the costs associated with maintaining the current system in the first one, three and five years of the AMI Project cashflows, respectively. This should also consider possible reductions in AMI metering technologies over time.
- Higher and lower real discount rates. One scenario should reflect FortisBC's allowed real weighted average cost of capital.
- Key cost uncertainties, including AMI meter costs, real labour and fuel escalation rates, and other key operating or capital costs with significant uncertainty.

13.0 Project Cost

**Reference: Exhibit No. B-1, 1. Application, p. 10
Revised Cost Estimate**

FortisBC states that:

“Following Commission approval of the Application, the Company will issue a Request for Proposal (RFP) to vendors of AMI technologies, and expects to execute contracts for the Project during 2008. FortisBC will file a Revised Project Cost Estimate within 30 days of execution of all major contracts. If the Revised Project Cost Estimate exceeds 110 percent of the cost estimate set out in this Application, FortisBC will provide a detailed variance analysis and justification to the Commission.”

- 13.1 If the Revised Project Cost Estimate exceeds 110 percent of the cost estimate set out in this Application, would FortisBC like to discuss whether or not it would be appropriate to require FortisBC to obtain a new CPCN that continues to be in the Public Interest?
- 13.2 Would FortisBC please comment on whether or not a conditional CPCN should be sought that would allow FortisBC to submit a revised funding estimate (after the selection of the vendor but before the award) that would provide better definition to the project?

14.0 Project Cost

**Reference: Exhibit No. B-1, 1. Application, p. 10
Deferral Account for Existing Meters**

FortisBC states that:

“FortisBC also requests an accounting order, consistent with the Canadian Institute of Chartered Accountants (CICA) Handbook, to defer the net book value, less proceeds of disposal, of the meters to be retired, and to amortize the deferred amount at the existing depreciation rate for meters, 3.5 percent.”

- 14.1 Would FortisBC, please provide the net book value (of the remaining useful life of the existing

meters to be retired early), and the estimate of the proceeds of disposal of these meters?

14.2 Why did FortisBC, chose 3.5 percent for the existing depreciation rate for the meters?

14.3 Would FortisBC consider writing off the net book value over say 5 years? If not, why not?

15.0 Project Costs

Reference: Exhibit No. B-1, 6. Project Costs, Section No. 6.1, Assumptions and Data Sources, p. 28

15.1 Please provide amortization policy in years for the smart meters, computer hardware, software, and communications network systems.

15.2 Please discuss the unit cost per system component of this proposal with respect to the following Electric Power Research Institute “Advanced Metering Infrastructure (AMI)”.

15.3 Please discuss the Application on a unit cost per system component in comparison to both the Fortis Alberta Advanced Metering Infrastructure (AMI) Phase II – Full Deployment Business Case 2008/2009, Phase I Tariff Application, dated June 1, 2007.

15.4 In the Fortis Alberta Advanced Metering Infrastructure (AMI) Phase II – Full Deployment Business Case 2008/2009, Phase I Tariff Application, June 1, 2007; the total cost (shown in Table 3.3 below) to deploy substation hardware upgrades (There will be an installation of meter data collection equipment at 158 substations in 2008 to 2010.), AMI-enabled meter installations (FortisAlberta will deploy approximately 63,000 meters scheduled to begin in August of 2008, followed by 239,000 meters in 2009, and 103,000 meters in 2010.) Management of the transition from the current outsourced meter reading vendor. FortisAlberta re-negotiated the contract to support a seamless transition from manual meter reading to AMI-enabled meters and management of the transition from the current outsourced meter reading vendor (The contractual provisions include mechanisms for the meter vendor to flow through their costs to FortisAlberta and provide one-time incentive payments to meter readers to ensure they are retained until their areas are fully transitioned.).

**Table 3.3 2008 - 2010 Forecast Capital Expenditures and Offsets
AMI Phase II Deployment**

Description	Forecast 2008 (\$000)	Forecast 2009 (\$000)	Forecast 2010 (\$000)	Total (\$000)
Capital Expenditures				
AMI Phase II Meters	\$6,993	\$32,720	\$14,661	\$54,374
Meters 2007 Growth (for period January – December 2007 only)	1,578	279	0	1,857
Substation Hardware	4,041	4,262	1,107	9,410
Installation Costs	10,341	17,240	6,425	34,006
Subtotal Capital Expenditures	\$22,953	\$54,501	\$22,193	\$99,647
Capital Offsets				
Retrofit Meters	\$(1,231)	\$(1,449)	\$0	(2,680)
Subtotal Capital Offsets	\$(1,231)	\$(1,449)	\$0	\$(2,680)
Net Capital Expenditures	\$21,722	\$53,052	\$22,193	\$96,967
Engineering and Supervision	1,737	3,979	1,665	7,381
Total Capital Expenditures	\$23,459	\$57,031	\$23,858	\$104,348

(Totals may vary due to rounding.)

- 15.4.1 Please explain the Unit Cost in Comparison to the FortisBC Application noting the cost differences and any explanations.
- 15.4.2 In the Fortis Alberta Application, it appears that they can install 405,000 meters at an approximate installed cost of \$ \$234.41/meter for a total cost of \$ \$94,938,000 (only substation hardware was removed). Please explain why FortisBC requires \$31,341,000 for 108,000 meters. The FortisBC Application is \$290.19/meter. Please explain.
- 15.4.3 Please submit the Fortis Alberta Advanced Metering Infrastructure (AMI) Phase II – Full Deployment Business Case 2008/2009, Phase I Tariff Application, June 1, 2007
- 15.5 In the “Hydro One Brampton Networks Inc. Issuance of Addendum for Smart Metering Rates To The 2007 Distribution Rate Adjustments ED-2003-0038 EB-2005-0377/ EB-2007-0541 Summary of Application February 9th, 2007”, please examine the unit costs and provide a comparison.
- 15.5.1 In the Hydro One Application, it appears that they can install 132,000 meters at an installed cost of \$152.18/meter for a total cost of \$20,087,560. Please explain why FortisBC requires \$31,341,000 for 108,000 meters. The FortisBC Application is \$290.19/meter. Please explain.
- 15.5.2 Please submit the “Hydro One Brampton Networks Inc. Issuance of Addendum for Smart Metering Rates To The 2007 Distribution Rate Adjustments ED-2003-0038 EB-2005-0377/ EB-2007-0541” - Summary of Application, February 9, 2007.
- 15.5.3 Please provide a unit cost comparison for other examples of AMI installations.

16.0 Project Cost

Reference: Exhibit No. B-1, 6. Project Costs, Section No. 6.3, Cost Details, p. 29

- 16.1 Please confirm the estimate is in Nominal (As-spent) dollars, or provide it on a Nominal basis.
- 16.2 Please identify the exclusions and assumptions made to perform this estimate.
- 16.3 Would FortisBC please explain the cost estimating technique used to develop this estimate?
- 16.4 Please describe the cost estimate review process performed by FortisBC.
- 16.5 Has FortisBC conducted an external review of this cost estimates and project scope using an independent third party?
- 16.6 Please provide the estimate accuracy and estimate class based on the five cost estimate classifications by Association for the Advancement of Cost Engineering (AACE’), Recommended Practice for Classifying Cost Estimates.
- 16.7 Would FortisBC please complete the risk matrix and assign a rating to each risk area: high, medium, or low, and a qualitative assessment of its relative impact and the likelihood of its occurrence and include the magnitude cost of each item?

RISK MATRIX TABLE

WBS	Technical Risks	Schedule Risks	Cost Risks	Resource Risks	Management Processes Risks

Work Breakdown Structure (“WBS”)

- 16.8 Please provide a risk and contingency analysis based on at least these five risk factors: technical issues, design completion and maturity, equipment/vendor, construction cost, and construction schedule. Please provide an impact magnitude cost for each item listed and include in risk matrix table.
- 16.9 Please provide escalation (including inflation) analysis.
- 16.10 Please provide the estimated unit cost for:

16.10.1 Unit Cost per smart meter by rate schedule

16.10.2 Smart Meter Installation cost (estimated labour time and material cost per meter)

16.10.3 Smart Meter Other Cost (estimated cost to repair broken meter bases, assuming an X% occurrence for broken meter bases).

16.10.3.1 Provide an assumption for the percent occurrence of broken meter bases.

16.11 Provide industry benchmarks or historical cost data to confirm the unit costs provide for the FortisBC smart meter costs.

16.12 Please complete the Table 6.3, Summary of Capital Costs and provide the missing data and add any new line items.

Table 6.3: Summary of Capital Costs				
		Direct Cost	Indirect Cost	Total
		(\$000s)	(\$000s)	(\$000s)
(i)	Meters and Modules			19,507
(ii)	AMI Vendor Training			41
(iii)	Network Infrastructure			6,700
(iv)	IT Infrastructure and Upgrades			1,483
(v)	MDMS – Meter Data Management System			
(vi)	Project Management <ul style="list-style-type: none"> • Project Management • 4 Project Leads • AMI Consultant • Business Analysis 			2,000
(vii)	Existing Meter Removal Cost			
(viii)	Project Planning, Network Design, and Testing			660
(ix)	AFUDC			950
(x)	Escalation (including Inflation)			
Performance Measurement Baseline (“PMB”)				31,341
(xi)	Management Reserve			
Total Allocated Budget (“TAB”)				31,341
(xii)	Other Non-Project Costs			
(xiii)	Regulatory Costs			
(xiv)	Contingency			

Table 6.3: Summary of Capital Costs			
	Direct Cost	Indirect Cost	Total
	(\$000s)	(\$000s)	(\$000s)
Total Project Cost (“TCP”)			31,341

Non-Project and Future Costs			
	Incremental Meter Costs		1,336
	Incremental Metering Operational Expenses		
	Incremental Other Operational Expenses		
	Incremental Other Admin Expenses		
	Avoided Future Capital Costs		(1,250)
	Innovative Rate Structures		3,000
	Load Control		500
	Remote Disconnect/Reconnect for 108,000 meters at \$199 ea.		21,492
	Meter Reading Frequency		
			\$24,992

17.0 Project Cost

Reference: Exhibit No. B-1, 6. Project Costs, Section No. 6.3, Cost Details, (i) Meter and Modules, p. 30

- 17.1 Using the format and row items of the table above, please provide a table of the annual costs per year to completion.
- 17.2 What is the number of projected new customers to be added to the FortisBC Service Area over the life of this project and have these new meters been included in the cost of this project?
- 17.3 Please provide:
- 17.3.1 Please provide an explanation of useful life, depreciable life, economic life, certified life, and technological life as it relates to this proposal.
 - 17.3.2 The life of the meter and the replacement cost using the life definitions above, and
 - 17.3.3 The Measurement Canada certified life and the re-certification costs, and
 - 17.3.4 Please provide the battery life and the battery replacement costs per meter (including labour).

- 17.3.5 Changes to National Policy (E-26), “Reverification Periods for Electricity Meters and Metering Installations”, issued September 15, 2004 by Measurement Canada, will result in increased frequency of mechanical demand meter exchanges. The proposed regulation will require that 100 percent of mechanical demand meters be exchanged every four years. In contrast, an average 7 percent of electronic demand meters (such as AMI) need to be sampled after ten years and then again after another six years. Mechanical demand meters will require four complete exchanges in the timeframe that electronic demand meters will require only two sample exchanges. Has FortisBC included the cost of sampling these electronic meters in their Application? If not, why not?
- 17.3.6 Has FortisBC included this item in its cost benefit analysis?
- 17.3.7 Was this expense cost allowed for in the revenue requirements template?

18.0 Project Cost

Reference: Exhibit No. B-1, 6. Project Costs, Section No. 6.3, Cost Details, (ii) Network Infrastructure, p. 30

“From the two AMI technologies examined, FortisBC has identified three AMI solutions. All of these solutions will provide the benefits described in this Application. The AMI technology solutions contained within this application are focused on proven technologies that have been thoroughly field tested. These are Power Line Carrier, Radio Frequency, and a Hybrid Solution (Exhibit No. B-1, p. 44).”

- 18.1 Please provide the estimated cost per end-point for each of the three mentioned technologies.
- 18.2 Please provide the breakdown of the costs associated with the \$6.7 million for Network Infrastructure by type of technology.

19.0 Project Cost

Reference: Exhibit No. B-1, 6. Project Costs, Section No. 6.3, Cost Details, (iii) IT Infrastructure and Upgrades, pp. 30-32

- 19.1 Please explain further how “the AMI software will be implemented in the initial stages of the project and parallel readings (both from the meter readers and the AMI system) during the transition will be filtered through this system”. Will this require manually data entry into these systems?
- 19.2 Provide costs for:
- 19.2.1 An interface between the AMI software and the CIS System; and
- 19.2.2 An interface to synchronize the customer information in the AMI; and
- 19.2.3 An interface from the AMI software and the Company’s field mapping system software to the interface in CIS.
- 19.3 Provide a typical listing of the work orders that would be automatically generated by the Work Order Management Interface.
- 19.4 What is the expected cost saving for this Work Order Management Interface and was it taken into

account?

- 19.5 Please provide a listing of the additional hardware required to support the AMI software and its expected cost.

20.0 Project Cost

Reference: Exhibit No. B-1, 6. Project Costs, Section No. 6.3, Cost Details, (iv) Project Management, p. 33

- 20.1 Please provide a project organization chart for the Application with names.
- 20.2 Please identify the roles to be performed by the four project lead resources.
- 20.3 Please provide the names and related AMI experience for the AMI consultant and business analyst.
- 20.4 Why is the Vendor on-site training not part of the AMI procurement?
- 20.5 Is Vendor testing, startup and commissioning assistance included in the planned AMI procurement?

21.0 Project Cost

Reference: Exhibit B-1, Section 4.1.1.1 (Meter Reading Savings), p. 13, and Section 5.5 (Employee Impacts), p. 25

- 21.1 The savings shown in this section are related to 2011 dollars and forecasted customer growth. Please provide a version of this table containing actual costs for the existing metering operations for 2007.
- 21.2 Does FortisBC anticipate disposing of the vehicles currently associated with the meter-reading function? If so, what is the anticipated value? If not, what is to be done with the vehicles?
- 21.3 Has FortisBC made any allowance for costs associated with labour-force reduction? Please explain.

22.0 Project Cost

Reference: Exhibit B-1, Section 4.1.1.2 (T&D Operational Savings), pp. 13-14

- 22.1 Measurement Canada requires testing on 16 percent of electronic meters at years 10 and 16. How does this compare with the testing requirements on the current meter population?
- 22.2 What is the experience with others who are already using this technology with respect to testing and verification costs? Has this experience been factored into FortisBC's estimates of operational savings and future AMI operating costs?
- 22.3 Will the fact that the entire meter population is to be replaced over a two-year period result in short-term jumps in meter testing costs in ten years and periodically thereafter? If not, why not?
- 22.4 What will be the operational and staffing impacts of having no meters to test for ten years, and

how will FortisBC preserve its corporate knowledge of testing processes?

22.5 Does the ability of a meter to provide real-time feedback on outages depend on the communications technology employed?

22.6 Please indicate how the \$25,000 savings on outage restoration was determined.

23.0 Project Cost

Reference: Exhibit B-1, Section 4.1.1.3 (Customer Service Savings), p. 15

23.1 Please explain how each of the cost savings shown in Table 4.1.1.3 was calculated.

23.2 Will these savings be directly reflected in staff reductions? If not, how will they be realized?

24.0 Project Cost

Reference: Exhibit B-1, Section 4.1.1.4 (AMI Operating Expenses), p. 16

24.1 Please explain how the \$142,000 for communication costs was calculated.

24.2 Please explain how the \$48,000 for equipment replacements and maintenance was determined.

24.3 What meter failure/replacement rate has been assumed in the cost/benefit calculations? Please estimate the sensitivity of the NPV impact on rates (-0.09 percent from page 4) to that failure rate.

24.4 Based on FortisBC's discussions with suppliers and existing users of the technology, what is the failure rate of AMI meters? Has that failure rate been used to estimate ongoing replacement costs?

25.0 Project Cost

Reference: Exhibit B-1, Section 6.3 (Cost Details), pp. 29-33

25.1 Please provide additional detail behind the cost estimates provided in Tables 6.3 and 6.3.2, as well as the costs for project management.

25.2 For each of these items, please indicate how the work is to be resourced (vendor, contractor, FortisBC in-house resources). For the items that are to be completed by the vendor, does FortisBC expect to have a turnkey contract incorporating these items? Please explain.

26.0 Project Cost

Reference: Exhibit B-1, Section 6.6 (Rate Impact), p. 36

26.1 What amount has been established for capital replacements through 2033?

26.2 Please provide a rate impact NPV over ten years.

26.3 For each of these items, please indicate how the work is to be resourced (AMI vendor, contractor, FortisBC in-house resources). For the items that are to be completed by the vendor, does FortisBC expect to have a turnkey contract incorporating these items? Please explain.

27.0 Project Cost

Reference: Exhibit B-1, Section 6.1, p. 28
Project Cost – Assumptions and Data Sources

- 27.1 Please confirm the NPV of revenue requirements is based on a 10% discount rate.
- 27.2 What is the rationale for the 10% discount rate? Please confirm this is a nominal discount rate.
- 27.3 Please provide a short rationale for the other assumptions listed in Section 6.1.

28.0 Project Cost

Reference: Exhibit B-1, Section 6.2, p. 28-29
Project Cost – Cost Summary

- 28.1 FortisBC indicates it received detailed quotes from two vendors. What was the cost difference between the two quotes? How were the quotes used to estimate the costs of the project (e.g., was one quote selected or was an average used)?
- 28.2 What are the key risks that may affect the final capital costs contained in Table 6.3?
- 28.3 Are any of the capital cost estimates subject to fluctuations in exchange rates? If so, what exchange rate was used in the estimates and what is the level of exposure?
- 28.4 What percentage of the capital costs in Table 6-3 would be fixed during the vendor selection process and what percentage would be subject to further escalation during implementation? Please explain.

29.0 Project Cost

Reference: Exhibit B-1, Section 6.3, p. 29
Project Cost – Cost Details

- 29.1 What is the expected life of the AMI system meters? Please provide any support for the expected life estimate, including actual experience, where available.
- 29.2 What is the expected failure rate for AMI system meters compared with conventional meters? Has the failure rate of meters been incorporated in any way in the impact analysis?

30.0 Project Cost

Reference: Exhibit B-1, Section 6.6, p. 36
Project Cost – Rate Impact

- 30.1 Please confirm the costs and expenses in Table 6.6 are in nominal dollars.

31.0 Project Schedule

Reference: Exhibit No. B-1, 7. Project Schedule, Section No. 7.1, AMI Evaluation Criteria, pp. 39-41

- 31.1 Will FortisBC be performing a Life-Cycle Cost Analysis (“LLC”) as part of the AMI evaluation

criteria to determine the lowest cost alternative? If not, why not?

- 31.2 Would FortisBC consider adding training and testing, startup and commissioning assistance to the AMI evaluation criteria?
- 31.3 If the Commission issues a conditional Order for this Application and after the Contract Negotiations have been completed, would FortisBC consider to re-baseline the project cost and financial data before proceeding?
- 31.4 Please provide a more in-depth explanation of each optional function in the AMI evaluation criteria and why they are classified as optional.

32.0 Project Schedule

Reference: Exhibit No. B-1, 7. Project Schedule, Section No. 7.2, Project Management, p. 41

- 32.1 Please provide the name and related AMI experience of the Project Manager.

33.0 Project Schedule

Reference: Exhibit No. B-1, 7. Project Schedule, Section No. 7.3, Risks and Mitigation, p. 42

- 33.1 Would FortisBC please complete a Consequences/Impacts Criteria matrix as shown below and provide an item qualitative assessment of its relative impact and the likelihood of its occurrence and include the magnitude cost of each item? Probability/Likelihood Criteria is to be provided in table below.

Consequences/Impacts Criteria				
Item	Given the Risk Is Realized, What Is the Magnitude of the Impact?			
	Level	Performance	Schedule	Cost
Batch failures of the AMI meters				
Large Scale failure of the AMI communication infrastructure				
Failure to move data correctly to the CIS Billing System				
Lost AMI readings				
Recruitment of Temporary Resources to read meters				

Probability/Likelihood Criteria (Example)	
Level	What is the Likelihood the Risk Event Will Happen?
a	Remote
b	Unlikely
c	Likely
d	Highly likely
e	Near certainty

33.2 Has FortisBC established any project or post implementation contingency plans and costs? If not, why not?

34.0 Project Schedule

**Reference: Exhibit B-1, Section 7.3, p. 42
Project Schedule – Risks and Mitigation**

FortisBC states meter readers will still be available to manually read meters if required and that temporary resources will be recruited to manually read meters in the case of a long-term failure.

34.1 How long does FortisBC expect to maintain workers to manually read meters after implementation of AMI?

34.2 Are the costs of maintaining manual meter readers included in the impact analysis?

34.3 What is the risk of long-term failure and what would be the cost of temporary resources to manually read meters in the event of failure?

35.0 Alternatives Considered

Reference: Exhibit B-1, Section 5.7 (Other Jurisdictions), pp. 26-27

35.1 Does FortisBC have any information from other jurisdictions regarding variances between initial

cost estimates and final (actual) installed costs? If it does, please provide it.

36.0 Alternatives Considered

**Reference: Exhibit B-1, Section 8, p. 43
Alternatives Considered**

- 36.1 Please describe in detail the status quo alternative assumed by FortisBC.
- 36.2 Please provide the base year for the dollar estimates referred to in this section and please provide real dollar equivalents in a common base year.

37.0 Public Consultation

Reference: Exhibit No. B-1, 9. Public Consultation, p. 43

- 37.1 Please explain if FortisBC has informed all customers within its service area. If not, why not?
- 37.2 What issues were raised by the municipal customers and First Nations within the service territory with regard to the AMI Project?

38.0 Public Consultation

Reference: Exhibit B-1, Section 5.6 (Consultation with Other Utilities in FortisBC Service Territory), p. 26

- 38.1 Has FortisBC approached any of these entities with a view to sharing AMI communications infrastructure and the associated costs? If not, why not?

39.0 Other Applications and Approvals

Reference: Exhibit No. B-1, 10. Other Applications and Approvals, p. 43

FortisBC states “Approvals from agencies other than the BC Utilities Commission are not required”.

- 39.1 Does FortisBC require Temporary Permission from Verification and Sealing of Electricity Meters (ENF-10), which allows utilities implementing AMI over a shortened timeframe to reduce the number of meters exchanged under existing programs from Measurement Canada? Please explain.

40.0 APPENDIX B: Net Present Value Revenue

Reference: Exhibit No. B-1, Appendix B: Net Present Value Revenue Requirements, p. 48

- 40.1 Has FortisBC allowed for replacement cost of AMI and associated equipment, software and hardware in the Revenue Requirements Template?
- 40.2 Please explain line 16 in the template. Where is this avoided cost (2x\$250,000) shown in the Application?
- 40.3 If this entry on line 16 in the template is the Avoided Handheld Upgrades on page 23 of the Application, then these are AMI soft costs and should not be included.

- 40.4 Also the amount claimed on page 23 of the Application is \$1.25 million not \$500,000 as per line 16 in the template. Please explain.
- 40.5 As the Avoided Handheld Upgrades are future avoided costs beyond the completion date of the project, they will need to be added into the LLC table required by the other IR.