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December 19, 2007

Via Email
Original via mail

Ms. Erica M. Hamilton
Commission Secretary
BC Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, BC V6Z 2N3

Dear Ms. Hamilton:

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

Please find enclosed for filing 20 copies of FortisBC Inc.'s Application for a Certificate of Public Convenience and Necessity for the Advanced Metering Infrastructure Project pursuant to Sections 45 and 46 of the Utilities Commission Act.

Sincerely,

David Bennett
Vice President, Regulatory Affairs
and General Counsel

FORTISBC

AN APPLICATION FOR A
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

Advanced Metering Infrastructure (AMI) Project

December 19, 2007

FORTISBC INC.

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EXECUTIVE SUMMARY

At FortisBC Inc. ("FortisBC" or "the Company") the reading of electric meters to determine consumption for billing purposes has been a largely manual process for more than 100 years. Over 99 percent of FortisBC meters are read by meter readers who drive to every part of the service territory and manually record consumption at each meter.

Various improvements have been made to this fundamental business process over the past 20 years, but Advanced Metering Infrastructure (AMI) provides significant opportunities, including the ability to:

- reduce meter reading cost exposure to higher than average inflationary costs for labour and fuel;
- implement future innovative rate structures in support of the 2007 BC Energy Plan (the Energy Plan) where it is appropriate to do so;
- affordably obtain meter readings more frequently and on more flexible reading dates;
- eliminate the use of estimates and increase the level of accuracy of customer bills;
- reduce exposure of FortisBC employees to safety risks; and
- read meters without having to access customer premises.

Until recently, a wide-scale deployment of remotely-read meters that takes advantage of these opportunities has not been economically viable.

The AMI Project proposes to replace all existing FortisBC meters with AMI-enabled meters and implement AMI throughout FortisBC's service territory over a three year period. FortisBC will require a capital investment of $31.3 million to deploy AMI technology.

The implementation of AMI has a net present value impact on rates of -0.09 percent over a twenty-five year period. Details on the rate impact by year can be found in Table 6.6.

The business benefits of AMI fall into one of three categories: those that will yield operational savings, those that the Company believes to be important but are difficult to quantify (soft benefits), and those benefits that could be achieved through future enhancements to the AMI. The Company expects to realize net annual operational savings of approximately $2.59 million beginning in the first year after Project completion (2011). FortisBC intends to reduce the Operating and Maintenance (O&M) component of the revenue requirements by the full amount of operational savings resulting from AMI implementation and will address this aspect as part of the relevant revenue requirement process.

The basic elements of the Project include:

- the purchase and installation of solid-state, AMI-enabled meters;
- the design, purchase and installation of a network infrastructure capable of collecting remote readings and communicating them back to the Company; and
- upgrading the Company's information technology (IT) infrastructure to accept, bill and report on the interval readings provided by AMI.

Post implementation, the Company expects to deliver operational savings and other related benefits in:

- meter reading;
- customer service;
- transmission and distribution (T&D) operations;
- T&D planning;
- finance and forecasting; and
- revenue protection.

In the future, AMI will support several policy initiatives identified in the Energy Plan. Specifically, AMI will:

- reduce greenhouse gas emissions by an estimated 217.6 tonnes annually due to the elimination of vehicle use for reading meters;
- permit FortisBC to pursue cost effective and competitive demand side management opportunities, and to explore new rate structures that promote energy efficiency and conservation; and
- provide customers access to consumption information to raise awareness and provide the tools necessary to conserve energy.

The Company is seeking approval to proceed with the implementation of AMI technology that will satisfy all of the identified needs and deliver the benefits identified within this Application.

1. THE APPLICATION

FortisBC hereby applies (the Application) to the British Columbia Utilities Commission, (the Commission) pursuant to Sections 45 and 46 of the Utilities Commission Act, for a Certificate of Public Convenience and Necessity (CPCN) for the AMI Project (the Project) at a cost of approximately $31.3 million.

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.

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.

1.1 Proposed Regulatory Process

The Company believes that the nature of this Project is such that a written process consisting of Information Requests from a Commission Panel is appropriate.

The following regulatory timetable is suggested.

Commission Information Request No. 1 (IR1)	January 29, 2008
FortisBC Response to Commission IR1	February 14, 2008
Commission Information Request No. 2 (IR2)	February 27, 2008
FortisBC Response to Commission IR2	March 14, 2008

2. THE APPLICANT

2.1 Name, Address, and Nature of Business

FortisBC Inc.
1975 Springfield Road, Suite 100
Kelowna, BC V1Y 7V7

FortisBC is an investor-owned, integrated utility engaged in the business of generation, transmission, distribution and sale of electricity in the southern interior of British Columbia. The Company serves more than 152,000 customers directly and indirectly, and employs approximately 570 full time and part time people. FortisBC was incorporated in 1897 and is regulated under the Utilities Commission Act of British Columbia.

2.2 Financial and Technical Capacity

FortisBC owns assets of approximately $850 million, including four hydroelectric generating plants with a combined capacity of 223 megawatts and approximately 6,750 kilometres of transmission and distribution power lines for the delivery of electricity to major load centers and customers in its service area.

2.3 Contact Persons

Regulatory/Legal Contact:

Dennis Swanson
Director, Regulatory Affairs
1975 Springfield Road, Suite 100
Kelowna, BC V1Y 7V7
Phone (250) 717 0890 Fax (866) 605 9431

Technical Contact:

Dawn Mehrer
Manager, Customer Service
1975 Springfield Road, Suite 100
Kelowna, BC V1Y 7V7
Phone (250) 469 8011 Fax (866) 429 9033

3. PROJECT NEED

3.1 Description of the Existing System

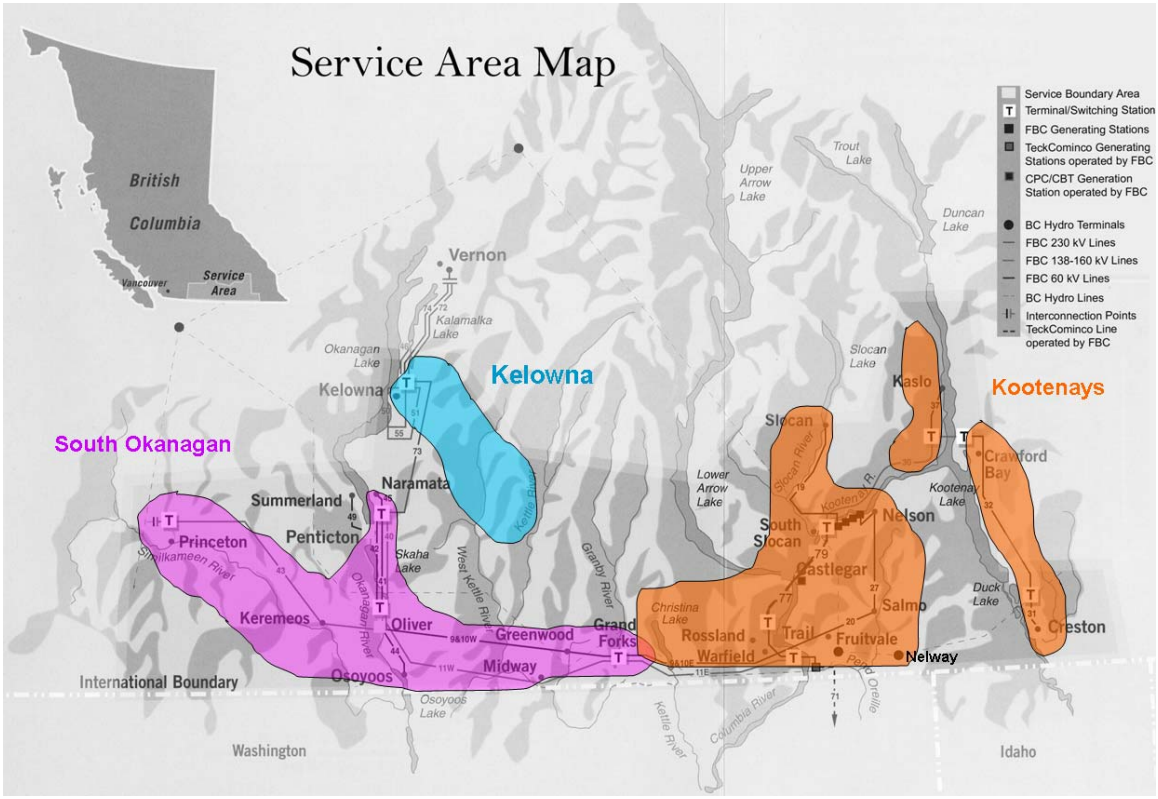
The meter reading workforce is comprised of 20 employees including 3 lead-hands, 14 regular full time meter readers, 1 regular part time meter reader, a meter data management analyst and a supervisor. Meter readers are members of the International Brotherhood of Electrical Workers Union, Local 213, the meter data management analyst is a member of the Canadian Office and Professional Employees Union, Local 378, and the supervisor is a non-union position.

The meter data management analyst is responsible for the upload of meter readings to the billing system and for administrative support to the meter reading function. The meter reading supervisor is responsible for the day-to-day supervision of the meter reading staff including scheduling, resource management and the safety of the meter readers.

The meter reading function is organized geographically into three areas; Kelowna, South Okanagan and the Kootenay regions. Each area is responsible for a set of routes which are scheduled each day for approximately 20 read-days per month.

Figure 3.1 below shows the FortisBC service territory and indicates each of the current meter reading regions.

Figure 3.1: Service Area Map



Currently, over 99 percent of FortisBC meters are manually read by a meter reader, requiring an on-site visit to each meter location. The readings are recorded in a handheld meter reading unit, and at the end of each day the meter reader must return to an office and upload the readings into the Customer Information System (CIS) billing system.

In addition to the regular schedule, readings are also taken each time a customer requests a move in or out of a premise. Re-reads may be required to verify or correct previous readings. These additional readings, also known as soft reads, are printed daily at each of the local FortisBC offices and assigned to the readers by the lead-hands. Once the readings have been manually recorded on paper, they are faxed to the contact center where agents key the readings into the CIS billing system. If a soft read is not provided on the exact day the customer is moving, the agent manually calculates an estimate and enters it into the CIS billing system. The costs associated

with the soft read process represent approximately ten percent of the total meter reading costs.

The timely and accurate collection of meter data requires a meter reading department comprised of a staff of twenty employees with all but one of those employees requiring a company vehicle. This number is partly driven by the low density of the customer base. The average turnover rate for meter readers over the last 4 years was 35 percent per year. It is anticipated that this turnover rate will be slightly higher in the next five years due to the competitive labour market and increasing opportunities in other areas of field operations. It takes 90 days before a new meter reader attains an acceptable level of knowledge, productivity and accuracy. Exposure to labour and fuel costs means that meter reading is subject to higher-than-average inflationary pressures.

Technical support for the meter reading handheld units is provided via a yearly maintenance contract with the vendor as well as support from an internal IT resource.

Overall, 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.

3.2 Customers Served

The AMI implementation will target all direct FortisBC customers now served by the manual meter reading process. This will encompass approximately 108,000 meters.

3.3 Summary

The need for an AMI implementation is driven by a number of factors, the most important of which are directly related to the practices and costs of conventional meter reading. The primary limitations of the existing process are as follows:

- Meter reading is costly and is exposed to higher than average inflation due to labour and fuel components;
- Existing meters are not capable of adapting to non-standard rate structures;
- Meter readings can be affordably obtained on only a fixed bi-monthly schedule;
- FortisBC employees are exposed to safety risks;
- Access to customer premises is required, which can be inconvenient to customers and often requires the use of billing estimates.

The costs of AMI technologies have declined to a point where these limitations can now be addressed with an AMI implementation. Moreover, the enhanced customer service benefits associated with a complete AMI implementation will help to deliver better and more cost-effective services that are expected to improve customer satisfaction.

4. PROJECT DESCRIPTION

This Project proposes to replace all existing meters with AMI-enabled meters and implement an AMI throughout the Company's service territory over a three year period. The three years includes one year for the approval and Request for Proposal (RFP) process and a two year deployment. Components of this Project include remote reading capability for all electric meters, installation of a communications system to transmit meter data and integration of the AMI system with FortisBC's information systems.

4.1 Benefits of AMI

The following Project benefits address the business needs listed in section 3.3. The benefits of AMI fall into one of three categories: those that will yield quantifiable operational savings, those that are important but are difficult to quantify (soft benefits), and those benefits that will be available in the future. FortisBC expects to realize net annual operational savings of approximately $2.59 million in the first year after Project completion (2011).

4.1.1 AMI Benefits Yielding Operational Savings:

Total operations savings from the Project are summarized in Table 4.1.1 below.

Table 4.1.1: Total AMI Cost Savings

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

Note: The annual savings calculated here are related to 2011 dollars and forecast customer growth.

4.1.1.1 Meter Reading Savings

The implementation of AMI has a direct impact on meter reading costs by eliminating the need for certain labour and non-labour costs associated with regular scheduled meter reads and soft reads. Labour cost savings include salaries and benefits for 18 meter readers, the supervisor and administrative support.

Non-labour cost savings include vehicle expenses, general administrative expenses (meals, travel, phones etc.) and the cost required for the annual support for the handheld units from the vendor.

The following chart indicates the total annual cost savings related to meter reading after the full deployment of AMI technology.

Table 4.1.1.1: Meter Reading Cost Savings

	Annual Savings ($000s)
Total Operating Labour (Incl. Benefits)	1,864
Total Non-Labour Operating	136
Vehicle Expenses	462
Handheld Support	29
Total Annual Savings	**2,491**

Note: The annual savings calculated here are related to 2011 dollars and forecast customer growth.

4.1.1.2 T&D Operational Savings

In addition to direct meter reading costs, there are other T&D Operational savings to be realized from having the AMI system in place as shown in Table 4.1.1.2 below.

Table 4.1.1.2: Operations Cost Savings

	Annual Savings ($000s)
Reduced Meter Exchanges	293
Outage and Restoration	25
Total Annual Savings	**318**

Note: The annual savings calculated are related to 2011 dollars and forecast customer growth.

Reduced Meter Exchanges: To comply with Measurement Canada standards, electronic meters require testing on 16 percent of the meters at year ten and year sixteen. Because nearly the entire meter population will be replaced with new meters, FortisBC expects to avoid meter compliance exchanges and save $293,000 per year for ten years post implementation. After year ten, the cost of meter exchanges is expected to return to the previous level of expenses at $293,000 per year

Outage and Restoration: A full deployment of AMI will provide real time feedback that will pinpoint the location and number of customers without power. This information will facilitate improved identification of the scope of the outage and assist with the prioritization of restoration. In addition, real time power outage notification will help to identify any "nested" outages within larger outages after power has been restored. This will ensure that power is restored to 100 percent of affected customers prior to work crews leaving the area.

The AMI system will provide confirmation of the status of a customer's electrical supply at the meter when an interruption is reported. Where the meter status confirms that the interruption is not related to FortisBC's system, unnecessary dispatching of crews into the field can be avoided.

This information related to outage management, will not only enhance customer satisfaction, but is expected to reduce operating costs by approximately $25,000 per year.

4.1.1.3 Customer Service Savings

Customer Service cost savings result primarily from the improved data provided by the AMI system. These are reflected in Table 4.1.1.3 below.

Table 4.1.1.3: Customer Service Cost Savings

Cost Category	Annual Savings ($000s)
Reduced Calls Due to Billing Issues	169
Reduced Billing Errors Requiring Correction	96
Data Entry for Soft Reads	42
Total Annual Savings	**307**

Note: The annual savings calculated here are related to 2011 dollars and forecast customer growth.

Reduced Calls Due to Billing Issues: In 2006, FortisBC received almost 53,000 billing enquiries from customers. With more accurate readings and reduced estimates that will be provided by AMI, it is estimated that billing related calls will decrease by at least 25 percent resulting in an increase to customer satisfaction and a reduction in costs associated with these calls. The cost savings are expected to be $169,000 in the first year post-implementation.

Reduced Billing Errors Requiring Correction: In 2006, FortisBC corrected approximately 14,000 bills relating to incorrect meter readings or billing estimates. With the implementation of AMI, it is anticipated that these errors will be almost completely eliminated. This will result in cost savings of $96,000 per year which is related to the correction of these error types.

Data Entry for Soft Reads: The daily soft read process would be completed using an interface with the AMI system rather than manually recording the readings on paper and then faxing the information to agents at the Contact Center. This process will result in a more efficient process and in cost savings of approximately $42,000. This will also serve to increase the level of accuracy for these readings thereby enhancing customer service.

4.1.1.4 Operating Expenses AMI:

Support of the AMI system will require additions to operating expenses. The total expected annual operating expenses are approximately $524,000. These expenses are detailed in Table 4.1.1.4.

Table 4.1.1.4: Summary of Annual Ongoing Operating Expenses

	Estimated Costs ($000s)
(i) Labour	296
(ii) Software Service Agreement	38
(iii) Communications	142
(iv) Equipment Replacements	48
Total Operating Expenses	**524**

Effectively operating an installed AMI system requires three new positions to manage the operation and maintenance of these new systems. The following additional labour operating expenses are required for the AMI system:

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.

One additional Customer Service employee will be required to manage the data within the AMI system.

The total labour costs are expected to be approximately $296,000 per year.

Ongoing software service agreement costs are expected to be approximately $38,000 per year.

Ongoing communications costs relating to getting the AMI data back from the meters is expected to be approximately $142,000 per year.

Contingency funds related to equipment replacements and maintenance is budgeted at $48,000 per year.

4.1.2 AMI Soft Benefits:

As noted in the previous section, AMI will result in direct operations savings. In addition, FortisBC expects that the AMI system will result in a number of additional benefits that are difficult to quantify and are referred to as "soft benefits", including the following:

Table 4.1.2: AMI Soft Benefits

Benefit Type	Benefit Description
Customer Service	Reduced Estimates Due to Missed Reads
	Reduced Equal Payment Plan Estimates
	Actual Reads on the Day of the Move In / Out
	Access to Customer Premises not required
	Improved High Bill Resolution
	Consolidated Billing Options
	Flexible Billing Dates
	Customer Load Profiles
	Enhanced Meter Reading Accuracy
Operations	Virtual Disconnect on Move-Out
	Improved Accuracy of Outage Reliability Statistics
	Avoided TOU Meter Maintenance
	Enhanced System Modeling
	Improved Employee Safety
	Targeted Upgrades
Reporting	Improved Financial Reporting and Load Forecasting
Revenue Protection	Quality Check During Installation
	Ease of Reconciliation from Feeder to Meter

Reduced Estimates Due to Missed Reads: Estimated bills are often a source of customer dissatisfaction. In the FortisBC second quarter 2007 Customer Satisfaction Survey, the percentage of customers indicating their satisfaction with the accuracy of metering reading as 9 out of 10 or higher (10 being most satisfied) was 57 percent. Despite reading over 97 percent of meters when scheduled in

2006, approximately 17,400 scheduled meter reads were still estimated due to various reasons (staffing, access, severe weather conditions).

Meter read estimates are based on historical information and do not reflect home improvements or changes in consumption patterns. For these reasons, it is difficult to make estimates accurate. AMI has the capacity to eliminate the practice of estimating meter readings by ensuring that 100 percent of all meters in the service territory can be read when scheduled, regardless of weather conditions or meter location.

Reduced Equal Payment Plan Estimates: Currently, customers on the Equal Payment Plan receive an estimated bill every second month. This can cause confusion for customers when the estimate is inaccurate and can require billing corrections once the meter is read the following month. With AMI, customers will receive an actual reading each month which would provide a more accurate status of the equal payment plan balance. It is estimated that there are approximately 75,000 estimates annually required by the equal payment plan option.

Actual Reads on the Day of the Move In / Out: It is difficult to complete soft readings on the exact day of the customer move. The actual read can sometimes be five to seven days later which is then adjusted by the agent entering the reading. Full deployment of AMI would ensure that opening and closing bills would be based on actual readings.

Access to Customer Premises not required: Meter readers must access customer property in order to obtain manual meter readings. Premises with an access issue generally receive estimates until the access problem can be resolved. In 2006, there were over 60 customer complaints related to the meter reading department, the majority of which were due to private property access issues. The AMI Project will minimize the need for employees to access customer premises. This reduces access issues with customers such as keys, locked gates, pass codes and dogs. It also reduces the risk of damage to customer property due to meter readers being on site.

Improved High Bill Resolution: The AMI system includes an enhancement that allows customers to use a secure login over the internet to view their meter read data in detail. It is anticipated that access to this data will help facilitate quicker resolution of high bill inquiries. In addition, contact centre staff will be able to view individual meter data when addressing customer high bill complaints, identifying the date and time when the high consumption occurred. In many cases, this detailed consumption information is expected to satisfy customer concerns.

Consolidated Billing Options: In the past, FortisBC has received requests from customers to receive a single bill for businesses that have multiple locations under the same ownership. At times, these services may be in different locations, on different meter reading routes which are read at different times of the meter reading cycle. Because of this, FortisBC has been unable to accommodate the majority of these requests. AMI technology will provide the ability to read meters at different locations simultaneously to facilitate bill consolidation for these customers.

Flexible Billing Dates: AMI would potentially allow customers to choose a billing date that meets their needs rather than be restricted to the date dictated by their route.

Customer Load Profiles: Currently, when customers are profiled by the PowerSense group, a separate meter is installed at the premise to monitor consumption patterns. This information is then used to help explain high bill issues or to suggest energy efficiency improvements. An AMI system providing readings at regular intervals would allow FortisBC staff to profile a customer's usage in a less obtrusive and more accurate way. Not only would this be more convenient for customers, but would also reduce the time required to install/remove the meter, complete the analysis and provide recommendations.

Enhanced Meter Reading Accuracy: The manual nature of the current meter reading process can cause errors due to the meter being misread or due to a keying error by the reader. Although major errors are most often caught by edits in the billing program, smaller errors may go un-noticed until the following bill is issued and

it needs to be corrected. The accuracy of meter readings provided by the AMI system will ensure increased customer satisfaction and reduce the number of errors on customer bills.

Virtual Disconnect on Move-Out: The AMI system can be used to flag accounts where the previous account holder has moved out and no new account holder has applied for service. The system can then identify which accounts show electrical consumption over a certain limit. Only premises that are identified as exceeding a consumption threshold will be targeted for physical disconnection thereby reducing the number of disconnect and reconnect visits required.

Improved Accuracy of Outage Reliability Statistics: The data provided by AMI would provide more exact “time off” and “time on” for outage reliability and restoration statistics.

Avoided TOU Meter Maintenance: The AMI solution supports two-way communication allowing TOU meters to be re-programmed for changes in rate periods, time buckets or daylight savings times without physically visiting the meter. Without AMI, these meters must be physically removed, re-programmed and re-sealed through the certification program. This process is expensive and is inconvenient for the customer.

Enhanced System Modeling: An AMI system provides highly granular end-use load data, allowing modeling of the electrical network to a much higher degree of accuracy than is available today.

Planning relies on “system modeling” to predict performance of the network. As with any modeling exercise, the results are only as good as the inputs. The system planning model is comprised of the electrical network and load transported on that network. The network is defined by the electrical potential and impedance characteristics of the generation, wires and transformers and the connected load. Load is the end use of real and reactive power by the customer.

Currently, end use load distribution on a feeder is estimated as a percentage of the connected transformer capacity. AMI has the potential to improve modeling by providing system planners with precise average and interval loads at each metering point. In conjunction with substation automation, these improvements would allow thermal loading, voltage and loss performance to be calculated to a higher degree of accuracy.

Improved Employee Safety: The meter reading environment inevitably exposes employees to potential dangers including vehicle accidents, walking hazards and dog bites. During the last three years, there have been 31 safety incidents within the meter reading department, all of which would have been avoided with an AMI implementation.

Targeted Upgrades: AMI in conjunction with the monitoring and data collection equipment being installed in new FortisBC distribution substations (and, pending approval of the FortisBC Distribution Substation Automation Project filed August 28, 2007, in its legacy substations) would provide information enabling the Company to target specific elements of the electrical distribution infrastructure for upgrades and future system loss improvements.

Improved Financial Reporting and Load Forecasting: AMI technologies allow for a more accurate calculation of unbilled usage and overall system losses for use in financial reporting and load forecasting. This benefit is significant as the results derived from AMI data can be considered to be almost exact as opposed to the approximate results provided by the current estimating routines.

Quality Check During Installation: With AMI, it is expected that the majority of the meter population would be replaced over the implementation period. The physical replacement of the meters will provide an opportunity to identify and resolve revenue protection and metering issues.

Ease of Reconciliation from Feeder to Meter: AMI, again in conjunction with substation automation, will permit synchronized readings from all meters on one feeder and complete a reconciliation to determine losses or other errors. Currently, this process is difficult to complete because it is not possible to simultaneously read all meters on a single feeder and calculate overall consumption at the feeder. In addition, the current process may result in meter reading errors which can increase the difficulty in reconciling the data.

4.1.3 Future Benefits

The following benefits are expected to be available after implementation of the AMI Project subject to additional cost requirements and approvals. This information is not discussed at length in this Application as the costs for their implementation is not included in the Project estimates

Innovative Rate Structures: Two-way communication with meters and the ability to obtain interval readings on those meters enables rate structures to support cost effective and competitive demand side management opportunities.

Load Control: AMI infrastructure would allow for a program to add load controlling devices into customer premises. These devices would be attached to appliances such as hot water heaters and would provide FortisBC with the ability to reduce the consumption used by the appliance during critical peak times. This can be done on a regular schedule (on peak versus off peak) or real-time as the system is experiencing a peak load.

Remote Disconnect / Reconnect: Customers that require a disconnection of service for non-payment or otherwise currently require a visit from a technician in the field. For an additional cost per meter, the ability to disconnect or reconnect the service from the office can be added. Although the cost of this option is relatively high, there may be opportunities to target this functionality into hard to reach areas or on premises that have been recently disconnected for non-payment so that the reconnection can be done remotely.

Meter Reading Frequency: The Company is currently providing the majority of customers with a bi-monthly meter reading. Under the current meter reading process, increasing the frequency of readings would require significant increases in both cost and the number of meter reading staff. The implementation of AMI would facilitate reading meters on a more frequent basis with less incremental cost than the existing process.

Avoided Handheld Upgrades: The AMI Project avoids the requirement to replace handheld meter reading equipment currently supplied by Itron Inc. This equipment is normally replaced every five years. The next scheduled replacement and associated software upgrade in 2013 would be avoided at an estimated savings of $250,000 in capital. This replacement would again be scheduled for replacement every five years thereafter for a total of $1.25 million in avoided capital expenses.

5. ENVIRONMENTAL AND SOCIAL IMPACT

5.1 The 2007 BC Energy Plan

The policy actions set out in the Energy Plan support the deployment of "smart metering" as a critical element in attaining meaningful reductions in electrical consumption. In the 2007 Throne Speech, the use of "in-home smart metering" was identified as a means to help "homeowners measure and reduce their energy consumption".

Numerous policy actions focused on conservation are presented within the Energy Plan including encouragement for utilities to pursue cost effective and competitive demand side management opportunities, and to begin exploring new rate structures that promote energy efficiency and conservation. The future possibilities afforded by AMI, such as real time pricing, load control, and accurate consumption data will help to not only provide customers with the necessary encouragement to conserve electricity, but also the potential to reduce the financial burden of electricity as a component of overall energy costs.

5.2 Environmental Impact

Based on preliminary reviews, the Company has identified no negative environmental or community impact, including special waste or disposal considerations from the proposed AMI Project.

In addition, at least one positive environmental impact will result. FortisBC's service territory has a number of attributes including low customer density, considerable variations in altitudes and weather conditions, and a largely radial road network that result in a significant amount of vehicle use. Although walking is employed where possible, a meter reader's primary means of traveling between metered service points is by vehicle.

With FortisBC meter reading vehicles driving over 400,000 km's per year and currently consuming approximately 85,000 litres of gasoline, greenhouse gas emissions (CO_2e)

are estimated at 217,600 kilograms or 217.6 tonnes. AMI has the capacity to completely eliminate this source of emissions as a component of FortisBC's overall greenhouse gas emissions.

5.3 Health and Safety

The health and safety interests of the public, employees and contractors include community and environmental values, and are well integrated into the planning, tendering and audit protocols for the AMI Project.

5.4 First Nations Consultation

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.

5.5 Employee Impacts

AMI will involve a reduction of staff – 18 meter readers, a meter data management position and one supervisor. The meter reading positions are represented by the International Brotherhood of Electrical Workers, the meter data management position is represented by the Office and Professional Employees Union and the supervisor position is non-union. The current plan calls for a 25 percent reduction in meter reading staff in year two and the remaining 75 percent being reduced in the first year post implementation (year 3).

Affected staff members were informed verbally in late 2006 that the Company is currently investigating AMI technologies. FortisBC has compiled a list of the affected employees and their skills, education and experience. The Company will strive to reduce staff through natural attrition and by assisting capable employees to find employment elsewhere in the organization.

5.6 Consultation with Other Utilities in FortisBC Service Territory

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 Project as requested, with none indicating any concerns.

5.7 Other Jurisdictions

The Company has discussed AMI implementations with a number of other utilities including BC Hydro, FortisAlberta, FortisOntario, Chatham-Kent Hydro and Cambridge and North Dumfries Hydro. The Company will continue exchanging information with other utilities, but is satisfied that the technologies and requirements proposed in this application are field-proven and consistent with other utilities' proposals.

British Columbia: BC Hydro and the provincial government have both have indicated their intention to provide "smart metering" to all customers in BC Hydro service territory before 2012. BC Hydro has been conducting a Conservation Research Initiative since November 2006 that is studying how AMI and a variety of conservation rates will affect the consumption of electricity.

Alberta: By mid-2007, FortisAlberta had successfully deployed approximately 26,000 automated meters as part of a pilot program. FortisAlberta selected primarily a PLC AMI technology for their service territory. Earlier this year, FortisAlberta negotiated a settlement and is awaiting approval from the Alberta Energy Utilities Board for approval to proceed with the installation of automated meters for the remaining customers. FortisBC continues to work closely with FortisAlberta, monitoring their results and exchanging AMI-related expertise and information.

Ontario: The Ontario government has committed to install "smart electricity meters" in 800,000 homes and small businesses by the end of 2007 and throughout Ontario by 2010. The primary purpose of the wide-scale deployment is to allow flexible, time-of-use pricing for electricity. FortisOntario is currently preparing to deploy their smart

metering system, and with FortisBC has been monitoring the installations currently underway or complete at the various Local Distribution Companies (LDCs). The Company has visited and talked with several LDCs in Ontario, representing a variety of AMI technologies. Encouragingly, all of the LDCs report successful installations of their smart meters.

6. PROJECT COST

6.1 Assumptions and Data Sources

The following assumptions have been made in the cost analysis provided below:

- Discount Rate: 10.0%
- Internal Labour Escalation: 3.0%
- Inflation for Vehicle Costs: 5.0%
- General Inflation Rate: 2.0%
- Composite Depreciation Rate: 4.21%
- Composite CCA Rate: 14.39%
- Combined Income Tax Rates:

2008	31.5%
2009	31.0%
2010	30.0%
2011	28.5%
2012 onwards	27.0%

6.2 Cost Summary

The Company estimates it will require a capital investment of $31.3 million for the acquisition and deployment of FortisBC's AMI Project technology.

The Company selected two vendors representing the two main technologies for cost comparison purposes in this Application. An experienced AMI consultant was retained to work with the Company and each of the two vendors to establish detailed quotes. The consultant retained by the Company has over 15 years experience in delivering AMI strategies for utility clients. The consultant has recently worked with Saint John Energy and FortisAlberta on their AMI business cases, and in 2006 completed the Specification and RFP for the Province of Ontario "smart metering" initiative.

The vendors were provided latitude and longitude coordinates of all of FortisBC's meter locations as well as locations of substations and towers in the area. From this data, the

vendors provided a detailed listing of equipment required to install an AMI system in FortisBC's service territory. The AMI consultant then reviewed these quotes and based on experience, determined that these estimates reasonably represent the costs of an AMI system. The consultant also assisted with estimating internal costs.

6.3 Cost Details

Table 6.3 below provides a summary breakdown of the required capital expenditures.

Table 6.3: Summary of Capital Costs

	Costs ($000s)
(i) Meters and Modules	19,507
(ii) Network Infrastructure	6,700
(iii) IT Infrastructure and Upgrades	1,483
(iv) Project Management	2,701
AFUDC	950
Total Capital Cost	**31,341**
(v) Non-Project Costs	
Incremental Meter Costs	1,336
Avoided Future Capital Costs	(1,250)

(i) Meters and Modules:

The Company estimates that the total costs for the purchase and installation of meters and modules will be $19.5 million.

Table 6.3.1 below indicates the timing of the expected deployment of these meters:

Table 6.3.1: Meter Deployment

	2008	2009	2010	Total
Meters Installed Per Year	0	39,401	68,760	108,161
Capital Expenditures Per Year for Meter Deployment ($000s)	0	7,339	12,167	19,506

An RFP will be issued for the disposal of the existing meter population. It is expected that this activity will be cost neutral with the cost for bins and transportation being offset by the value earned in the way of the scrap material.

(ii) Network Infrastructure

The estimated cost of the network infrastructure required to support the AMI system is approximately $6.7 million. This reflects the cost of additional network equipment that will be required to collect data from each of the meters and communicate that data back to FortisBC.

(iii) IT Infrastructure and Upgrades

To effectively deploy the AMI system and to be able to attain the benefit levels identified in this application, several information technology upgrades must be made. These costs total $1.48 million and are comprised of the elements below.

6.3.2: Summary of IT Infrastructure Costs

	Estimated Costs ($000s)
Software and Reporting Tools	311
Interfaces to Existing Systems	279
Billing System Enhancements	530
Work Order Management Interface	235
Hardware Requirements	128
Total IT Infrastructure Costs	**1,483**

Software and Reporting Tools

The Company expects that the AMI software will be used as the main repository for all data relating to the AMI system. Only billable readings will be transferred to the CIS billing system. In addition to acting as a repository, it is also expected that the AMI software will have the following functionality:

- Alert for momentary outages to identify possible tamper situations;
- Flag "no expected usage" accounts to permit investigation when consumption occurs;
- Identify communications issues related to the AMI system;
- Provide the ability for ad-hoc reporting related to all AMI data stored in the AMI software;
- Interface to the CIS and Work order management systems as required; and
- Identification of possible power diversion by comparing usage data between a group of meters and the feeder or substation linked up to those meters.

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. This will allow additional time to review and refine the functionality of the AMI software as well as limit the number of separate processes required for meter reading and billing during deployment.

The cost of the AMI software solution is expected to be $311,000.

Interfaces to Existing Systems

Several interfaces with the Company's current systems will be required to support the AMI system. The primary interfaces are as follows:

- An interface between the AMI software and the CIS System will be required for the CIS System to poll the meters and have the readings populated into the billing system at the time of billing;

- An interface will be required to synchronize the customer information in the AMI software to that in CIS. Although this depends largely on the technology, some information such as premise address and customer name may have to be passed between the two systems and therefore synchronized; and
- An interface between the AMI software and the Company's field mapping system to provide improved outage information.

The cost of these upgrades is expected to be $279,000.

Billing System Enhancements

Changes will be required to the CIS Billing System to accept and bill readings provided by the AMI system. In addition, the billing system currently only has the ability to take a start and to estimate partial period consumption on a pro-rata basis. For example, if a rate change happens mid-cycle, the system determines billing by pro-rating the amount of usage based on the number of days at each of the different rates. With AMI, actual reads will be available on those rate change dates. The CIS System needs to be enhanced to support "interval billing" or the ability to use these verified reads to separate a billing period between rate changes.

These enhancements are expected to cost $530,000.

Work Order Management Interface

Due to the high volume of meter exchanges during the deployment period, a dispatch and work management tool that integrates with the CIS Billing System will be required to manage readings and control the flow of meters. It is expected that this interface will cost $235,000.

Hardware Requirements

Additional hardware required to support the AMI software, interfaces and increased data storage is expected to cost $128,000.

(iv) Project Management

Project management resources, design, testing and training are expected to be $2.7 million.

Project management resource costs include a full time project manager and four project lead resources that will be required at various stages of the Project. They also include a part time AMI consultant and business analyst to assist in the RFP and project planning stages. These resources are expected to cost $2.0 million which includes both the labour costs and associated staff expenses such as travel.

Vendor on-site training related to the AMI system will be provided to the Project team and is expected to cost $41,000.

Project planning, network design and testing and is expected to be $660,000.

(v) Non-Project Costs

Incremental Meter Costs

Incremental capital costs will be incurred for new meter installations associated with customer growth from 2009 onwards. This is due to the fact that AMI meters are more expensive than conventional meters. The total incremental cost of these meters is expected to be $1.34 million over a ten year period.

Avoided Future Capital Costs

As discussed in section 4.3 of this application, the AMI Project avoids the requirement to replace handheld meter reading equipment currently supplied by Itron Inc. There will be avoided upgrades every five years starting in 2013 for a total capital savings of $1.25 million.

6.5 Accounting Treatment of Existing Meters:

The Company is requesting an Order of the Commission approving its proposed accounting treatment for its existing meters, which are not AMI-compatible and must be retired. This section deals with the accounting treatment of the existing meters that will be replaced by AMI enabled meters. Under Canadian Generally Accepted Accounting Principles (GAAP), section 3475 of the CICA Handbook provides the guidance for the accounting for the disposal of long-lived assets. In general terms, section 3475 provides that a long-lived asset is deemed to have been disposed of when it is no longer being used. The standard also requires that the value of the asset be measured at the lower of its net book value or fair value less cost to sell.

Therefore, under GAAP, the forecast 2008 year-end net book value of approximately $8.9 million would be expensed in 2009 and 2010. Accordingly, the Company would include the net write down of the assets in the amounts of $3.2 million and $5.7 million in 2009 and 2010 revenue requirements resulting in an approximate 1.3 percent and 2.3 percent rate impact in 2009 and 2010 respectively.

Paragraph 3475.26 of section 3475 provides alternate treatment for rate regulated operations if there is a desire to mitigate the rate impact over a longer term as follows:

> *"For rate-regulated operations, the regulator may require the difference between net carrying amount and the proceeds on disposal of a long-lived asset to be considered in the determination of future rates charged to customers. In such circumstances, the difference is deferred, provided there is reasonable assurance that:*
>
> *(a) any excess of net carrying amount over proceeds on disposal will be recovered through future rates; or*
>
> *(b) any excess of proceeds on disposal over net carrying amount will serve to reduce future rates."*

The provisions of paragraph 3475.26 could be applied to mitigate the rate impact by effectively amortizing the write down of the assets over the agreed to amortization period. Accordingly, the Company requests approval to establish a deferral account to record any excess of net carrying amount over proceeds on disposal (less cost of disposal) of those meters removed from service as a result of this CPCN, and to amortize these amounts at the existing depreciation rate for meters of 3.5 percent per year.

The time period chosen for amortizing the remaining balance of the existing meters is discretionary. For example, a five year amortization would effectively reduce the NPV of the revenue requirements to approximately $400,000 yielding the Project almost revenue neutral.

6.6 Rate Impact

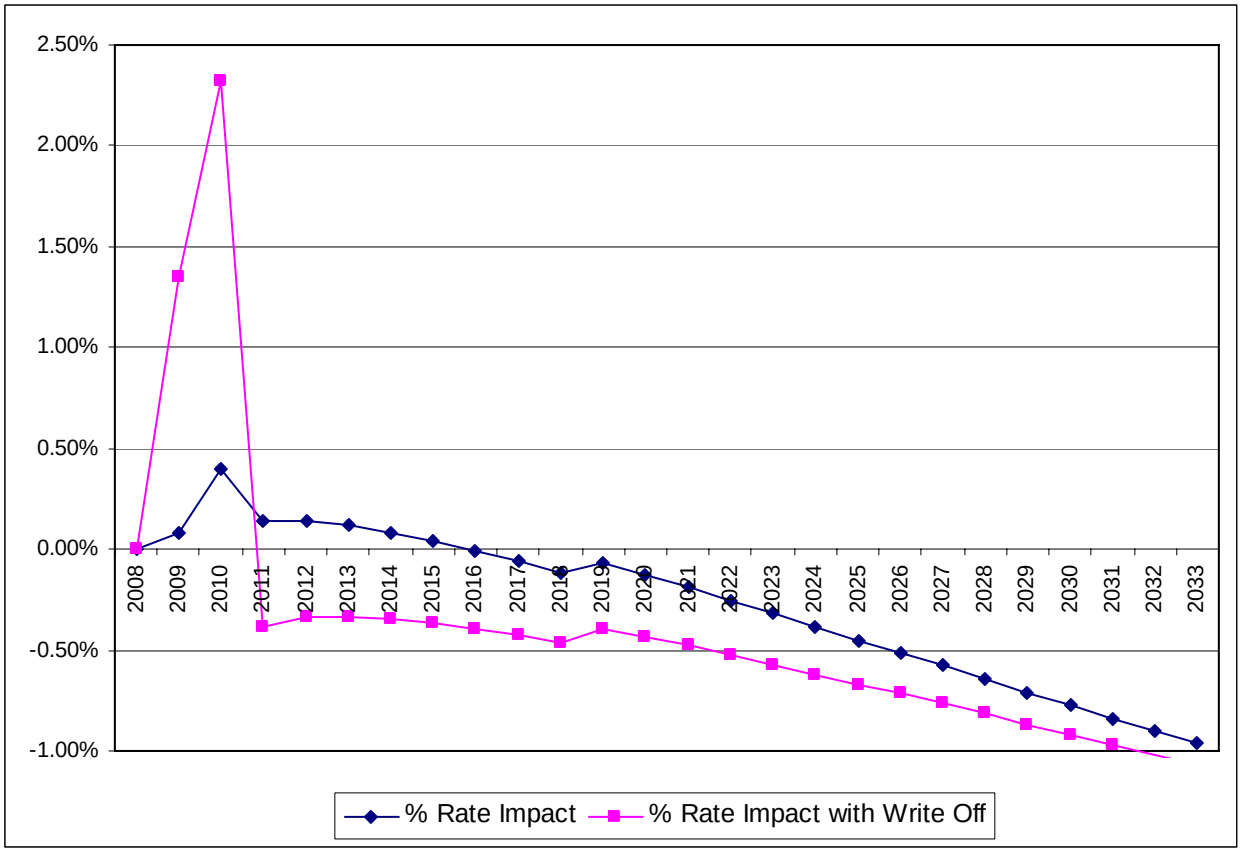
The implementation of AMI has a net present value impact on rates of -0.09 percent over a twenty five year period. The maximum incremental annual rate impact is 0.40 percent in 2010. However, by the year 2016, the Project will reduce rates.

Table 6.6: Summary of Revenue Requirements

	Expenditure / Impacts	2008	2009	2010	2011	2012	2016	2033
		($000s)						
1	**Cumulative Capital Expenditure**	568	14,098	31,341	31,341	31,341	31,341	31,341
2	Non-Project Costs	0	110	207	286	347	342	86
3	Total Operating Expense	0	0	(518)	(2,593)	(2,718)	(3,266)	(6,070)
4	Financing Cost	0	530	1,686	2,264	2,170	1,773	76
5	Total Revenue Requirement	0	186	1,022	391	409	(29)	(4,201)
6	**Maximum Annual Incremental Rate Impact Over Previous Year**	0.40%						
7	**Net Present Value of Revenue Requirement**	(2,851)						
8	**One-Time Equivalent Rate Impact**	-0.09%						

Figure 6.6 below summarizes the annual rate impact from 2008 to 2033 based on full AMI implementation as outlined in this Application. It also reflects the two accounting treatment options outlined in section 6.5.

Figure 6.6: Summary of Rate Impact 2008 to 2033



7. PROJECT SCHEDULE

The Project duration is expected to be approximately three years including the planning phase. FortisBC is proposing a two year physical deployment of the AMI system beginning in 2009. The two year implementation period addresses a number of risks and concerns.

- **Cost uncertainties** - Capital costs and vendor pricing can be more easily secured for full deployment over a two year period. Beyond this timeframe, the cost of AMI services may be subject to variations.

- **Realization of customer service benefits** - Under a two year deployment strategy customers will receive more accurate bills and be able to take advantage of the other AMI benefits sooner.

- **Customer equity** - A longer deployment strategy lengthens the period of time that customers will be receiving two different levels of services. Those without AMI would not be able to take advantage of the customer service benefits that AMI provides.

- **Realization of economic benefits -** If the deployment period is extended beyond two years, there would likely be temporary cost increases as FortisBC staff would be required to maintain and manage two different meter reading processes for an extended period of time.

- **Labour market exposure -** Risk and costs of meter reader turnover will be limited to the two year implementation period.

The full deployment of AMI is expected to be complete within three years. The major milestones for the AMI Project are as follows:

BCUC Approval Process	Second Quarter 2008
Develop and issue RFP to AMI vendors	Third Quarter 2008
Receive and evaluate RFP responses	Third Quarter 2008
Site visits to vendor utility references	Third Quarter 2008
Contract negotiation and procurement	Fourth Quarter 2008
AMI deployment phase one	2009
AMI deployment phase two	2010

AMI Phase One (2009):

The first phase of AMI deployment will consist of the following:

- all required IT infrastructure and upgrades;
- network infrastructure required to support meters to be deployed in phase one; and
- replacement of approximately 40 percent of active meters.

AMI Phase Two (2010):

The second phase of AMI deployment will consist of the following:

- network infrastructure required to support meters to be deployed in phase two; and
- replacement of approximately 60 percent of active meters.

7.1 AMI Evaluation Criteria

To determine the most appropriate technology for FortisBC's business objectives and service territory, an RFP will be issued to the major AMI vendors. Each of these vendors will be evaluated against the following criteria.

The "required" functions for the purposes of this Project have been limited to those necessary to deliver on the proposed benefits. In addition, it is important to understand each vendor's ability to deliver on the "optional" functions as well as those required for future use in AMI.

Table 7.1: AMI Functions and Features

Type	Description	Required (R) Optional (O)
1. Cost		**R**
2. Vendor Stability	**Financial stability** **Proven installations** **Ease of vendor relationship** **Utility references** **Manufacturing Capacity** **Scalability to 1,000,000 meters**	**R**
3. Functions / Features	**Monthly reads for billing**	**R**
	Daily readings	**R**
	Hourly readings	O
	Hourly readings for select customer profiles	**R**
	< Hourly interval readings	O
	Interface to CIS Billing System	**R**
	Interface to Customer Web Access	**R**
	Basic reporting of meter data	**R**
	Outage Management functions	**R**
	Virtual disconnect reporting	**R**
	Restoration verification	**R**
	Voltage readings	O
	Tamper detection	O
	Supports re-programming of meter without a field visit	**R**
	Instantaneous demand readings	O
	Supports TOU pricing models	**R**
	Supports block pricing models	**R**
	Supports CPP pricing models	**R**
	Supports load control	**R**
	Supports remote disconnect / reconnect	**R**
	Complex reporting	O
	Validation / estimation functionality in MDMR	O
	Compatibility with Measurement Canada Regulations	**R**
	Secure encryption of the meter data file	**R**
	Ability to use multiple meter brands	**R**
4. Warranties	**Product warranties and guarantees**	**R**

Only "required" functionality is included in the Project costs.

FortisBC anticipates that the vendor selection process will include the following:

***Vendor Selection*:** Vendor Selection will be established with input from each of the key areas including Customer Service, Operations, Information Technology, Engineering, Finance and Legal.

Request for Proposal: A formal RFP is expected to be issued early 2008 dependent on regulatory approvals.

Evaluation of the RFP: Each of the vendor submissions will be evaluated against the RFP criteria to determine the most cost effective technology for FortisBC's operational requirements and the geographical complexity of the service territory.

Reference Checks: FortisBC will conduct reference checks with electric utilities who have implemented each of the short-listed vendors' technologies to confirm the vendors' claims with respect to the RFP evaluation criteria. This process will include site visits to these utilities to review the AMI technology in operation.

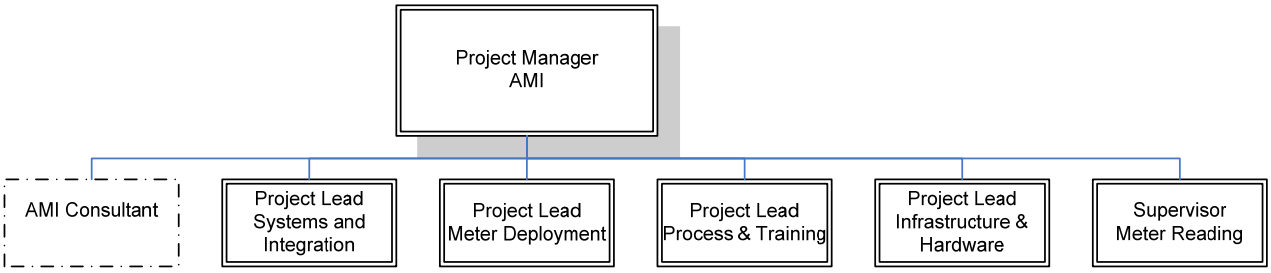
Contract Negotiation: The final step will be negotiating with the preferred vendor to ensure pricing and commitments are finalized for the term of the AMI Project.

7.2 Project Management

The following principles will underpin the management of the AMI Project:

- quality, scope, and cost control of the Project will be the responsibility of a FortisBC Senior Project Manager;
- work which impacts the operational control points will be done, where appropriate by FortisBC staff. This includes: engineering, management and review, and installation supervision; and
- accountability for each Project component will reside with FortisBC and will be actively managed by a FortisBC employee or representative.

The planned organizational structure for the AMI Project is as follows:



7.3 Risks and Mitigation

AMI technologies once implemented are highly reliable. However, FortisBC customers will be exposed, at least during the installation phase of the Project, to a higher level of risk that meters will not be correctly read. Therefore, once an AMI technology has been selected contingency plans will be developed that cover:

- Batch failures of the AMI meters;
- Large-scale failure of the AMI communication infrastructure; and
- Failure to move the data correctly from the meter reading database to the CIS billing system.

Most AMI systems have internal memory within the meter to store several weeks of data. It is anticipated that in most cases, the issue could be resolved prior to that so that no readings would be lost.

During the early phases of the AMI installation, meter readers will still be available to manually read meters if required. Post implementation, contingency plans will involve the recruitment of temporary resources to manually read meters in the case of any long term failure of the AMI system.

8. ALTERNATIVES CONSIDERED

The status quo alternative considered by FortisBC does not provide for the identified functionality provided by an AMI implementation. Cumulative capital expenditure for this option is projected to be $1.25 million for the upgrade and purchase of new meter reading handhelds every five years beginning in 2013. Based on projected inflation rates and projected customer growth, the operating expenses for this option are expected to increase from $2.70 million for 2008 to approximately $4.20 million in 2018. In comparison to an AMI implementation, the cost of continuing with the manual process of meter reading is significantly more with little to no added benefit to either the customer or FortisBC.

9. PUBLIC CONSULTATION

The Company has informed municipal customers and First Nations within the service territory with regard to the AMI Project, and no significant issues were identified.

10. OTHER APPLICATIONS AND APPROVALS

Approvals from agencies other than the BC Utilities Commission are not required.

APPENDIX A: TECHNOLOGY ALTERNATIVES CONSIDERED

AMI connects all meters to a communications network which transmits meter readings to a central database for use by the CIS. Two-way communicating AMI technologies have the added ability to remotely transmit data back to the meter. This allows meters to be read on demand and permits remote meter configuration and potentially control of variable load devices at the customer site.

The unique characteristics of FortisBC's business and service territory including the existing electrical infrastructure, the relatively low customer density, a radial road network and mountainous terrain, will be primary considerations in the selection of a suitable AMI technology solution.

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. The differences between these options are described in more detail below.

Option 1 - Power Line Carrier (PLC):

In a PLC AMI system, meter data is transmitted over the electrical distribution network as a modulated carrier wave, and received by a collector which is generally housed in distribution substations. The transmission of data from the collector to the meter data storage servers at the utility is made through a separate communication network solution.

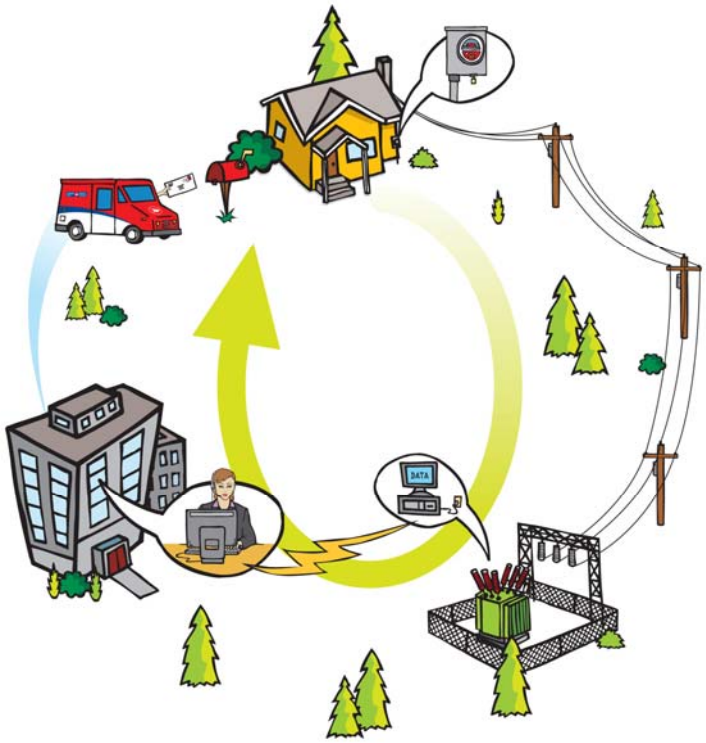
A PLC based system can generally reach all endpoints serviced by the utility. This is particularly important in rural locations and mountainous areas.

PLC technologies have two weaknesses as compared to other technologies. Since the collectors are housed in the substations, the cost of the PLC option depends on the number of endpoints per substation. The cost of the infrastructure within the substation

is the same no matter how many customers are downstream of that particular substation.

Depending on the number of endpoints and the frequency of reading intervals, the amount of data travelling between the meters and the collectors can be substantial. This becomes increasingly challenging once load control or pricing signal data is included for transmission through these same channels. The volume of data can impact the speed of transmission and can cause delays in getting the information back to the central computer in a timely fashion.

Figure A: PLC Technology



Option 2 - Radio Frequency (RF):

In a radio frequency 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.

The main advantage of these technologies is that their higher bandwidth allows larger amounts of data to be transmitted than PLC based systems.

These technologies have two main weaknesses.

Some RF technologies rely on “line of sight” to be able to transmit data and all are limited as to how far the meters can transmit data to collectors. These limitations can make it difficult to reach customers in remote areas or areas of mountainous terrain.

Figure B: RF Technology

Option 3 - Hybrid Networks:

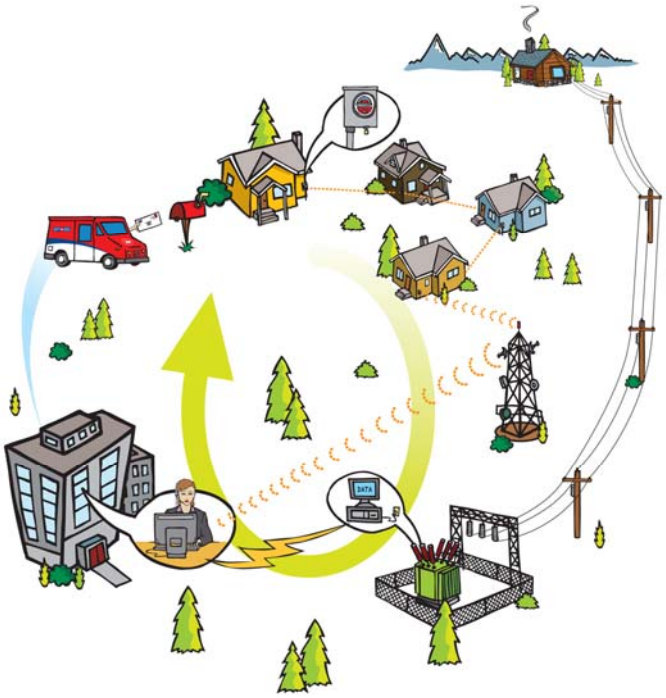
In a hybrid network, customers are serviced by either PLC or RF depending on their location in the service area.

The main advantage of a hybrid solution is that it allows customers to be served by the most cost effective technology.

The main disadvantage of this option is that the two technologies must work in tandem to provide readings at the appropriate intervals to the main billing system. This can be complex because the speed of the two technologies may be different. Operational processes may also be made more complex as differences may exist in the way the meters are maintained in each of the two parts of the system.

There are, however, vendors that have addressed these issues and that provide turn-key integrated hybrid systems.

Figure C: Hybrid Networks



APPENDIX B: NET PRESENT VALUE REVENUE REQUIREMENTS

Revenue Requirements Template
Option "AMI"

Line No.		NPV @ 10.00%	0 Dec-08	1 Dec-09	2 Dec-10	3 Dec-11	4 Dec-12	5 Dec-13	6 Dec-14	7 Dec-15	8 Dec-16	9 Dec-17	10 Dec-18
	Summary												
	Revenue Requirements												
1	Operating Expense (Incremental)	**(26,206)**	0	0	(518)	(2,593)	(2,718)	(2,849)	(2,976)	(3,118)	(3,266)	(3,419)	(3,577)
2	Depreciation Expense	**10,256**	0	0	598	1,327	1,330	1,333	1,325	1,327	1,330	1,332	1,335
3	Carrying Costs	**13,335**	0	530	1,686	2,264	2,170	2,066	1,962	1,868	1,773	1,678	1,574
4	Income Tax	**(235)**	0	(344)	(742)	(608)	(373)	(207)	(71)	41	134	212	281
5	Total Revenue Requirement for Project	**(2,851)**	0	186	1,022	391	409	342	240	117	(29)	(196)	(387)
	Rate Impact												
6	Forecast Revenue Requirements		219,817	240,023	255,139	272,208	287,690	293,400	299,300	305,300	311,400	317,600	324,000
7	Rate Impact		0.00%	0.08%	0.40%	0.14%	0.14%	0.12%	0.08%	0.04%	-0.01%	-0.06%	-0.12%
8	**NPV of Project / Total Revenue Requirements**		**-0.09%**										
	Regulatory Assumptions												
9	Equity Component		40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
10	Debt Component		60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%
11	Equity Return		9.02%	9.02%	9.02%	9.02%	9.02%	9.02%	9.02%	9.02%	9.02%	9.02%	9.02%
12	Debt Return		6.43%	6.43%	6.43%	6.43%	6.43%	6.43%	6.43%	6.43%	6.43%	6.43%	6.43%
13	AFUDC		6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
	Capital Cost												
14	Capital Investment		551	13,120	16,720								
15	Incremental meter costs		0	110	97	79	61	62	62	61	60	59	57
16	Avoided Itron Purchase (2013 & 2018)		0					(250)					(250)
16	AFUDC		17	410	523								
17	Total Construction Cost in Year		568	13,640	17,339	79	61	(188)	62	61	60	59	(193)
18	Cumulative Construction Cost		568	14,208	31,547	31,627	31,688	31,500	31,562	31,623	31,683	31,741	31,548
19	Land												
20	Net Cost of Removal												
21	Total Capital Cost in Year		568	13,640	17,339	79	61	(188)	62	61	60	59	(193)
22	Cumulative Capital Cost		568	14,208	31,547	31,627	31,688	31,500	31,562	31,623	31,683	31,741	31,548
23	Additions to Plant in Service		0	14,208	17,339	79	61	(188)	62	61	60	59	(193)
24	Cummulative Additions to Plant		0	14,208	31,547	31,627	31,688	31,500	31,562	31,623	31,683	31,741	31,548
25	CWIP		568	0	0	0	0	0	0	0	0	0	0
	Annual Operating Costs / (Savings)												
	Savings												
26	Annual Meter Reading Savings		-	-	(592)	(2,491)	(2,611)	(2,736)	(2,856)	(2,992)	(3,133)	(3,280)	(3,431)
27	Annual Customer Service Savings		-	-	(74)	(307)	(316)	(324)	(333)	(343)	(352)	(362)	(371)
29	Annual Operations Savings		-	-	-	(318)	(329)	(340)	(351)	(363)	(375)	(387)	(399)
	Costs												
32	Incremental Labour			-	148	296	304	314	323	333	343	353	364

33	Software Service Agreement		-	-	38	38	39	40	41	42	42	43
34	Communications		-	-	142	145	148	151	154	157	160	163
35	Equipment Replacements		-	-	48	49	50	51	52	53	54	55
36	Total Incremental Operating Costs (Savings)	0	0	(518)	(2,593)	(2,718)	(2,849)	(2,976)	(3,118)	(3,266)	(3,419)	(3,577)
					523							
	Depreciation Expense											
37	Opening Cash Outlay	0	0	14,208	31,547	31,627	31,688	31,500	31,562	31,623	31,683	31,741
38	Additions in Year	0	14,208	17,339	79	61	(188)	62	61	60	59	(193)
39	Cumulative Total	0	14,208	31,547	31,627	31,688	31,500	31,562	31,623	31,683	31,741	31,548
40	Depreciation Rate - composite average	4.21%	4.21%	4.21%	4.21%	4.21%	4.21%	4.21%	4.21%	4.21%	4.21%	4.21%
41	Depreciation Expense	0	0	598	1,327	1,330	1,333	1,325	1,327	1,330	1,332	1,335
	Net Book Value											
42	Gross Property	0	14,208	31,547	31,627	31,688	31,500	31,562	31,623	31,683	31,741	31,548
43	Accumulated Depreciation	0	0	(598)	(1,924)	(3,254)	(4,587)	(5,911)	(7,239)	(8,569)	(9,901)	(11,236)
44	Net Book Value	0	14,208	30,950	29,702	28,434	26,913	25,650	24,384	23,114	21,840	20,312
	Carrying Costs on Average NBV											
45	Return on Equity	0	256	815	1,094	1,049	998	948	903	857	811	760
46	Interest Expense	0	274	871	1,170	1,121	1,068	1,014	965	916	867	813
47	AFUDC	0	0	0	0	0	0	0	0	0	0	0
48	**Total Carrying Costs**	0	530	1,686	2,264	2,170	2,066	1,962	1,868	1,773	1,678	1,574
	Income Tax Expense											
49	Combined Income Tax Rate	31.50%	31.00%	30.00%	28.50%	27.00%	27.00%	27.00%	27.00%	27.00%	27.00%	27.00%
	Income Tax on Equity Return											
50	Return on Equity	0	256	815	1,094	1,049	998	948	903	857	811	760
51	Gross up for revenue (Return / (1- tax rate)	0	371	1,164	1,530	1,437	1,368	1,299	1,236	1,174	1,111	1,042
52	Income tax on Equity Return	0	115	349	436	388	369	351	334	317	300	281
	Income Tax on Timing Differences											
53	Depreciation Expense	0	0	598	1,327	1,330	1,333	1,325	1,327	1,330	1,332	1,335
54	Less: Capital Cost Allowance	0	1,022	3,144	3,945	3,388	2,891	2,466	2,120	1,824	1,570	1,334
55	Total Timing Differences	0	(1,022)	(2,547)	(2,618)	(2,058)	(1,558)	(1,141)	(793)	(494)	(238)	0
56	Gross up for tax (Total Timing Differences/(1-tax rate))	0	(1,481)	(3,638)	(3,662)	(2,819)	(2,135)	(1,564)	(1,086)	(677)	(325)	1
57	Income tax on Timing Differences	0	(459)	(1,092)	(1,044)	(761)	(576)	(422)	(293)	(183)	(88)	0
60	**Total Income Tax**	0	(344)	(742)	(608)	(373)	(207)	(71)	41	134	212	281
	Capital Cost Allowance											
61	Opening Balance - UCC	0	0	13,186	27,381	23,515	20,189	17,110	14,706	12,647	10,883	9,371
62	Additions	0	14,208	17,339	79	61	(188)	62	61	60	59	(193)
63	Subtotal UCC	0	14,208	30,525	27,460	23,576	20,001	17,172	14,767	12,706	10,941	9,178
64	Capital Cost Allowance Rate	14.39%	14.39%	14.39%	14.39%	14.39%	14.39%	14.39%	14.39%	14.39%	14.39%	14.39%
65	CCA on Opening Balance	0	0	1,897	3,939	3,383	2,905	2,462	2,116	1,819	1,566	1,348
66	CCA on Capital Expenditures (1/2 yr rule)	0	1,022	1,247	6	4	(14)	4	4	4	4	(14)
67	Total CCA	0	1,022	3,144	3,945	3,388	2,891	2,466	2,120	1,824	1,570	1,334
68	Ending Balance UCC	0	13,186	27,381	23,515	20,189	17,110	14,706	12,647	10,883	9,371	7,844

APPENDIX C: COST ESTIMATES OF FUTURE BENEFITS

The following is a high level estimate of additional capital infrastructure costs that would be required for benefits that are expected to be available for future implementation after implementation of AMI. The cost to implement these items is not included in the Project estimate of $31.3 million. These estimates also do not include any additional operating and maintenance costs that may be required.

Innovative Rate Structures: Assuming that the rate structure was similar to FortisBC's existing Time of Use rates and that Measurement Canada will allow time of use programming to occur under the meter seal, it is not expected that there would be any additional AMI related costs in the implementation of innovative rate structures. Some innovative rate structures may require the AMI system to provide validation and estimation of the meter data. The additional cost of this item is not expected to exceed $3.0 million.

Load Control: The cost of load control will vary depending on the technology chosen and the specific functional requirements of the load control program. However, it would require a load management device such as a thermostat within the customer home. This device currently costs between $90 - $300 each depending on the complexity of the functions required. At this time, it is unclear as to whether this cost would be borne by the utility or the customer. There would also be internal information system enhancements required to manage the commands being sent to the devices. This is estimated to cost approximately $500,000.

Remote Disconnect / Reconnect: The current cost of a remote disconnect collar is an additional $199.00 per end point for both PLC and RF technologies. Expectations are that the industry will see these costs decline over the next six to twelve months as the functionality is incorporated into the meters.

Meter Reading Frequency: It is not expected that there would be any additional capital costs in the implementation of more frequent readings as long as they are no more frequent than the daily readings provided by AMI.