Notes on the Business Case for BC Hydro's Smart Meter and Infrastructure (SMI) Program

based on the Business Case released by BC Hydro on Jan 18, 2011

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- This report summarizes notes I made from new information gathered from the Business Case (an earlier report summarizes my notes for the Business Plan released on Dec 23, 2010).

- BC Hydro released its Smart Meter and Infrastructure (SMI) Business Case on Jan 18, 2011. SMI is not subject to any regulatory process or application (as stated in the BC Clean Energy Act legislation). This is a newly updated Business Case,

- The SMI program includes smart meters, solution integration, conservation feedback (e.g. in-home displays), advanced theft detection, grid modernization, and other program activities (including privacy, security, safety, stakeholder engagement etc.).

- The total budget of the program is $840 million, with a reserve of $90 million for a total of $930 million. It is expected to deliver $1.929 billion in benefits (Present value). Nominal value is placed at $4.658 billion. Benefits include:

    - Improve safety and reliability through faster and precise outage notification and a reduction in the damage caused by illegal electricity diversions

    - Enhance customer service by reporting electricity use more accurately, eliminating estimated bills, simplifying the process of opening and closing an account when moving, and reducing the need for onsite visits by field crews

    - Reduce electricity theft that currently amounts to approximately $100 million a year in lost revenue—costs that are borne by all legitimate BC Hydro customers.

    - Improve operational efficiency and reduce wasted electricity through voltage optimization. Lower operating costs are passed on to all customers in rates

    - Support greater customer choice and control by offering optional in-home feedback tools that provide direct and timely information to customers about their

electricity consumption.

- Help modernize British Columbia's electricity system by replacing nearly obsolete meters, and creating the foundation for supporting new uses of electricity such as electric vehicles

- The Business Case re-confirms that smart meters installations will begin in 2011 and will be complete by the end of 2012. Installations will begin simultaneously in communities throughout the province.

- Security, privacy and safety are key principles throughout the process and there are many levels of protection.

  - "Privacy by design" will be used. The SMI Program focused on privacy since its inception.

  - End-to-end encryption techniques will be used of the same level of security as online banking systems. There will be secure channels between in-home displays to the meter to ensure nearby meters will not be able to access data. The system is broken up into "many isolated units" with different access keys so one cannot access the whole system.

- In-Home Feedback is seen as an important part of the system (benefit put at $220 Million).

  - The In-Home Feedback devices are optional.

  - BC Hydro will provide incentives for customers to adopt market available in-home displays, programmable thermostats, and energy management software products.

  - Real-time customer use information will be transmitted through the Home Area Network directly to the customer and will not be available to BC Hydro.

  - BC Hydro will offer a rebate program to encourage customers to choose a basic, market available in-home display.

  - The total cost estimated for the In-Home Feedback is around $55 million (with a total of $42 million for rebates), with a predicted benefit of around $220 million.

- BC Hydro has learnt lessons from other jurisdictions and put them into practice (technology, meter accuracy, rates, customer choice and support, security and

privacy).

- BC Hydro will maintain the same rate structures when Smart Meters are first put in, and implement new rate structures afterwards; so that Smart Meters aren't blamed for higher rates.

- There have been complaints in other areas about few options for in-home feedback – therefore BC Hydro will provide incentives to get a wide range of in-home feedback devices.

- BC Hydro is aware of concerns of meter accuracy from other jurisdictions – corresponding heat waves is one reason. Smart meters are more accurate and installed base of meters in Canada have a very high degree of accuracy due to regular random testing.

- The biggest benefit is the reduction of electricity theft at a benefit value of $732 Million.

- There is mention of a wide range of standards processes that BC Hydro is involved in, including the Standards Council of Canada Smart Grid Task that I am a member of.

- Customers will receive information packages before smart meters are installed in their communities.

- Seventeen Use Cases (covering Customer Service, Distribution System Optimization, Home Area Network and in-home feedback) have been developed to understand the complex issues. Customers will receive information packages before smart meters are installed in their communities.

- The BC Hydro Conservation Research Initiative time of use pilot (of which I was on the working group) from 2006 to 2008 in locations around BC was noted. Overall consumption reduced by 7.6 per cent and peak reduced by 11.5 per cent.

- There will be support for new initiatives such as electric vehicles, electrification of public transport, solar panels.

- Voluntary time of use rates are predicted to have net benefits of $110 million.

- There will be a remote disconnect feature on the Smart Meters (benefit valued at $47 million) to increase customer security and privacy as meter do not need to enter premises to disconnect. BC Hydro will maintains its present policies and procedures for disconnections.

- There is a discussion about emission levels and radio frequency safety.

    - Standing adjacent to a smart meter and transmitting continually (which it does not do), exposure is 60 to 600 times below acceptable levels. It is expected that Smart Meters will transmit only a few minutes a day.

    - Most Smart Meters are on the outside of the house, so at a more reasonable distance of 10 feet, the exposure is 60,000 to 600,000 times below acceptable levels. At 10 feet, Smart Meters are 100 times weaker than a Cyber cafe and lap top computer, 3000 to 1,000,000 times weaker than a cell phone held up to a head, and 500,000 times weaker than a microwave oven at 2 inches from the door.

    - An email address of smartmeters@bchydro.com is given for Individuals with concerns.

- No mention yet of who is the successful proponent as supplier of the Smart Meters.

- The Smart Metering Program pays for itself, with net benefits to the customers in reducing rates.