

Reprint **Island Tides**

Visit www.islandtides.com for more interesting articles on other BC, national & international topics

Reprint from Volume 23 Number 16

July 14, 2011

In-depth Report by Patrick Brown

Smart meters: a solution looking for a problem

BCHydro's Smart Meter Program is a fine example of an expensive solution looking for some expensive problems to solve. The problems that have been assembled under the Smart Meter banner are wide-ranging; the \$930 million program includes a number of related activities which are intended to increase the efficiency of the distribution system, and possibly reduce demand, or at least reduce the demand peaks for which the system must be designed.

BCHydro has published its cost and benefit estimates for the program in a report entitled 'Smart Metering and Infrastructure Program Business Case'.

However, there is some question as to whether the cost of supplying and installing meters for 100% of BCHydro's customers is actually justified by the savings from the expected increased efficiencies. It is only when BCHydro includes expected massive savings from the detection and prevention of 'electricity theft' that the business case for the entire program holds up.

Through the 2010 *Clean Energy Act*, the program was exempted from review by the BC Utilities Commission. As a result, its financial justification has not been closely examined, and specific parts of the program, and the attribution of benefits, may not be justified.

Details & Costs of the Business Case

Note: 'Present Value' used in BCHydro's calculations is widely used to provide a means of comparing cash flows at different times on a meaningful 'like to like' basis. It is the value on a given date of a future payment or series of future payments, discounted to reflect the time value of money and other factors such as investment risk.

The major elements of the Smart Meter Program, its estimated costs and benefits, are:

1. Planning phases (2007-2011): \$49.1 million.
2. Smart metering system (2011-2014): purchase & installation of smart meters, telecommunications and

software, \$391.1 million.

3. Design and implementation of information technology to handle data generated by the system (2011-2014): \$60.9 million. The Present Value of the benefits of elements 2 and 3 is estimated at \$359 million.
4. Theft detection (2011-2014): purchase and installation of distribution system meters and software, \$110.5 million. Present Value (PV) of benefits estimated at \$732 million.
5. Conservation tools (2011-2014): development and distribution of in-home displays, website, software and revised rates for customer information, \$62.8 million. PV of benefits from in-home feedback tools and voluntary time-of-use rates estimated at \$330 million.
6. Modernization of infrastructure for voltage optimization on commercial sites and the distribution system (2011-2014): \$54.2 million. PV of benefits from this activity (mainly energy savings) estimated at \$208 million.
7. Program management and support costs (2011-2014): \$37.0 million.
8. Interest during construction (2011-2014): \$14.4 million.
9. Contingencies and reserves (2011-2014): BC Hydro provides for a project contingency of \$60 million, and a 'Reserve Subject to Board Control' of \$90 million.

The total front-end capital expenditure estimate for the entire program is \$930 million (PV \$779 million).

Costs and Net Savings

BCHydro's estimated operating and maintenance costs for the 25 years to 2033 is \$745 million (PV \$330 million). BC Hydro estimates the total gross benefits attributable to the entire program to 2033 will be \$4,658 million (PV \$1,629 million). This may be compared with the PV of the front-end capital expenditure of \$779 million, and the PV of the

© Island Tides Publishing Ltd. This article may be reproduced with the following attribution, in its entirety, and notification to Island Tides Publishing Ltd.

'This article was published (July 14, 2011) in 'Island Tides', an independent, regional newspaper distributing across the Southern Strait of Georgia from Tsawwassen to Victoria to Nanaimo.'

Island Tides, Box 55, Pender Island, BC, Canada
Email: islandtides@islandtides.com

Phone: 250-629-3660 Fax: 250-629-3838
Website: www.islandtides.com

operating and maintenance costs of \$330 million. The Present Value of the net savings is \$520 million.

Smart Meter Savings – Critical Assumptions

The \$520 million Present Value of the net savings (expected benefits less expected capital and operating costs) depends on two main features of BCHydro's 'Business Case' for the program:

- estimating the cumulative benefits and operating costs for the program over a 25-year period (until 2033), with the accompanying uncertainties of long-term forecasting (normally, a much shorter time frame would be used for estimating project payout);
- excluding any provision for the interest costs for the \$930 million capital expenditure for the program. The money must be borrowed, at a likely interest rate of 4.5%. The Present Value of these interest payments might be \$360 million.

Finding Electricity Theft

For its financial justification, the Smart Meter Program depends rather critically on the detection and termination of electricity theft (PV \$732 million, or almost half of the quantified benefits of the entire program).

According to BCHydro, the estimates of the quantity of electricity stolen arise from four pilot studies using smart meters (Program elements 2 and 3) together with distribution system meters (element 4).

The approach used is to balance energy quantities metered with the energy supplied through the distribution system. This should presumably identify a quantity of energy unaccounted for, and the areas of the system where it is missing. The assumption is that the electricity was stolen through tapping into the distribution system before it reaches the meters.

BCHydro states that in the four pilot areas, which included over 800 homes, 22 electricity thefts were identified and terminated. However, the company will not provide any further details of how the specific locations of these thefts were identified, but it has stated that the smart meters, the distribution system meters and analytic software were all necessary, together with what it describes as 'new investigation techniques and processes'.

The benefits of theft detection are credited to and used to justify the distribution meters. The calculation of the expected benefits appears to depend on how well this small sample of BC Hydro's customers represents them all.

It All Depends On You

Less critical to program justification, but nevertheless important to it, are estimates of electricity conservation from billing initiatives that are only possible with smart meters.

BCHydro has stated they will not introduce compulsory time-of-use billing, but they nevertheless estimate 'capacity savings' with a total PV of \$110 million from voluntary use of this billing system. These savings stem from the fact that the distribution system has to be designed with capacity to handle consumption peaks, and time-of-use rates are designed to discourage electricity use at peak times. BCHydro's estimates were based on trials in six BC communities to research customer reaction to these rates.

Smart meters can enable customers to take action to reduce power consumption in real time, provided the customer is presented with timely information. Experience at US utilities underpins BCHydro's estimates of energy savings, which have a significant PV total of \$220 million.

Coming Clean On Rates

This is an expensive program; counting borrowing costs, it is more costly than it appears. Its financial justification depends on assumptions that should be closely examined, and its deliberate exclusion from examination by the BC Utilities Commission is clearly questionable.

The incentives that might be initiated to encourage power conservation by customers may depend on the universal installation of 'smart meters', but they may also depend on rate structures that have not been introduced to accompany their use.

Those structures should be exposed to public view as soon as possible; without them, the smart meters may be a dead end. ☹

© Island Tides Publishing Ltd. This article may be reproduced with this attribution, in its entirety, with notification to Island Tides Publishing Ltd.

'This article was published (July 14, 2011) in 'Island Tides', an independent, regional newspaper distributing across the Southern Strait of Georgia from Tsawwassen to Victoria to Nanaimo.'

Island Tides, Box 55, Pender Island, BC, Canada
Email: islandtides@islandtides.com

Phone: 250-629-3660 Fax: 250-629-3838
Website: www.islandtides.com
