Q. With regard to the response to CA-NP-129:

(a) Please provide five cost saving programs that NP intends to implement in the next three years and provide an estimate of the expected cost savings and benefit to cost ratios of each program.

(b) Does NP intend to implement any distribution automation programs in the next three years? If so, what benefits are expected?

(c) Does NP intend to implement "smart grid/smart meter" technology? Is this technology feasible for the Island Interconnected System, and what savings might be realized?

A. (a) Table 1 provides a summary of five capital budget items forecast to be completed over the next three years that are justified based on reducing the cost of generating electricity on the Island Interconnected System.

Table 1
Cost Savings Projects

Project	Energy Savings (GWh)	Levelized Cost of Energy (¢/kWh)	Net Cost Savings[1] ($000s)	Benefit to Cost Ratio[2]
2009 Capital Budget				
Raise Rose Blanche Spillway	0.90	4.06	961	3.0
Energy Efficient Streetlights[3]	2.18	4.66	566	2.6
2010 Capital Budget				
Raise Sandy Lake Spillway	0.86	6.64	534	1.8
Convert 23L to 66 kV	0.25	0.77	325	15.7
2011 Capital Budget				
Raise Blackwood's Spillway	1.90	2.29	2,478	5.3

[1] Net cost savings are presented on a net present value basis. The savings are based on reduced production at Hydro's Holyrood Generating Station assuming the current forecast oil price of $75.95 will apply over the planning period used in evaluating the projects.

[2] The benefit to cost ratio is calculated by dividing the current cost of producing electricity at Holyrood by the levelized cost of energy for the project. The current cost of production for Holyrood is estimated at 12.06¢/kWh. This is based upon a conversion efficiency of 630 kWh/barrel and oil price of $75.95/barrel. The oil price is taken from a Hydro fuel forecast dated March 31, 2009.

[3] Energy Efficient Streetlights is a project that is forecast to be completed over three years, 2009 – 2011.

(b) Newfoundland Power has not included any distribution automation projects in the 5 year forecast included with its 2010 Capital Budget Application.[4] However, Newfoundland Power has, on an ongoing basis over a number of years, increased the deployment of modern automation technology to monitor and control its distribution feeders.

Newfoundland Power monitors the power system through its SCADA system. The SCADA system remotely monitors and controls equipment located in its distribution substations. In 1999, Newfoundland Power upgraded its SCADA technology, substantially improving its ability to monitor and control distribution feeders. The increased intelligence and control of the distribution circuitry has allowed Newfoundland Power to improve service reliability with a smaller workforce.

Through its annual capital budgets, Newfoundland Power continues to upgrade the devices used to control the distribution system to more fully utilize the technical capabilities of its SCADA system.[5]

(c) With the exception of continuing to extend the reach of its SCADA system, and the strategic deployment of automatic meter reading, Newfoundland Power does not have any specific plans to implement "smart grid/smart meter" technology.[6]

The term "smart grid" refers to the modernization of the electricity system using digital technology with a view to delivering electricity more efficiently and reliably. A key element of the smart grid concept is the installation of smart meter technology.

Smart meter technology is being installed in many jurisdictions in North America. In some jurisdictions, smart meters have been mandated by government; as a result, business cases to justify their deployment have not been required. In jurisdictions that have installed smart meters without government mandate, the cost savings associated with certain innovative pricing and demand response programs have helped to justify the investment.[7] Occasionally, regulators have been asked to accept estimates of societal benefits as part of the justification.

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4 "Distribution automation" refers to monitoring and control technology deployed on the distribution feeder remote from the distribution substation.

5 As part of its annual Substations Refurbishment and Modernization capital projects, Newfoundland Power installs devices such as digital relays, advanced reclosers and power quality-enabled meters that provide distribution system information.

6 Implementing advanced technology through SCADA systems and employing automatic meter reading can be considered elements of smart grid technology.

7 Certain types of electricity pricing and demand response programs require smart meters. These include pricing based on hourly market prices, and critical peak pricing. Such programs have the potential to reduce the need to add new generation and reduce production costs.

In the Rate Design Report, Newfoundland Power considered pricing options to encourage peak load management.[8] At this time, pricing that focuses on peak load management is not considered to be cost-effective for the Island Interconnected System. It may be difficult to justify a wide scale deployment of smart meters without including potential cost benefits of innovative pricing or demand response programs.

The number of smart meter installations across North American has risen in recent years. As manufacturers increase production of smart meters and standardize communications protocols, it is anticipated that the unit costs will decline. As costs decline, the cost-effectiveness of smart meter technology will improve.

[8] See response to Request for Information CA-NP-285.