Q. Provide details on all evaluations of Newfoundland Power hydro plant refurbishments conducted over the period 2008 to present in which Newfoundland Power determined it was not reasonable to proceed with a proposed capital project to refurbish the hydro plant.

A. With the response to Request for Information CA-NP-30 to Newfoundland Power's 2011 Capital Budget Application the Consumer Advocate requested clarification on why the 5-year capital plan for generation no longer included the Victoria Hydro Plant Refurbishment project. In the 5-year capital plan included with the Company's 2010 Capital Budget Application the Victoria Hydro Plant Refurbishment project was planned to be completed in 2011 at a cost of approximately $2.5 million.

The detailed engineering assessment completed by Newfoundland Power prior to filing the 2011 Capital Budget Application determined that the condition of the plant assets justified refurbishment. However, the decision to delay the project was based upon economic considerations as well as the consequences of plant failure.[1]

Capital expenditures on individual hydroelectric plants, such as the refurbishment of protection and control systems and the replacement of penstocks, are typically justified on the basis of maintaining access to existing hydroelectric generation at a cost that is lower than the cost of replacement energy. For example the present worth feasibility analysis of projected capital and operating expenditures for the 2011 Horse Chops Rewind and Rotor Re-Insulation project had determined the levelized cost of energy from the plant over the next 50 years to be 1.015¢ per kWh, which was significantly less than the 2010 cost of replacement energy at Holyrood.[2]

In the case of the Victoria hydro plant which produces 3.1 GWh of electricity on an annual basis, the levelized cost of energy associated with a complete plant refurbishment approached the cost of replacement energy, depending upon the assumptions made relating to future operating and capital expenditures. As a result, the economic justification for this project would have to be based upon a comparison of two alternatives, one being the refurbishment and continued operation of the hydro plant, and the second being the decommissioning of the hydro plant and the associated dismantling and environmental cost.

As Newfoundland Power had not previously justified a capital project in this manner, further engineering work was required to scope the decommissioning alternative and estimate the associated cost. As this engineering work was not completed Newfoundland

[1] The small size and remote location of the Victoria hydro plant make the consequences of failure relatively low compared to some of Newfoundland Power's larger hydro plants located in more public locations.

[2] In 2010 the cost of electricity from the Holyrood thermal generating station was estimated at 11.63¢ per kWh. This was based upon a 630 kWh/barrel conversion efficiency and oil price forecast from Hydro of $73.30 per barrel for 2010 as per Newfoundland Hydro 2010 Capital Budget Application, Generation Planning Issues 2009 Mid Year Report dated July 2009.

Power determined it was not reasonable to proceed with a proposed capital project to refurbish the Victoria hydro plant in 2011.

In its 2012 Capital Budget Application Newfoundland Power included the Lockston Hydro Plant Refurbishment project at an estimated cost of approximately $3.5 million.[3] In 2011 the Lockston plant had 2 hydro generators; the 49 year old G1 with a capacity of 1.5 MW; and the 55 year old G2 with a capacity of 1.5 MW. The total plant capacity was 3.0 MW with an annual production of 8.1 GWh of energy. This amount of energy production could be provided by only one of the two generators. As a result Newfoundland Power determined that for economic reasons only unit G1 would be fully automated with a new digital governor and water management system.[4] Unit G2 will be refurbished to the extent necessary to provide reliable peaking capacity and to operate at base load during periods of high inflows and when operating isolated from the grid.

The Victoria and Lockston G2 unit refurbishment assessments are 2 examples where Newfoundland Power determined it was not reasonable on an economic basis to proceed with a proposed capital project to refurbish the hydro plant.

[3] The actual project cost was $3.4 million.

[4] Newfoundland Power has two other hydro plants where the extent of automation is different between generators. Both Petty Harbour and Tors Cove plants have 2 generators fully automated with programmable logic controller based water management systems and 1 generator operated manually.