

### ***Holyrood Projects in a No Infeed Scenario***

The Province's Energy Plan indicated that should the Lower Churchill Project not be sanctioned, the emissions issues at the Holyrood Generating Station would be improved by the installation of scrubbers and precipitators. Hydro identified the technical parameters, construction schedule, capital and operating costs for this facility in a study performed during 2008. Should the Lower Churchill Project not be constructed, or be delayed, there is a significant amount of additional work required at Holyrood. To give an indication of the implications this would have on the 20-year Capital Plan a separate line item has been added to address Holyrood without an HVDC infeed. This deals solely with the Holyrood Generating Station and identifies those additional expenditures which will be required should the Lower Churchill Project not be sanctioned. These expenditures include new equipment, such as scrubbers, precipitators, low NOx burners, plant life extension and related projects to replace assets which have reached, or will reach, their end of life. At this time, these costs are estimated to orders of magnitude only. The table below is very preliminary, but provides an estimate of the expenditures required to maintain this facility in reliable and efficient operating condition.

Unit and Item Description	(\$000)
Unit 1 – Boiler	15,500
Unit 1 - Turbine	5,450
Unit 1 – Continuous Emission Monitoring System	235
Unit 1 - Steam Piping	1,090
Unit 1 - Condensate System	1,000
Unit 1 - Feedwater System	2,250
Unit 1 - Condensers	1,400
Unit 1 – Warm Air Makeup and Air Preheat	3,000
Unit 1 - Inside Building Fuel System	550
Unit 1 – Lube Oil System	500
Unit 2 - Boiler	17,000
Unit 2 - Turbine	5,000
Unit 2 - Continuous Emission Monitoring System	235
Unit 2 - Steam Piping	750

Unit and Item Description	(\$000)
Unit 2 - Condensate System	1,000
Unit 2 - Feedwater System	3,250
Unit 2 - Condensers	1,400
Unit 2 - Warm Air Makeup and Air Preheat	3,000
Unit 2 - Inside Building Fuel System	550
Unit 3 - Boiler	28,000
Unit 3 - Turbine	5,000
Unit 3 - Stack and Breeching	3,000
Unit 3 - Continuous Emission Monitoring System	235
Unit 3 - Steam Piping	1,050
Unit 3 - Condensate System	750
Unit 3 - Feedwater System	3,250
Unit 3 - Condensers	1,150
Unit 3 - Warm Air Makeup and Air Preheat	3,000
Unit 3 - Inside Building Fuel System	550
Common - Fuel Storage System Supply to Plant	650
Common - Ambient Air Monitoring Stations	750
Common - Fuel Unloading Dock and Bldg. Envelope	800
Common - Fuel Unloading Equipment	425
Stack Emissions Cleanup Equipment	<u>570,000</u>
Initial Plant Life Extension	100,000
Replace Burner with Low NOx Burners	17,500
Upgrade Soot Blowing Controls	3,500
Total	802,770

Should Hydro be required to operate the Holyrood facility as a generating plant significantly beyond the planned date for the HVDC infeed and a standby period beyond that date, considerable investigation and planning will be required to properly determine the extent and timing of work which will be required. The first step is a detailed life assessment and extension study which will establish the scope and cost of the remedial work required, along with the optimal timing to perform the work, to ensure that least cost energy is produced from the plant. This study was started in 2009, concentrating on the

plant components required for synchronous condensing and identifying the work which should be performed to ensure total plant reliability to the date of the HVDC infeed. As the items and estimates contained in the table were prepared without the benefit of a detailed assessment, it can be expected that the final scope and cost will differ from what is presented here. It can also be expected that some of these replacements or refurbishments will be required to be performed in an infeed scenario, should a component fail or deteriorate significantly such that plant reliability is compromised.