Q. Should the system be able to withstand the loss of the Sunnyside transformer (or any transformer for that matter) without losing firm load?

A. Please refer to Hydro's response to CA-NLH-002 for the criterion applied to the failures of transformers in Hydro's bulk transmission system. As stated in that response, short-term loss of customer load is part of the design standard applied. This applies to Sunnyside and all of Hydro's larger terminal stations. This criterion provides a balance of cost and reliability. In order to prevent the short-term loss of load, Hydro would have to establish circuit breakers in all stations such that each transformer can be removed from service without affecting other transformers. In existing stations, this would involve considerable work to physically rearrange equipment and establish additional protection and control facilities. Hydro is applying that configuration for new stations and is considering the application in existing stations when new transformers are being added. The current application before the Board for the replacement of T1 at Sunnyside has this change proposed.

In the existing configuration at the Sunnyside Terminal Station, both 230/138 kV transformers T1 and T4 are connected to a common 230 kV bus. There are no dedicated 230 kV transformer circuit breakers to isolate only one transformer should it experience a failure. Each transformer is connected to the 230 kV bus using a motor operated disconnect switch. As a result of this configuration, failure of one transformer at Sunnyside requires operation of appropriate 230 kV circuit breakers to de-energize the common 230 kV bus and operation of 138 kV circuit breakers to de-energize the failed 230/138 kV transformer. With de-energization of the common 230 kV bus, both 230/138 kV transformers are removed from service. Depending upon system load levels, loss of both T1 and T4 at Sunnyside can result

in severe under-voltage along the 138 kV transmission system between Stony Brook and Sunnyside and along the Burin Peninsula which, in turn, will result in loss of load. With the failed 230/138 kV transformer isolated, the common 230 kV bus can be re-energized and load restored using the remaining 230/138 kV transformer at Sunnyside.