Q. In the opinion of Hydro operating staff, can Hardwoods adequately meet black start requirements at Holyrood? Does the Hardwoods black start alternative meet NERC and NPCC standards with respect to black start? Please explain why or why not.

A. Hydro's staff is of the opinion that Hardwoods can meet the blackstart requirements at Holyrood. Blackstart of Holyrood is required so that the Holyrood plant can be used to begin restoration of service to customers in an isolated part of the system when the plant and that area have become isolated from the main system. For emergency planning purposes, this isolated area of the system was considered the broader Avalon Peninsula area and not an isolated area adjacent to the Holyrood plant. In order to supply customers in the Avalon area the Holyrood plant requires a transmission path to the customers. Therefore where the Hardwoods gas turbine plant and Hardwoods Terminal Station are located centrally on the Avalon Peninsula transmission near the load it can provide the initiating point for blackstarting this electrical island. Although an actual blackstart test was not performed, Hydro did simulate a blackstart using its Operator Training Simulator with successful results. Using the results of the simulations, an operating instruction was developed to help guide Hydro's operating staff in carrying out the blackstart procedure. This instruction is provided in NP-NLH-015 Attachment 1.

The available NERC/NPCC information with respect to the blackstart functionality is as follows:

- The North American Electric Reliability Corporation (NERC) defines Blackstart Resource as:

> *A generating unit(s) and its associated set of equipment which has the ability to be started without support from the System or is designed to remain energized without connection to the remainder of the System, with the ability to energize a bus, meeting the Transmission Operator's restoration plan needs for real and reactive power capability, frequency and voltage control, and that has been included in the Transmission Operator's restoration plan.*

NERC Emergency Preparedness and Operations (EOP) standard EOP-005-2 covers system restoration from blackstart resources. In essence, the standard requires that each Transmission Operator have a restoration plan. The plan must include the capabilities of the blackstart resources.

- The Northeastern Power Coordinating Council, Inc. (NPCC) defines Blackstart Capability as:

> *The ability of a generating unit or station to go from a shutdown condition to an operating condition and start delivering power without assistance from the electric system.*

NPCC Directory 8 "System Restoration" provides the basic criteria for entities to plan for and perform power system restoration following a major, or total, blackout. Section 5.1 of the directory provides the restoration plan requirements for NPCC members. Included in these requirements is the need to identify a basic minimum power system (i.e., one or more generators, lines and substations operating in the form of an island) which can be used to initiate the restoration process.

Upon review of the noted NERC and NPCC standards with respect to blackstart of Holyrood to restore the system, there was nothing identified that would prevent the use of the Hardwoods gas turbine (which can be started independent of the system) to energize the 66 and 230 kV buses at Hardwoods, the 230 kV transmission line TL242 to Holyrood and then the 230/66 kV and 66/4.16 kV transformation at Holyrood to start the Holyrood plant to restore service to the Avalon Peninsula.