Q. **At page 65 of the report, Liberty states that "Hydro has also estimated the replacement power costs for the period that Unit 1 was in an outage in 2014 for vibration repairs at $504,610."**

Does Liberty agree that the methodology used by Hydro in estimating those replacement power costs as set out in Hydro's response to PR-PUB-NLH-129 (Revision 1) is a valid approach?

A. Prior to Hydro's response to PR-PUB-NLH-129 (Revision 1) Liberty was not aware that Hydro attributed a portion of the Unit 1 January 4-8 outage to vibration problems. Specifically, it appears that Hydro attributed the time between the three-unit trip (0905 on January 4) and the return to service of Unit 2 (2127 on January 5) to vibration issues. Liberty has no information from which to agree or disagree with Hydro's conclusion in this attribution.

Liberty does not agree that Hydro's costing method is appropriate. We understand the method to consist of three parts: (1) determine the amount of time Unit 1 would have run if not for the vibration issues; (2) calculate the fraction of the total unavailable capacity that is attributed to Unit 1; and (3) apply that fraction to the total replacement power costs for the defined time period. Liberty does not agree with the embedded assumption that replacement power costs are directly proportional to the amount of unavailable capacity. To the contrary, they increase on a $/MWh basis faster as the amount of unavailable capacity increases.

"Replacement power" becomes necessary when a unit that otherwise would be dispatched is not, for whatever reason. The costs of the unit providing the replacement power generally exceeds the costs of the displaced unit. As more capacity becomes unavailable, the replacement power must come from increasingly more expensive sources. The replacement cost calculation should therefore be based on marginal costing, recognizing the higher cost of the last increment of unavailable capacity (not the average cost of all of the unavailable capacity).

Liberty concluded that only one unit was unavailable due to imprudence in the pertinent timeframes: *i.e.*, Holyrood Unit 1. The cost to replace Unit 1 should therefore be calculated on a marginal basis at the top of the dispatch stack.

Liberty agrees that the application of such methods often proves difficult. Utilities often lack the data to simulate actual cost impacts accurately. We therefore did not suggest an alternate method or estimate, choosing instead to accept the Hydro estimate as a minimum value.