

1 Q. **Other**

2 (Re: Amended GRA, Exhibit 2) Pages E41 and E42 summarize the under-frequency
3 load shedding events in 2013. Why does spinning reserve not make it possible to
4 avoid load shedding in such instances?

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7 A. Hydro maintains spinning reserve to accommodate the loss of the largest
8 generating unit on the system. The reserve allows for units be taken offline in the
9 event of unsafe or otherwise unacceptable operating conditions. This is performed
10 in a controlled manner with minimal impacts to system frequency and without
11 affecting supply to customers.

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13 In the event of an instantaneous trip of a unit, spinning reserve provides only
14 marginal support with respect to the transient fall of system frequency. This is
15 primarily due to fixed characteristics of generating units including water start times
16 and governor time constants. As a result of these parameters, it can take several
17 seconds for generating units to respond. The underfrequency load shedding
18 thresholds are configured to provide a nearly immediate response, catching the
19 rate of frequency decay in time to avoid reaching a point of instability.