

1 Q. **Reference: Redesign of UFLS Scheme for High Power Operation, dated March 17, 2021 (UFLS**
2 **2021 Report)**

3 Assuming normal restoration and adequate supply post a LIL outage event and the Maritime
4 Link and its frequency controller are in service, how long will it take to restore the Island
5 Interconnected system to its pre-event condition if the LIL were lost when carrying 900 MW?

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8 A. For a single contingency generation loss which results in an Under Frequency Load Shedding
9 (“UFLS”) event that impacts customers, Newfoundland and Labrador Hydro (“Hydro”) would
10 normally restore customers in a timeframe of ten minutes or less.¹ This expedient restoration is
11 facilitated through operation of the system with ten minutes reserves equal to or greater than
12 the largest single resource. Close coordination is required between Newfoundland Power Inc.
13 (“Newfoundland Power”) and Hydro control centres to ensure that the load restoration is done
14 in manageable block sizes to avoid further issues on the power system.

15 A full loss of the Labrador-Island Link (“LIL”) carrying 900 MW (bipole trip) would trigger a
16 runback of the Maritime Link exports or Maritime Link frequency response in conjunction with
17 UFLS to maintain the stability of the system and to prevent uncontrollable cascading outages.
18 Even if it were assumed that there was normal restoration and adequate supply post-event,
19 Hydro would not expect to restore customers in as expedient a manner as if it were a single
20 contingency loss as outlined above. In all likelihood, the resources required to replace the full LIL
21 would not be carried as ten minute reserve and the time to restore would be largely dependent
22 on the time to start-up/activate these resources. Hydro would activate its faster starting
23 resources (such as standby hydroelectric units and gas turbines) and restore customers to the
24 extent possible. This would again require close coordination between Newfoundland Power and
25 Hydro control centres to ensure that the load restoration is done in manageable block sizes to

¹ Since the activation of the Maritime Link frequency controller during the winter of 2018, UFLS events have occurred very infrequently on the Island Interconnected System.

1 avoid further issues on the power system.² However, in what could be considered the extreme
2 case, if a Holyrood thermal unit³ or multiple thermal units were required to be started from a
3 standby state it could take several hours⁴ to place the unit(s) online to fully restore service to
4 customers and to return the Island Interconnected System to its pre-event condition.

² Section 4 of the referenced report outlines the maximum load block sizes to guide the control centre operators of Newfoundland Power and Hydro during the restoration following a full LIL bipole loss. Restoration can occur in larger block sizes and in a more expedient manner if the Maritime Link frequency controller is in service; however, it does require that sufficient generation be online to supply the customer load. This would also require close coordination with the Nova Scotia System Operator.

³ If it is determined that additional backup generation is required for the Island Interconnected System and the Holyrood Thermal Generating Station were to remain as a backup facility.

⁴ As a part of the condition assessment of the Holyrood Thermal Generating Station as a long term backup resource option, Hydro is investigating means and the cost to achieve a shorter start-up time of the units. If other backup resources were added to the system, associated start times would also be a significant consideration.