

1 Q. Reference: (<http://www.powerinourhands.ca/pdf/MHI.pdf>) *Manitoba Hydro*  
2 *International: Review of the Muskrat Falls and Labrador Island HVdc Link and the*  
3 *Isolated Island Options*, October 2012, page 37.  
4 *“Development of a good emergency response plan is recommended by MHI as part*  
5 *of the operational stage of the project post Decision Gate 3. Nalcor has committed*  
6 *to have this emergency response plan developed prior to in-service.”*

7 Following the 1998 ice storm in Quebec, some lines required periods of up to 12  
8 weeks to repair and restore to service.

9 Please indicate the reliability impact to customers of the Island Interconnected  
10 System of the unavailability of the Labrador-Island HVdc Link for 12 weeks due to a  
11 widespread extreme icing event in excessive design loads.  
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14 A. The 1998 ice storm in Québec occurred between January 5 and 10, 1998. While it is  
15 true that some lines within the system required up to 12 weeks to repair, the  
16 Hydro-Québec news posting “Ice Storm 1998: 15 years later” dated January 7,  
17 2013<sup>1</sup> states that:

18 *“By late January, most customers again had power”*  
19

20 Further, the article states:

21 *“The mechanical strength of our grid has been increased. For instances, by*  
22 *making every tenth tower along a transmission line a very robust anti-*  
23 *cascading tower, we limit the damage that results from the collapse of a*  
24 *single tower.”*  
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<sup>1</sup> This article is located on the Hydro-Québec website and can be found at:  
<http://news.hydroquebec.com/en/news/116/ice-storm-1998-15-years-later/?fromSearch=1>.

1 As well, the article goes on to include:

2 *“Hydro-Québec has also changed the configuration of its transmission*  
3 *system to make energy sources more secure and to include redundant*  
4 *sources of supply in case of line failures. These “loops” permit the delivery*  
5 *energy over different paths.”*  
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7 Based upon Hydro’s own experiences with ice storms, the experiences of other  
8 utilities (including Hydro-Québec) and the latest transmission line design standards  
9 and practices, new transmission line construction by Hydro, including the Avalon  
10 Transmission Upgrades and the Labrador – Island HVdc Link, incorporates the  
11 application of anti-cascading towers to limit the damage resulting from the collapse  
12 of a single tower.  
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14 In addition, the design of the Labrador – Island HVdc Link includes a continuous  
15 monopolar rating of 150% of the normal pole rating to reduce the impact of a pole  
16 outage (i.e., insulator, cross arm, converter failure) on the transfer capability.  
17 Further, to provide capacity and energy during a bipole outage, Hydro is  
18 maintaining its standby thermal generation at Hardwoods, Stephenville, Hawke’s  
19 Bay and St. Anthony. The addition of the 120 MW combustion turbine at Holyrood  
20 in 2014 further strengthens Hydro’s position to supply the Island’s needs during the  
21 potential bipole outage. As well, the Maritime Link provides an alternate  
22 connection, or “loop”, to the North American grid providing access for up to 300  
23 MW of capacity from the Maritimes/New England during a Labrador – Island HVdc  
24 Link bipole outage.  
25

26 Based upon recent load forecasts, Hydro expects that if a 12-week loss of the  
27 Labrador-Island HVdc Link were to occur, there will be sufficient generating capacity  
28 until the mid-2020s. The analysis of the 2025 peak load indicates that a 12-week

bipole outage to the LIL during the peak load period would result in approximately ten hours in which the load would exceed the capacity. The total unsupplied energy during this 12-week outage is estimated at approximately 193 MWh. In advance of reaching that point, Hydro will have a number of options available to supply the capacity deficit including:

- Industrial and commercial interruptible load arrangements;
- Customer demand side management initiatives;
- Additional imports via the Maritime Link when existing constraints in the Maritimes/New England systems are mitigated; and
- On-Island capacity additions.