

1 Q. **Reference: RRAS, 2019 Update, Vol. I, page 7 (33 pdf), Figure 1**

2 Citation (from Liberty Report, page 6 (15 pdf)):

3 Box 2 in Figure 1 depicts the Vista Model. This component addresses “medium- to long-term  
4 water storage and energy generation management that guides water operations, hydrothermal  
5 generation, and energy transactions.”<sup>5</sup> Inputs to the Vista Model include the load forecast and  
6 the hydraulic record of 67 years of hydraulic inflows. The Vista Model optimizes storage and  
7 water releases to create an economically optimum allocation of the available water to serve  
8 load. Hydro’s modeling of hydrological uncertainty properly incorporated a probability  
9 distribution for Muskrat Falls. The firm capability of its other hydro stations is not affected by  
10 low water conditions, with other hydro generation represented by firm capacity ratings based  
11 on low water.

12 a) Please clarify if Hydro’s modelling of the Muskrat Falls Generating Station is based on :

13 i. The hydrology at Muskrat Falls; or

14 ii. Hydro’s entitlements to power and energy from Muskrat Falls according to its Power  
15 Purchase Agreement with the Muskrat Falls Corporation.

16 b) Please explain how and to what extent (if any) Hydro’s modelling of the Muskrat Falls  
17 Generating Station takes into account the provisions of the Water Management Agreement  
18 between Nalcor Energy and the CF(L)Co.

19 c) Please explain in detail how the Water Management Agreement is taken into account in  
20 determining the firm capacity available to Hydro from the Muskrat Falls Generating Station.  
21 If it is not taken into account, please explain why not.

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24 A. a) Newfoundland and Labrador Hydro’s (“Hydro”) modelling of the Muskrat Falls Generating  
25 Station includes both consideration of the hydrology at the Muskrat Falls Generation Station  
26 and Hydro’s entitlements under its Power Purchase Agreement with Nalcor Energy

1 (“Nalcor”). In the reliability model, the daily storage capabilities of the Muskrat Falls  
2 Generating Station are appropriately included.<sup>1</sup> From a capacity perspective, Hydro has  
3 modelled the full capacity of the Muskrat Falls Generating Station minus the Nova Scotia  
4 Block as available to serve native load. This is consistent with Hydro’s entitlements under  
5 the Muskrat Falls Power Purchase Agreement. From an energy perspective, Hydro’s energy  
6 entitlements pursuant to the Muskrat Falls Power Purchase Agreement are considered in  
7 evaluating the sufficiency of system energy to meet firm load.

8 b) The Water Management Agreement is included in Nalcor Energy Marketing’s modelling of  
9 provincial energy resources. The capacity accessible under the Water Management  
10 Agreement limits the access to capacity to the maximum output of the Muskrat Falls  
11 Generating Station. Pursuant to the power purchase agreement between Hydro and Nalcor,  
12 Hydro is entitled to the full capacity of the Muskrat Falls Plant that is available in any hour  
13 minus the firm capacity associated with the Nova Scotia Block and additional Contracted  
14 Commitments to external markets made by Muskrat Falls Corporation. These additional  
15 Contracted Commitments can only be made for capacity available in excess of that  
16 previously forecast as being required by Hydro. As such, given that Hydro can forecast to  
17 require all capacity from Muskrat Falls with the exception of that committed to serve the  
18 Nova Scotia Block at time of peak, and the capacity accessible under the Water  
19 Management Agreement is limited to the maximum output of the Muskrat Falls Plant, the  
20 Water Management Agreement is not required to be modelled in Hydro’s reliability model.

21 c) Please refer to Hydro’s response to part b).

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<sup>1</sup> The results of previously completed analysis which assessed the travel time and degree of attenuation of outflows from Churchill Falls to Muskrat Falls and the degree to which Muskrat Falls generation could be shaped within the day were used to determine the day-to-day variation in Muskrat Falls generation from the monthly mean. The monthly mean was calculated for each day in the five year study period, and from this, the daily variation from the mean was calculated. This was used to develop a statistical profile of the daily variations in generation at Muskrat Falls.