Q. **Reference: Application, Page 7, Lines 22 - 24**

On Page 7 at Lines 22 - 24, Hydro states:

> Preliminary cost estimates prepared by Hydro indicate that the total capital cost of such an interconnection would be in excess of $400 million. Due to the magnitude of this cost, it was not considered further for analysis.

Please provide the preliminary cost estimates that Hydro prepared for the Interconnection to the Labrador Interconnected System alternative, including a breakdown of the estimate between the terminal station at Port Hope Simpson, transmission line construction, 25 kV distribution line extension and the conversion to 25 kV for the existing distribution feeders.

A. In February 2014, Newfoundland and Labrador Hydro prepared a high-level cost estimate of the interconnection of northern and southern Labrador communities to the Labrador Interconnected System. This cost estimate was updated in February 2016 and included high-level costs for both transmission lines and terminal stations. The alternative studied in 2014 was slightly different than proposed in the "Long-Term Supply for Southern Labrador," but the cost estimates for the transmission lines and terminal stations used were as outlined in Table 1.

Table 1: Capital Cost Estimates ($ million)[1]

Item	Cost/Unit	Total
138 kV Overhead Transmission Line Required: 400 km	0.995/km	**398**
25 kV Overhead Transmission Line Required: 133 km	0.197/km	**26.2**
High-Voltage Terminal Station Required: One at Port Hope Simpson	10.1/station	**10.1**
Voltage Conversion to 25 kV Required: Conversion of Four Communities	0.8/community	**3.2**
Total Approximate Cost		**437.5**

[1] Based on 2016 update.

From these estimates, the consultant estimated 400 km of 138kV transmission line to be approximately $400 million, with the rest of the proposed 25kV distribution lines, high voltage terminal station and community voltage conversions causing the $400 million to be exceeded on a very high level.

In 2020, Hydro engaged Hatch to perform an interconnection study for Labrador.[2] This study included a review of interconnection options, including the construction of transmission lines and terminal stations to supply communities in Southern Labrador from Muskrat Falls. On the basis of this report, a 138/69 kV interconnection of all southern Labrador communities would have a capital cost of approximately $545 million.

For the purposes of further review, the Hatch estimates are revised below to only include supply to the communities in the proposed Southern Labrador Interconnection.[3] As indicated, the total capital cost is approximated to be $350 million for such an interconnection. While this value is less than the $400 million estimate described above, a project with a cost of this magnitude would still not be viable in comparison to other alternatives.

Transmission Lines			
Run	**Voltage**	**Distance**	**CAPEX**
HV-GB To Muskrat Falls Intersection	138 kV	300 km	$204,000,000
Muskrat Falls Intersection to Charlottetown Tap	69 kV	85 km	$49,300,000
Charlottetown Tap to Port Hope Simpson	69 kV	30 km	$17,516,000
Port Hope Simpson to Charlottetown	25 kV	48 km	$9,101,000
Charlottetown to Norman Bay	25 kV	70 km	$13,300,000
Port Hope Simpson to St. Lewis	25 kV	52 km	$9,804,000
Port Hope Simpson to Mary's Harbour	69 kV	49 km	$28,420,000
TOTAL			$331,441,000

[2] "Labrador Interconnection Options Study," Hatch, November 2020.
[3] Revised estimates are for demonstration purposes and are not supported by load flow analysis. Additional reactive support in the form of shunt devices may be required to ensure acceptable voltage regulation in the revised system configuration. However, the total system cost provides a reasonable approximation.

Substations		
Community	**Description**	**CAPEX**
Muskrat Falls Intersection	138 kV to 69 kV; 2 x 10/13.3/16.6 MVA	$9,800,000
Port Hope Simpson	69 kV to 25 kV - 12.5 kV; 2 x 2/2.7/3.3 MVA	$7,400,000
TOTAL		$17,200,000

Reactive Compensation	Rating	Total Cost
Muskrat 138 kV	- 21 Mvar	$483,000