

1 Q. With respect to generation data used in the calculation of LOLH, provide a
2 complete list of generating units including unit name, Maximum Continuous
3 Rating (MCR), forced outage rate (assuming a two-state model for
4 generators), seasonal derates, if any, and planned outage rates. If the
5 software uses a multi-state model for generator outages, provide the state
6 probabilities of outage and explain how the model treats multi-state
7 generating units. Does the software account for seasonal minimum and
8 maximum outputs or energy limitations on hydro generation? If so, please
9 provide the parameters for each relevant generating unit and the rationale for
10 the seasonal limitations.

11
12
13 A. With respect to generation data used in the calculation of LOLH, please see
14 the following tables. (Note: some groups of smaller units have been
15 aggregated into larger units). Hydro uses CEA composite forced outage
16 values for its thermal units and customer generation plants. Due to CEA's
17 ongoing review of the provision for benchmarking data in regulatory settings
18 (See CA 4 (e) NLH), Hydro is unable to provide these particular forced
19 outage rates at this time. Hydro is able to provide forced outage rates for its
20 own hydroelectric plants and for diesel plants.

21
22 Two-state models, not multi-state models, are used for generator outages.

23
24 The software does account for seasonal variations in hydro generation.
25 These parameters, provided on Page 4 of 4 of this RFI, are future projections
26 that have been derived from historical data.

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HYDRO	Maximum Capacity and Outage Rates		Forced	Planned
		Max. Capacity MW	Outage Rates	Outage Rates
Newfoundland & Labrador Hydro				<i>Note 1</i>
	Bay D'Espoir Unit #1	73.0	0.91%	N/A
	Bay D'Espoir Unit #2	73.0	0.91%	N/A
	Bay D'Espoir Unit #3	73.0	0.91%	N/A
	Bay D'Espoir Unit #4	73.0	0.91%	N/A
	Bay D'Espoir Unit #5	73.0	0.91%	N/A
	Bay D'Espoir Unit #6	73.0	0.91%	N/A
	Bay D'Espoir Unit #7	154.0	0.91%	N/A
	Hinds Lake	75.0	0.91%	N/A
	Upper Salmon	84.0	0.91%	N/A
	Cat Arm Unit #1	63.5	0.91%	N/A
	Cat Arm Unit #2	63.5	0.91%	N/A
	Paradise River, Marble Brook	9.3	0.91%	N/A
	Snook's Arm & Venam's Bight			N/A
	Granite Canal	40.0	0.91%	N/A
Newfoundland Power				
	Aggregation of small hydro units	14.1	Note 2	N/A
	Aggregation of small hydro units	16.3	Note 2	N/A
	Aggregation of small hydro units	15.5	Note 2	N/A
	Aggregation of small hydro units	13.4	Note 2	N/A
	Aggregation of small hydro units	14.7	Note 2	N/A
	Mobile	12.0	Note 2	N/A
	Rose Blanche	6.1	Note 2	N/A
Corner Brook Pulp & Paper				
	Deer Lake 50 Hz Unit #1	17.9	Note 2	N/A
	Deer Lake 50 Hz Unit #2	17.9	Note 2	N/A
	Deer Lake 60 Hz Unit #1	11.8	Note 2	N/A
	Deer Lake 60 Hz Unit #2	11.8	Note 2	N/A
	Deer Lake 60 Hz Unit #3	11.8	Note 2	N/A
	Deer Lake 60 Hz Unit #4	11.8	Note 2	N/A
	Deer Lake 60 Hz Unit #5	11.8	Note 2	N/A
	Deer Lake 60 Hz Unit #6	11.3	Note 2	N/A
	Deer Lake 60 Hz Unit #7	11.3	Note 2	N/A
	Watson's Brook	4.0	Note 2	N/A
Abitibi Consolidated				
	Bishop's Falls Plant	13.6	Note 2	N/A
	Grand Falls Plant	44.9	Note 2	N/A
NUGs				
	Exploit's River	32.3	Note 2	N/A
	Star Lake and Rattle Brook	19.0	Note 2	N/A
Newfoundland & Labrador Hydro - Future Options				
	Island Pond	36.0	0.91%	N/A
	Portland Creek	12.0	0.91%	N/A
	Round Pond	18.0	0.91%	N/A
OTHER				
	Wind Farm	25.0	0.91%	N/A

Note 1: Annual maintenance periods for hydro units are much shorter and take place during the off-peak seasons.
Note 2: Due to the ongoing review by CEA of the provision of benchmarking data in regulatory settings,
Hydro is not in a position to provide CEA composite data at this time. See IC 105 NLH

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THERMAL	<u>Maximum Capacity and Outage Rates</u> <small>continued</small>	Max. Capacity MW	Forced Outage Rates	Planned Outage Rates weeks/yr
Newfoundland & Labrador Hydro				
	Holyrood Unit 1	161.5	<i>Note 2</i>	8
	Holyrood Unit 2	161.5	<i>Note 2</i>	8
	Holyrood Unit 3	142.5	<i>Note 2</i>	8
NLH and NP Diesels				
	Aggregation of Diesel Units	21.7	1.18%	2
Newfoundland Power				
	Combustion Turbine - Greenhill	20	<i>Note 2</i>	2
	Combustion Turbine - Wesleyville	10	<i>Note 2</i>	2
	Combustion Turbine - GBS	6.5	<i>Note 2</i>	2
Newfoundland & Labrador Hydro				
	Combustion Turbine - Holyrood	10	<i>Note 2</i>	2
	Combustion Turbine - Stephenville	54	<i>Note 2</i>	2
	Combustion Turbine - Hardwoods	54	<i>Note 2</i>	2
NUG				
	Corner Brook Pulp and Paper Co-gen	15	<i>Note 2</i>	2.1
Newfoundland & Labrador Hydro - Future Options				
	Combined Cycle Combustion Turbine - 125 MW	125	<i>Note 2</i>	2
<p>Note 2: Due to the ongoing review by CEA of the provision of benchmarking data in regulatory settings, Hydro is not in a position to provide CEA composite data at this time. See IC 105 NLH</p>				

<u>Average Energy - Seasonal Generation - Percentage of Annual Total</u>												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bay D'Espoir Unit #1	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Bay D'Espoir Unit #2	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Bay D'Espoir Unit #3	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Bay D'Espoir Unit #4	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Bay D'Espoir Unit #5	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Bay D'Espoir Unit #6	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Bay D'Espoir Unit #7	11.93%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.62%	6.14%	7.61%	7.78%	10.05%
Hinds Lake	14.76%	12.45%	10.72%	6.96%	7.25%	6.67%	2.93%	1.77%	5.22%	9.41%	10.43%	11.43%
Upper Salmon	10.83%	9.90%	10.36%	9.02%	7.09%	6.72%	6.78%	6.81%	6.14%	8.52%	7.78%	10.05%
Cat Arm Unit #1	6.92%	7.57%	10.81%	7.72%	10.81%	10.36%	6.73%	7.40%	8.83%	7.57%	8.03%	7.24%
Cat Arm Unit #2	6.92%	7.57%	10.81%	7.72%	10.81%	10.36%	6.73%	7.40%	8.83%	7.57%	8.03%	7.24%
Paradise River, Marble Brook	8.85%	7.71%	9.66%	12.30%	10.90%	6.28%	4.63%	4.80%	5.48%	8.57%	10.50%	10.33%
Snook's Arm & Venam's Bight												
Granite Canal	8.90%	8.60%	8.70%	8.50%	9.80%	7.50%	8.90%	4.60%	8.80%	8.80%	8.20%	8.70%
Aggregation of small hydro units	10.70%	9.20%	10.30%	10.40%	9.60%	7.10%	5.60%	5.20%	6.00%	8.10%	8.50%	9.30%
Aggregation of small hydro units	10.70%	9.20%	10.30%	10.40%	9.60%	7.10%	5.60%	5.20%	6.00%	8.10%	8.50%	9.30%
Aggregation of small hydro units	10.70%	9.20%	10.30%	10.40%	9.60%	7.10%	5.60%	5.20%	6.00%	8.10%	8.50%	9.30%
Aggregation of small hydro units	10.70%	9.20%	10.30%	10.40%	9.60%	7.10%	5.60%	5.20%	6.00%	8.10%	8.50%	9.30%
Aggregation of small hydro units	10.70%	9.20%	10.30%	10.40%	9.60%	7.10%	5.60%	5.20%	6.00%	8.10%	8.50%	9.30%
Mobile	10.70%	9.20%	10.30%	10.40%	9.60%	7.10%	5.60%	5.20%	6.00%	8.10%	8.50%	9.30%
Rose Blanche	8.90%	7.92%	9.51%	12.20%	10.87%	6.23%	4.63%	4.72%	5.59%	8.39%	10.54%	10.50%
Deer Lake 50 Hz Unit #1	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 50 Hz Unit #2	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #1	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #2	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #3	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #4	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #5	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #6	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Deer Lake 60 Hz Unit #7	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Watson's Brook	8.60%	8.00%	9.20%	8.70%	8.70%	8.00%	7.40%	7.60%	7.90%	8.50%	8.70%	8.70%
Bishop's Falls Plant	9.00%	7.90%	8.20%	8.40%	8.80%	7.80%	7.50%	8.30%	8.20%	8.90%	8.50%	8.50%
Grand Falls Plant	9.00%	7.90%	8.20%	8.40%	8.80%	7.80%	7.50%	8.30%	8.20%	8.90%	8.50%	8.50%
Exploit's River	9.00%	7.90%	8.20%	8.40%	8.80%	7.80%	7.50%	8.30%	8.20%	8.90%	8.50%	8.50%
Star Lake and Rattle Brook	8.90%	7.92%	9.51%	9.56%	9.88%	7.53%	5.94%	6.03%	6.90%	8.39%	9.56%	9.88%
Island Pond	8.80%	7.90%	8.70%	8.30%	10.00%	9.70%	9.50%	4.20%	7.90%	8.00%	8.20%	8.80%
Portland Creek	6.92%	7.57%	10.81%	7.72%	10.81%	10.36%	6.73%	7.40%	8.83%	7.57%	8.03%	7.24%
Round Pond	9.46%	7.56%	8.40%	8.78%	10.00%	8.99%	9.23%	8.09%	6.28%	6.43%	7.94%	8.85%