

1 Q. Further to response to PUB-Nalcor-074, and PUB-Nalcor-057, and references to
2 different load forecasts considered in the Reliability and Resource Adequacy Study,
3 and in reference to any Newfoundland Hydro forecast data available for projected
4 loads for: Newfoundland Power, Newfoundland Hydro Rural Operations, Industrial
5 Deliveries, and summary Newfoundland Hydro loads, by year (not month) through
6 2037: please provide such forecast data for all different underlying economic or
7 retail rate cases, in Excel format, inclusive of energy, peak demand, and loss
8 components as available. This includes data for long-term Labrador base and
9 sensitivity cases, in addition to Island Interconnected System cases.

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12 A. With respect to Hydro's Reliability and Resource Adequacy study, please see PUB-
13 Nalcor-112, Attachment 1, which provides the key load forecast model inputs and
14 segmented load forecast outputs which form the basis of the forecasted coincident
15 peak demand for the Island Interconnected System (IIS) used as input for the
16 Reliability Model and Resource Planning Model. PUB-Nalcor-112, Attachment 2
17 provides the load forecast model inputs and segmented load forecast outputs
18 which form the basis of the forecasted coincident peak demands for the Labrador
19 Interconnected System (LIS) used as input for the Reliability Model and Resource
20 Planning Model.

21

22 Forecast losses included in PUB-Nalcor-112, Attachments 1 and 2 were determined
23 in the Plexos modelling tool using an underlying representation of Hydro's
24 integrated island and Labrador transmission system based on current assumptions.
25 The losses indicated are inclusive of all energy being generated and delivered to
26 meet both internal customer requirements and external market participation. Note
27 that the Reliability and Resource Adequacy study was a planning exercise and not

1 necessarily an output of a market optimization activity. This was appropriate as the
2 primary function of the Reliability and Resource Adequacy study was to ensure
3 near-term and long term system reliability. Market optimization activities, including
4 optimization for losses, are undertaken by Vista analysis. As such, in actual
5 operation there could be opportunities to reduce losses from values forecast as
6 part of the Reliability and Resource Adequacy study.

7
8 Additionally, as a matter of clarification, it should be noted that in addition to the
9 information provided in Nalcor's response to PUB-NLH-057 (specifically the IIS and
10 LIS losses) LIL losses for a large part of the future system are incremental to the
11 response as provided. These losses are modelled dynamically in Plexos using the
12 underlying representation of the transmission system and have been included in
13 PUB-Nalcor-112, Attachment 1.

PUB-Nalcor-112, Attachment 1
Rate Mitigation Options and Impacts Reference, Page 1 of 4

Forecast Completion Date: 10-Sep-18

Modelled Load Forecast Key Inputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
IIS Avg. Residential Price Incl. Taxes (\$/MWh)	155.3	165.3	175.4	185.4	195.5	199.4	203.4	207.5	211.6	215.8	220.2	224.6	229.1	233.6	238.3	243.1	247.9	252.9	258.0
Furnace oil price for St. John's Excluding HST (Cents per Liter)	68.29	80.39	74.79	71.60	70.43	69.94	69.65	69.56	69.40	69.22	69.13	69.08	69.03	68.98	68.93	68.88	68.88	68.81	68.74
Adjusted Real GDP at Basic Prices (\$2007 Millions) ¹	18,013	17,828	17,684	17,485	17,369	17,380	17,541	17,851	18,126	18,557	18,725	19,042	19,298	19,561	19,764	19,742	19,923	20,104	20,146
Consumer Price Index (2002=100)	141	144	148	151	154	157	160	164	167	171	174	178	182	185	189	193	197	202	206
Household Income (\$ Millions)	26,645	26,996	27,579	28,149	28,795	29,510	30,297	31,192	32,089	32,762	33,643	34,640	35,685	36,770	37,849	38,641	39,719	40,859	41,746
Household Disposable Income (\$ Millions)	17,801	18,048	18,444	18,829	19,265	19,748	20,276	20,873	21,473	21,930	22,524	23,193	23,896	24,625	25,352	25,893	26,620	27,388	27,991
Housing Starts	1,159	1,199	1,262	1,303	1,256	1,207	1,174	1,170	1,164	1,115	1,104	1,108	1,116	1,129	1,139	1,103	1,110	1,118	1,088
Real Commercial Building Investment (\$2007 Millions)	490	488	462	461	432	392	379	378	376	375	373	372	370	369	368	367	366	365	363

Source:

- Provincial Economic Forecast provided by Gov NL, April 30, 2018
- Furnace oil pricing basis is PIRA Energy Group, May 2018.

Load Forecast Outputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	
<u>NEWFOUNDLAND POWER</u>																				
Energy Requirements (GWh)	6350	6291	6279	6273	6266	6259	6299	6344	6389	6431	6471	6515	6558	6603	6646	6678	6719	6760	6801	
Peak Demand (MW)	1409	1405	1400	1404	1410	1412	1418	1424	1433	1443	1453	1463	1472	1481	1491	1501	1510	1519	1529	
IIS Coincident Peak Demand (MW)	1401	1398	1393	1397	1403	1405	1411	1417	1426	1436	1446	1456	1465	1474	1484	1493	1503	1511	1521	
<u>NLH RURAL</u>																				
Energy Requirements (GWh)	432	425	420	410	404	401	401	401	401	400	400	401	401	402	402	401	402	402	401	
Peak Demand (MW)	99	97	96	94	93	93	93	93	93	93	93	93	94	94	94	94	94	94	94	
IIS Coincident Peak Demand (MW)	93	92	91	89	88	88	88	88	88	88	88	88	89	89	89	89	89	89	89	
<u>INDUSTRIAL</u>																				
Energy Requirements (GWh)	1520	1493	1493	1493	1493	1493	1493	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	
Sum of Customer Max Demands (MW)	191	188	188	188	188	188	188	187	187	187	187	187	187	187	187	187	187	187	187	
IIS Coincident Peak Demand (MW)	175	172	172	172	172	172	172	171	171	171	171	171	171	171	171	171	171	171	171	
<u>IIS SUMMARY (60 Hz)</u>																				
Energy Requirements (GWh)	8301	8208	8191	8176	8162	8152	8192	8235	8281	8321	8362	8406	8450	8495	8539	8570	8611	8653	8692	
Island Losses (GWh)	294.8	362.4	413.7	428.2	425.8	427.8	426.2	414.8	419.1	416.9										
LIL Losses (GWh)	56.4	278.4	313.5	305.4	305.8	306.2	306.4	299.1	301.7	304.4										
Total Energy Requirements (GWh)	8652	8849	8918	8909	8893	8886	8924	8948	9001	9042										
Annual Peak (P-50) (MW)	1671	1662	1657	1659	1663	1666	1672	1677	1686	1696	1706	1716	1726	1735	1745	1755	1764	1773	1782	

Note:

- IIS summary GWh and MW may include rounding differences.
- Plexos model input is IIS GWh and MW.

PUB-Nalcor-112, Attachment 1
Rate Mitigation Options and Impacts Reference, Page 2 of 4

Forecast Completion Date: 10-Sep-18

Modelled Load Forecast Key Inputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
IIS Avg. Residential Price Incl. Taxes (\$/MWh)	155.3	173.4	191.5	209.6	227.7	232.3	236.9	241.6	246.5	251.4	256.4	261.6	266.8	272.1	277.6	283.1	288.8	294.6	300.4
Furnace oil price for St. John's excluding taxes, including carbon premium.	68.29	80.39	74.79	71.60	70.43	69.94	69.65	69.56	69.40	69.22	69.13	69.08	69.03	68.98	68.93	68.88	68.88	68.81	68.74
Adjusted Real GDP at Basic Prices (\$2007 Millions) ¹	18,013	17,828	17,684	17,485	17,369	17,380	17,541	17,851	18,126	18,557	18,725	19,042	19,298	19,561	19,764	19,742	19,923	20,104	20,146
Consumer Price Index (2002=100)	141	144	148	151	154	157	160	164	167	171	174	178	182	185	189	193	197	202	206
Household Income (\$ Millions)	26,645	26,996	27,579	28,149	28,795	29,510	30,297	31,192	32,089	32,762	33,643	34,640	35,685	36,770	37,849	38,641	39,719	40,859	41,746
Household Disposable Income (\$ Millions)	17,801	18,048	18,444	18,829	19,265	19,748	20,276	20,873	21,473	21,930	22,524	23,193	23,896	24,625	25,352	25,893	26,620	27,388	27,991
Housing Starts	1,159	1,199	1,262	1,303	1,256	1,207	1,174	1,170	1,164	1,115	1,104	1,108	1,116	1,129	1,139	1,103	1,110	1,118	1,088
Real Commercial Building Investment (\$2007 Millions)	490	488	462	461	432	392	379	378	376	375	373	372	370	369	368	367	366	365	363

Source:

- Provincial Economic Forecast provided by Gov NL, April 30, 2018
- Furnace oil pricing basis is PIRA Energy Group, May 2018.

Load Forecast Outputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	
<u>NEWFOUNDLAND POWER</u>																				
Energy Requirements (GWh)	6349	6291	6212	6141	6064	5987	6014	6044	6076	6104	6131	6163	6193	6224	6254	6274	6302	6331	6360	
Peak Demand (MW)	1409	1405	1400	1393	1386	1376	1368	1370	1376	1383	1389	1395	1400	1406	1412	1419	1424	1430	1436	
IIS Coincident Peak Demand (MW)	1401	1398	1393	1386	1379	1369	1362	1363	1369	1376	1382	1388	1393	1399	1405	1412	1417	1423	1429	
<u>NLH RURAL</u>																				
Energy Requirements (GWh)	432	424	415	401	390	385	384	384	384	382	382	382	383	383	383	382	382	382	380	
Peak Demand (MW)	99	97	95	92	90	89	89	89	89	89	89	89	89	90	90	90	90	90	89	
IIS Coincident Peak Demand (MW)	93	92	90	87	85	84	84	84	84	84	84	84	85	85	85	85	85	85	84	
<u>INDUSTRIAL</u>																				
Energy Requirements (GWh)	1520	1493	1493	1493	1493	1493	1493	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	
Sum of Customer Max Demands (MW)	191	188	188	188	188	188	188	187	187	187	187	187	187	187	187	187	187	187	187	
IIS Coincident Peak Demand (MW)	175	172	172	172	172	172	172	171	171	171	171	171	171	171	171	171	171	171	171	
<u>IIS SUMMARY (60 Hz)</u>																				
Energy Requirements (GWh)	8301	8207	8119	8033	7946	7864	7890	7918	7950	7976	8003	8035	8065	8097	8127	8145	8174	8203	8230	
Annual Peak (P-50) (MW)	1670	1662	1656	1645	1637	1625	1618	1620	1626	1632	1638	1644	1650	1656	1663	1668	1674	1680	1686	

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Forecast Completion Date: 10-Sep-18

Modelled Load Forecast Key Inputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
IIS Avg. Residential Price Incl. Taxes (\$/MWh)	155.3	176.1	196.9	217.6	238.4	259.2	280.0	285.6	291.3	297.1	303.1	309.1	315.3	321.6	328.0	334.6	341.3	348.1	355.1
Furnace oil price for St. John's excluding taxes, including carbon premium.	68.29	80.39	74.79	71.60	70.43	69.94	69.65	69.56	69.40	69.22	69.13	69.08	69.03	68.98	68.93	68.88	68.88	68.81	68.74
Adjusted Real GDP at Basic Prices (\$2007 Millions) ¹	18,013	17,828	17,684	17,485	17,369	17,380	17,541	17,851	18,126	18,557	18,725	19,042	19,298	19,561	19,764	19,742	19,923	20,104	20,146
Consumer Price Index (2002=100)	141	144	148	151	154	157	160	164	167	171	174	178	182	185	189	193	197	202	206
Household Income (\$ Millions)	26,645	26,996	27,579	28,149	28,795	29,510	30,297	31,192	32,089	32,762	33,643	34,640	35,685	36,770	37,849	38,641	39,719	40,859	41,746
Household Disposable Income (\$ Millions)	17,801	18,048	18,444	18,829	19,265	19,748	20,276	20,873	21,473	21,930	22,524	23,193	23,896	24,625	25,352	25,893	26,620	27,388	27,991
Housing Starts	1,159	1,199	1,262	1,303	1,256	1,207	1,174	1,170	1,164	1,115	1,104	1,108	1,116	1,129	1,139	1,103	1,110	1,118	1,088
Real Commercial Building Investment (\$2007 Millions)	490	488	462	461	432	392	379	378	376	375	373	372	370	369	368	367	366	365	363

Source:

- Provincial Economic Forecast provided by Gov NL, April 30, 2018
- Furnace oil pricing basis is PIRA Energy Group, May 2018.

Load Forecast Outputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
<u>NEWFOUNDLAND POWER</u>																			
Energy Requirements (GWh)	6349	6291	6190	6096	5997	5894	5790	5692	5705	5714	5724	5737	5749	5763	5775	5779	5790	5802	5815
Peak Demand (MW)	1409	1405	1400	1389	1378	1363	1351	1329	1312	1313	1314	1316	1317	1318	1319	1320	1322	1322	1324
IIS Coincident Peak Demand (MW)	1401	1398	1393	1382	1371	1357	1344	1323	1306	1307	1308	1309	1310	1311	1312	1314	1315	1316	1317
<u>NLH RURAL</u>																			
Energy Requirements (GWh)	432	423	413	397	385	377	368	363	362	361	360	360	360	360	359	358	357	357	355
Peak Demand (MW)	99	97	95	91	89	87	85	84	84	84	84	84	84	84	84	84	84	84	83
IIS Coincident Peak Demand (MW)	93	92	90	86	84	82	80	79	80	79	79	79	80	80	80	79	79	79	79
<u>INDUSTRIAL</u>																			
Energy Requirements (GWh)	1520	1493	1493	1493	1493	1493	1493	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490
Sum of Customer Max Demands (MW)	191	188	188	188	188	188	188	187	187	187	187	187	187	187	187	187	187	187	187
IIS Coincident Peak Demand (MW)	175	172	172	172	172	172	172	171	171	171	171	171	171	171	171	171	171	171	171
<u>IIS SUMMARY (60 Hz)</u>																			
Energy Requirements (GWh)	8301	8206	8095	7986	7875	7763	7650	7544	7558	7565	7574	7587	7599	7613	7625	7627	7638	7649	7660
Annual Peak (P-50) (MW)	1671	1662	1655	1641	1628	1611	1597	1574	1557	1558	1559	1561	1562	1563	1564	1565	1567	1567	1568

Note:

- IIS summary GWh and MW may include rounding differences.
- Plexos model input is IIS GWh and MW.

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Rate Mitigation Options and Impacts Reference, Page 4 of 4

Forecast Completion Date: 10-Sep-18

Modelled Load Forecast Key Inputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
IIS Avg. Residential Price Incl. Taxes (\$/MWh)	155.3	165.4	175.4	181.5	181.0	180.7	183.2	182.6	182.6	186.3	187.4	188.0	192.3	196.6	201.0	205.5	210.2	214.9	219.7
Furnace oil price for St. John's excluding taxes, including carbon premium.	74.27	80.34	76.43	73.70	73.45	73.84	73.92	73.69	74.08	74.75	75.13	75.20	75.29	75.09	75.12	74.83	74.57	74.75	74.67
Adjusted Real GDP at Basic Prices (\$2007 Millions) ¹	18,013	17,828	17,684	17,485	17,480	17,720	17,819	18,113	18,483	19,630	20,321	20,710	20,733	20,542	19,990	19,777	20,321	20,975	20,842
Consumer Price Index (2002=100)	141	144	148	151	154	157	160	164	167	171	174	178	182	185	189	193	197	202	206
Household Income (\$ Millions)	26,645	26,996	27,579	28,149	28,933	29,896	30,572	31,424	32,427	34,036	35,625	36,754	37,544	38,175	38,896	39,828	41,987	43,985	45,029
Household Disposable Income (\$ Millions)	17,801	18,048	18,444	18,829	19,354	19,997	20,454	21,025	21,694	22,755	23,809	24,569	25,112	25,555	26,056	26,690	28,117	29,443	30,156
Housing Starts	1,159	1,199	1,262	1,303	1,284	1,281	1,216	1,199	1,208	1,315	1,401	1,391	1,323	1,243	1,187	1,167	1,320	1,426	1,383
Real Commercial Building Investment (\$2007 Millions)	490	488	462	461	432	392	380	378	377	377	376	375	374	372	370	369	368	368	367

Source:

- Provincial Economic Forecast provided by Gov NL, April 30, 2018
- Furnace oil pricing basis is PIRA Energy Group, May 2018.

Load Forecast Outputs

	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
<u>NEWFOUNDLAND POWER</u>																			
Energy Requirements (GWh)	6356	6299	6288	6285	6317	6406	6483	6547	6639	6751	6834	6922	6999	7044	7083	7127	7205	7284	7344
Peak Demand (MW)	1409	1407	1402	1407	1413	1422	1444	1458	1472	1490	1509	1526	1545	1563	1576	1588	1599	1612	1627
IIS Coincident Peak Demand (MW)	1329	1327	1322	1327	1333	1342	1364	1378	1392	1410	1429	1446	1464	1482	1495	1507	1518	1530	1545
<u>NLH RURAL</u>																			
Energy Requirements (GWh)	432	425	421	411	409	412	412	414	417	422	426	428	428	427	426	426	430	434	433
Peak Demand (MW)	99	97	97	95	94	95	95	96	97	98	99	100	100	100	100	100	101	102	102
IIS Coincident Peak Demand (MW)	91	90	89	87	87	88	88	88	89	90	91	92	92	92	92	92	93	94	94
<u>INDUSTRIAL</u>																			
Energy Requirements (GWh)	1520	1493	1493	1493	1493	1493	1493	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490
Sum of Customer Max Demands (MW)	191	188	188	188	188	188	188	187	187	187	187	187	187	187	187	187	187	187	187
IIS Coincident Peak Demand (MW)	82	80	80	80	80	80	80	79	79	79	79	79	79	79	79	79	79	79	79
<u>IIS SUMMARY (60 Hz)</u>																			
Energy Requirements (GWh)	8308	8216	8201	8189	8219	8310	8388	8451	8546	8663	8750	8841	8918	8961	8999	9043	9126	9208	9268
Annual Peak (P-50) (MW)	1671	1664	1659	1662	1668	1678	1699	1714	1729	1748	1767	1785	1804	1822	1835	1847	1858	1872	1887

Note:

- IIS summary GWh and MW may include rounding differences.
- Plexos model input is IIS GWh and MW.

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Forecast Completion Date: July 16, 2018

Long Term Labrador Interconnected Base Case Load Forecast Summary																			
	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>
NLH Rural - Labrador West																			
Energy Requirements (GWh) ¹	371.8	383.7	384.6	385.4	386.2	387.3	388.6	389.8	391.0	392.1	393.1	394.2	395.2	396.2	397.3	398.3	399.4	400.4	401.4
Coincident Peak at LIS Peak (MW) ²	75.2	75.9	76.1	76.3	76.5	76.8	77.1	77.4	77.8	78.0	78.3	78.6	78.9	79.1	79.4	79.7	80.0	80.3	80.5
NLH Rural - Labrador East																			
Energy Requirements (GWh) ¹	344.8	345.7	346.9	348.0	349.0	351.0	352.9	354.8	356.6	358.5	360.2	361.9	363.6	365.3	366.9	368.5	370.0	371.5	373.0
Coincident Peak at LIS Peak (MW) ²	70.6	70.8	71.1	71.3	71.6	72.0	72.5	72.9	73.4	73.8	74.3	74.7	75.1	75.5	75.9	76.3	76.7	77.1	77.4
Muskrat Falls Construction																			
Energy Requirements (GWh) ¹	33.8	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coincident Peak at LIS Peak (MW) ²	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Totalized LIS Utility Requirements (Net of bulk transmission losses)																			
Energy Requirements (GWh) ¹	750.4	738.9	731.4	733.3	735.2	738.3	741.4	744.5	747.6	750.6	753.4	756.1	758.8	761.5	764.2	766.8	769.4	771.9	774.4
Coincident Peak at LIS Peak (MW) ²	149.0	146.7	147.2	147.6	148.1	148.9	149.6	150.4	151.1	151.9	152.6	153.3	154.0	154.6	155.3	156.0	156.7	157.3	158.0
Totalized LIS Industrial Requirements (Net of bulk transmission losses)																			
Energy Requirements (GWh) ¹	1,741.5	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6	1,740.6
Customer Peak (MW)	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0
Coincident Peak at LIS Peak (MW) ²	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5	242.5
LIS Utility and Industrial Requirements (Net of bulk transmission losses)																			
Energy Requirements (GWh) ¹	2,491.9	2,479.5	2,472.0	2,473.9	2,475.8	2,478.9	2,482.0	2,485.1	2,488.2	2,491.2	2,494.0	2,496.7	2,499.4	2,502.1	2,504.8	2,507.4	2,510.0	2,512.5	2,515.0
Labrador East and West Losses (GWh) ⁴	182.6	209.1	169.2	170.5	169.4	168.4	169.1	169.9	172.2	170.7									
LTA Losses (GWh) ⁴	3.9	3.4	2.2	1.7	1.7	1.7	1.7	1.9	2.1	1.8									
Total Labrador Losses (GWh) ⁴	186.5	212.5	171.4	172.2	171.1	170.1	170.8	171.8	174.3	172.5									
Total Energy Requirements (GWh)	2,678.4	2,692.0	2,643.4	2,646.1	2,646.9	2,649.0	2,652.8	2,656.9	2,662.5	2,663.7									
Coincident Peak at LIS Peak (MW) ²	391.5	389.2	389.7	390.1	390.6	391.4	392.1	392.9	393.6	394.4	395.1	395.8	396.5	397.1	397.8	398.5	399.2	399.8	400.5
Notes:																			
1. Energy equates to distribution system requirements at terminal station delivery points.																			
2. Peak at terminal station delivery points coincident with Labrador Interconnected System (LIS) peak.																			
3. All peaks are presented on a winter peak basis.																			
4. Losses calculated from underlying transmission networks as modeled in Plexos.																			

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	Medium Term					Long Term														
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
NLH Rural - LIS West																				
Total Domestic Customers Year End	174,784	174,355	174,791	175,227	175,663	175,655	175,711	175,766	175,820	175,790	175,678	175,566	175,453	175,339	175,225	175,110	174,995	174,879	174,763	
Change in Customers	5,262	5,274	5,285	5,297	5,308	5,323	5,338	5,353	5,368	5,378	5,388	5,398	5,408	5,418	5,428	5,438	5,448	5,458	5,468	
Average Use kWh	11	12	11	12	11	15	15	15	15	10	10	10	10	10	10	10	10	10	10	
Total General Service Total GS Customers	33,251	33,097	33,108	33,118	33,128	33,046	32,963	32,881	32,799	32,717	32,636	32,554	32,473	32,392	32,311	32,231	32,150	32,070	31,990	
Lighting MWh Customers	177,339	189,115	189,452	189,790	190,127	191,228	192,329	193,430	194,531	195,632	196,733	197,834	198,934	200,035	201,136	202,237	203,338	204,439	205,540	
	701	707	712	717	722	727	734	739	746	751	757	763	768	774	780	786	792	798	803	
Total Sales Customers	816	817	826	827	828	826	823	820	817	815	812	809	806	803	801	798	795	792	789	
	140	141	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	
Co. Use MWh Customers	352,940	364,288	365,070	365,844	366,619	367,708	368,863	370,016	371,168	372,237	373,223	374,208	375,193	376,178	377,162	378,145	379,128	380,110	381,092	
	6,103	6,122	6,140	6,158	6,175	6,196	6,219	6,240	6,263	6,279	6,296	6,313	6,329	6,346	6,363	6,380	6,397	6,414	6,430	
Losses MWh	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	321	
Losses %	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	18,517	19,128	19,168	19,209	19,249	19,306	19,367	19,427	19,487	19,544	19,595	19,647	19,699	19,750	19,802	19,853	19,905	19,957	20,008	
	5%	5%	5%	5%	5%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%	
Gross Energy (MWh)	371,777	383,736	384,559	385,373	386,188	387,335	388,550	389,764	390,976	392,101	393,139	394,176	395,212	396,249	397,284	398,319	399,353	400,387	401,420	
Gross Winter Peak (LW kW)	76,724	77,361	77,594	77,826	78,058	78,359	78,675	78,991	79,307	79,606	79,887	80,169	80,452	80,735	81,018	81,302	81,586	81,870	82,155	

Long Term Labrador Interconnected Upside Load Sensitivity Forecast Summary

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Tacora Resources Mine Re-development Case																			
Customer & Terminal Station Energy (MWh)	157,680	245,280	336,384	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408	357,408
Customer & Terminal Station Peak (kW) ¹	30,000	40,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000
CP at Labrador West Peak (kW) ²	29,700	39,600	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520	47,520
CP at LIS Peak (kW) ³	29,100	38,800	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560	46,560
Labrador West Data Center Development Case																			
Customer Energy (MWh)	0	163,760	278,392	393,024	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693	436,693
Terminal Station Energy (MWh)	0	172,275	292,868	413,461	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401	459,401
Customer Peak (kW) ¹	0	27,093	40,639	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186	54,186
CP at Labrador West Peak (kW) ²	0	27,077	40,615	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476
CP at LIS Peak (kW) ³	0	27,077	40,615	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476	51,476
Labrador East Data Center Development Case																			
Customer Energy (MWh)	0	90,433	153,735	217,038	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153	241,153
Terminal Station Energy (MWh)	0	94,683	160,961	227,239	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488	252,488
Customer Peak (kW) ¹	0	14,961	22,442	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923	29,923
CP at Labrador East Peak (kW) ²	0	14,213	21,320	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427
CP at LIS Peak (kW) ³	0	14,213	21,320	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427	28,427
Labrador East DND Central Heating Plant Conversion Case																			
Customer Energy (MWh)	0	14,191	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304	47,304
Terminal Station Energy (MWh)	0	14,858	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527	49,527
Customer Peak (kW) ¹	0	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
CP at Labrador East Peak (kW) ²	0	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
CP at LIS Peak (kW) ³	0	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560	10,560

Notes:

1. Peak requirements reflect requirements at terminal station delivery points.
2. Peak requirements at terminal station delivery points coincident with region peak.
3. Peak at terminal station delivery points coincident with Labrador Interconnected System (LIS) peak.
4. Tacora requirements reflect NLH's expectation of overall load requirements at June 2018 based on requirements indicated by Tacora.
5. Labrador data center sensitivity loads reflect queued service applications at July 11, 2018.
6. DND central heating plant conversion loads estimated at 12 to 15 MW by DND.

Source: Market Analysis Section, Rural Planning Department