1 Q. Reference: CA-NLH-030, Page 3 of 8, Table 2

Please provide a revised table that shows the Island Interconnected System

contingency loss of one pole of the Labrador-Island HVdc Link with the additional

contingency of the loss of Hydro's largest generator on the Island Interconnected

System.

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A. Table 1 below provides an update to Table 2 of Hydro's response to CA-NLH-030, assuming the loss of one pole of the Labrador – Island HVdc Link (LIL) and the largest generator on the Island Interconnected System.

| | | | | 7 | able 1 | | | | | |
|------------------------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| NLH Island Interconnected System | | | | | | | | | | |
| | Contingency Loss of One Pole of The Labrador-Island Link and Bay d'Espoir Unit 7 | | | | | | | | | |
| Peak Demand – Supply Analysis - MW | | | | | | | | | | |
| 2018 - 2027 | | | | | | | | | | |
| Firm | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
| Generation | | | | | | | | | | |
| Hydro | 773.3 | 773.3 | 773.3 | 773.3 | 773.3 | 773.3 | 773.3 | 773.3 | 773.3 | 773.3 |
| NUGs | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 |
| HVdc | 448.0 | 448.0 | 448.0 | 448.0 | 448.0 | 448.0 | 448.0 | 448.0 | 448.0 | 448.0 |
| Subtotal | 1307.3 | 1307.3 | 1307.3 | 1307.3 | 1307.3 | 1307.3 | 1307.3 | 1307.3 | 1307.3 | 1307.3 |
| Hydro | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 | 234.7 |
| Standby | | | | | | | | | | |
| NP | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 |
| standby | | | | | | | | | | |
| Subtotal | 276.2 | 276.2 | 276.2 | 276.2 | 276.2 | 276.2 | 276.2 | 276.2 | 276.2 | 276.2 |
| Total Gen | 1583.5 | 1583.5 | 1583.5 | 1583.5 | 1583.5 | 1583.5 | 1583.5 | 1583.5 | 1583.5 | 1583.5 |
| System | 1570 | 1559 | 1558 | 1568 | 1589 | 1616 | 1635 | 1656 | 1677 | 1695 |
| Peak | | | | | | | | | | |
| Reserve | 13.5 | 24.5 | 25.5 | 15.5 | -5.5 | -32.5 | -51.5 | -72.5 | -93.5 | -111.5 |

Notes:

- Analysis is for Hydro System.
- Hydro allocation via HVdc at Soldiers Pond reduced to 448 MW in continuous monopolar operation.
- NUGs non-utility generators.
- Hydro Standby includes Hardwoods (50 MW), Stephenville (50 MW), New Holyrood Combustion turbine (120 MW), Hawke's Bay (5.0 MW) and St. Anthony (9.7 MW) diesel plants.
- NP Standby includes Greenhill, Wesleyville and Grand Bay Combustion turbines and portable diesels
- System Peak taken from 2013 PLF dated June 19, 2013.
- Holyrood units (while available for 2018 to 2020 period) have not been included in the reserve analysis.

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The analysis highlights that for the simultaneous loss of one pole of the LIL and loss of the largest generator on the Island, there is an expected generation capacity shortfall on the Island Interconnected System beginning in 2022. A review of NERC transmission planning standards suggest that for events resulting in the loss of two or more elements (i.e., a line and a generator), controlled loss of load is acceptable. This scenario is covered under NERC transmission planning standards TPL-003-0b and TPL-004-0a as Category C and/or Category D events standards. However, in this case it is difficult to ascertain how the trip of one pole of the LIL would result in simultaneous loss of Unit 7 at Bay d'Espoir and vice versa.

In contemplating the scenario that one pole of the LIL is out of service and there is a subsequent loss of Bay d'Espoir Unit 7, the NPCC Directory #1 Design and Operation of the Bulk Power System contemplates the reliability requirement in section 5.4 Transmission Design Criteria. This requires the bulk power system to have sufficient transmission capability to serve forecasted demand for single contingencies following the loss of a critical element such as a generator or transmission line assuming generation and power flows are adjusted between the outages by use of ten-minute reserves, phase angle regulator control and HVdc control as required. In this context, Table 1 above denotes a generation capacity deficit for the scenario beginning in the year 2022. Although this is an n-2 contingency, where customer load loss is acceptable, Hydro has a number of options to avoid load loss in this hypothetical scenario, including:

- Industrial and commercial interruptible load arrangements;
- Customer demand side management initiatives; and
- Imports from the Maritimes/New England.

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| Further, in the event of a capacity shortfall, the Electrical Power Control Act 1994, |
| Part III Power Emergencies, enables the Lieutenant Governor in Council to declare a |
| state of emergency and appoint an emergency controller who may redirect all |
| generation and transmission assets in the province to supply the most critical and |
| essential loads to minimize the overall impact of any shortfall. |