



NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES
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2022-12-13

Ms. Shirley Walsh
Senior Legal Counsel, Regulatory
Newfoundland and Labrador Hydro
P.O. Box 12400
Hydro Place, Columbus Drive
St. John's, NL A1B 4K7

Dear Ms. Walsh:

**Re: Newfoundland and Labrador Hydro - Reliability and Resource Adequacy Study
Review - To NLH - Requests for Information**

Enclosed are Requests for Information (RFIs) PUB-NLH-227 to PUB-NLH-310 regarding the above-noted matter which are being filed earlier than the scheduled date of January 13, 2023. Although responses are not required to be filed until February 10, 2023, we request that they be filed as soon as possible.

Following meetings Hydro had individually with the parties in November, it was decided to proceed directly to filing RFIs. Therefore the technical conference previously tentatively scheduled for the week of January 23, 2023 will not proceed. The process and schedule for this Reliability and Resource Adequacy Review will be set after the filing of the RFI responses.

If you have questions please contact the undersigned.

Sincerely,

A handwritten signature in blue ink, appearing to read 'C. Blundon', written over a horizontal line.

Cheryl Blundon
Board Secretary

CB/cj
Enclosure

ecc **Newfoundland and Labrador Hydro**
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1 **IN THE MATTER OF**
2 the **Electrical Power Control Act, 1994**,
3 SNL 1994, Chapter E-5.1 (the “**EPCA**”)
4 and the **Public Utilities Act**, RSNL 1990,
5 Chapter P-47 (the “**Act**”), as amended, and
6 regulations thereunder; and
7
8
9 **IN THE MATTER OF** Newfoundland and
10 Labrador Hydro’s Reliability and Supply
11 Adequacy Study.

**PUBLIC UTILITIES BOARD
REQUESTS FOR INFORMATION**

PUB-NLH-227 to PUB-NLH-310

Issued: December 13, 2022

- 1 **PUB-NLH-227** The brochure, “Planning for Today, Tomorrow, and the Future” filed with the
2 Reliability and Resource Adequacy Study 2022 Update, states on page 4: “The
3 current base forecast is expected to grow by 120 MW in the next decade.”
4 Explain the reasons for this increase, including how much is attributed to
5 electric vehicles and each other category of load growth.
6
- 7 **PUB-NLH-228** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 5, lines
8 6-23 and page 6, lines 1-2. Describe in detail the process and schedule Hydro
9 proposes to use for near-term, medium-term and long-term reliability and
10 system planning for the Newfoundland and Labrador electrical system given
11 the described uncertainties and challenges.
12
- 13 **PUB-NLH-229** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 5-6.
14 Hydro has listed a number of uncertainties that may influence system planning
15 for the electrical system in the province and states that the 2022 Update does
16 not include an expansion plan that contemplates all these uncertainties. Given
17 that system planning always must include consideration of uncertain and
18 unknown factors, explain why Hydro believes it can not propose a long-term
19 plan at this time that does include appropriate consideration of such factors.
20
- 21 **PUB-NLH-230** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 5, lines
22 10-12. Hydro states that there is “a high level of uncertainty regarding the
23 potential load growth on the Labrador Interconnected System...and on the
24 Island Interconnected System.” Describe specifically how, beyond monitoring,
25 Hydro plans to address this uncertainty, both in Labrador, due to significant
26 customer requests, and on the Island, from electrification and electric vehicles.
27
- 28 **PUB-NLH-231** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 5, lines
29 17-19. Hydro mentions the Clean Electricity Standard. Describe specifically
30 how, beyond monitoring, Hydro plans to address this initiative.
31
- 32 **PUB-NLH-232** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 5.
33 Footnote 22 states: “Hydro is undertaking a third-party study with the goal of
34 determining the amount of wind that can be integrated into Hydro’s system,
35 including preliminary interconnection information for future potential self-
36 supply customers.” Provide the name of the consultant undertaking this study,
37 the scope and schedule for this study, and explain how Hydro plans to use the
38 results of this study.
39
- 40 **PUB-NLH-233** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 5,
41 footnote 22 and page 22, lines 16-22. Describe specifically how, in addition to
42 the third-party study mentioned in footnote 22, Hydro plans to address the
43 network and resource adequacy implications of wind integration. Include in
44 the response the schedule to address this issue.

- 1 **PUB-NLH-234** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 6, lines
2 3-5. Hydro states that it recommends a decision-based phased approach.
3 Provide (a) a conceptual description of this approach, (b) an outline of key steps
4 in this process, and details regarding the steps that are complete and the steps
5 that remain outstanding, and (c) the results of the decision making process
6 steps to date.
7
- 8 **PUB-NLH-235** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 6, lines
9 8-16. Explain how the reliability and duration of outages data required for the
10 statistical analysis was determined for outages of the LIL for both the overhead
11 line and the converters. Provide the actual parameters that were used and
12 justify these values.
13
- 14 **PUB-NLH-236** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 8, lines
15 1-3 and footnote 28. Hydro states that: "The mitigated rate that formed the
16 basis of the rate included in the load forecast is the target mitigated rate that
17 was announced publicly by the Government of Newfoundland and Labrador."
18 Provide the numerical value(s) of the rate used each year in the forecast.
19
- 20 **PUB-NLH-237** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 8, lines
21 1-3. State whether Hydro believes that achieving the established rate
22 mitigation targets should be taken as a given and if not, how and when varying
23 levels of success in reaching them should be considered in exploring supply
24 resource additions or avoidance.
25
- 26 **PUB-NLH-238** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 8, lines
27 1-3. Describe Hydro's views (and studies or analyses if available) of the impacts
28 a range of rate mitigation levels will have on the load forecast and the need
29 for additional supply resources.
30
- 31 **PUB-NLH-239** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 8, lines
32 4-7. Hydro states: "All inputs in the resource planning process flowchart were
33 completed for the 2022 Update except for Step 'h'." Has Hydro ever performed
34 a study in which all inputs in the flowchart were completed including Step 'h'?
35 If so, describe the context of the study, any ways in which the implemented
36 process differed from that depicted in the flowchart, and how the results of
37 the study were used. Provide the report from this study if one was completed.
38
- 39 **PUB-NLH-240** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 8, lines
40 12-14. Hydro states that: "an estimated rate impact placeholder for generation
41 expansion builds was utilized to assess the impact on the Island Interconnected
42 System. This estimated rate impact placeholder was included as an addition to
43 the mitigated rate." Provide the numerical value(s) of this rate impact
44 placeholder and the total rate used as input to the rates model including both

- 1 the mitigated rate and the rate impact placeholder. Also, provide a description
2 of and the results from any analysis showing the sensitivity of the load forecast
3 to this rate impact placeholder.
4
- 5 **PUB-NLH-241** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 8, lines
6 14-17. Describe how Hydro anticipates or recommends incorporating
7 stakeholder input on the rate consequences of all available alternative supply
8 resources (or avoidance of them) prior to committing to substantial
9 expenditures on a preferred alternative and to delaying or ceasing of
10 consideration of other alternatives.
11
- 12 **PUB-NLH-242** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 9, lines
13 14-15. Hydro states: "As discussed in the 2018 Filing, the existing criteria will
14 continue to be applied until full integration and reliable operation of the
15 Muskrat Falls Project Assets." Has Hydro ever had an external review of the
16 applicability or inapplicability of the $LOLE \leq 0.1$ criterion to the existing system
17 prior to integration of the LIL and Muskrat Falls? If so, provide this review.
18 Given the length of time the system has operated under the existing criteria
19 and how long it will continue to do so, is Hydro of the opinion that it is at least
20 informative to address gaps between the two. If not, why not?
21
- 22 **PUB-NLH-243** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 10, line
23 19. Hydro refers to the "minimum regulating reserve." Provide the relationship
24 between this minimum regulating reserve and the operational reserve
25 requirement described in section 3.2.2 and explain the impact of the minimum
26 regulating reserve on the Reliability Model.
27
- 28 **PUB-NLH-244** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 11.
29 Provide a description of the time frames and risks on resumption of
30 transmission following trips caused by converters versus resumption following
31 line failures.
32
- 33 **PUB-NLH-245** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 11, lines
34 8-11. Explain why Hydro considers the first and second contingency losses to
35 be as stated, since there is a (albeit infrequent but could happen) likelihood of
36 the loss of all power carried on the LIL as a single event.
37
- 38 **PUB-NLH-246** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 15, lines
39 5-6. Hydro states: "A transmission constraint was revised for the Island
40 Interconnected System and updated in the Reliability Model. From that
41 analysis, it was determined that if the LIL experienced a bipole (i.e., total)
42 outage, the eastward power flows from the Bay d'Espoir Hydroelectric
43 Generating Facility would be limited to a maximum of approximately 750 MW.
44 In the 2018 Filing, the eastward power flows from the Bay d'Espoir

- 1 Hydroelectric Generating Facility were limited to a maximum of approximately
2 650 MW.” Explain how the emergency limit of 750 MW was determined and
3 provide documentation of the 750 MW emergency limit east of Bay d’Espoir.
4 Also discuss any limit on the time duration over which it is reasonable to apply
5 the 750 MW emergency limit east of Bay d’Espoir and any relevant conditions
6 or restrictions.
7
- 8 **PUB-NLH-247** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 16, lines
9 4-7. Hydro states that: “Until the LIL is fully commissioned with multiple years
10 of operational experience to better inform the selection of a bipole forced
11 outage rate, the LIL capacity and bipole forced outage rate will be addressed
12 with a range of upper and lower limits,” and the LIL Capacity and Bipole Forced
13 Outage Rates scenarios are set out in Table 1, page 17. Identify how many
14 years of experience Hydro anticipates will be required to inform the selection
15 of the bipole outage rate and when Hydro anticipates that the $LOLE \leq 0.1$
16 criterion will become relevant.
17
- 18 **PUB-NLH-248** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 17, lines
19 5-12. Explain how Hydro determined that restoration of the LIL could take up
20 to seven weeks and provide documentation of the analysis or study that was
21 completed to support this conclusion. In light of this conclusion explain why
22 Hydro has chosen a period of six weeks for restoration as the basis for analysis
23 of the implications of an extended LIL outage.
24
- 25 **PUB-NLH-249** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 25,
26 Table 2. Explain why the reliability is expected to start as high un-reliability and
27 will then reduce to a higher reliability over the years and whether Hydro is
28 aware of LIL defects that are still to be resolved.
29
- 30 **PUB-NLH-250** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 26. In
31 Table 3, page 26, Holyrood TGS and Hardwoods and Stephenville GTs all retire
32 on April 1, 2024. In Table 4, page 27, Hardwoods and Stephenville GTs retire
33 on April 1, 2024, but HTGS continues operating until 2030. In Table 5, page 28,
34 only Stephenville GT retires on April 1, 2024. The descriptions of the three
35 cases do not indicate any other difference in assumptions between Tables 3,
36 4, and 5. Therefore, it seems that the assumptions underlying Tables 3, 4, and
37 5 are identical for 2023. However, there is a significant difference in the LOLH
38 results for 2023 as shown in the following comparison. Explain the differences.

Scenario	2023		
	Table 3	Table 4	Table 5
1	1.9	0.2	0.1
2	9.7	0.8	0.7
3	9.6	0.8	0.7
4	9.6	0.8	0.7
5	9.8	0.8	0.7
6	19.1	1.5	1.4
7	21.7	1.7	1.4

- 1 **PUB-NLH-251** Reliability and Resource Adequacy Study 2022 Update, Volume I, pages 26-28.
2 Provide the LOLE results corresponding to the LOLH results presented in Tables
3 3, 4, and 5.
4
- 5 **PUB-NLH-252** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 29.
6 Table 6 shows the resultant planning reserve margin of 36%. (a) Provide the
7 derivation of the planning reserve margin of 36%, in a form similar to Island
8 LOLE Calculator October 10, 2018 R2.xlsm, provided by Hydro in March 2019;
9 (b) Explain why the planning reserve margin has jumped so much compared to
10 previous values (14% in the 2018 RRAS and 16% in the 2019 Update); and (c)
11 Provide an analysis that shows the value of LOLH equivalent to LOLE=0.1 for
12 the assumptions underlying the 36% planning reserve margin, in a form similar
13 to *LOLE Calculator - Benchmarking Study #1.xlsm*, provided by Hydro in March
14 2019.
15
- 16 **PUB-NLH-253** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 30, line
17 3. Explain the reasons for the forced outage rate of 5 percent.
18
- 19 **PUB-NLH-254** Reliability and Resource Adequacy Study 2022 Update, Volume I, page 33.
20 Explain:
21 (a) If a long-term outage (for example, two days or more) of the LIL would
22 be very likely to be a very rare event (say 50 years return time), and
23 Hydro would be prepared to take this risk, how much less stand-by
24 generation would be required; and
25 (b) What would be the economic impact on the consumers in
26 Newfoundland and Labrador for a 10-day outage.
27
- 28 **PUB-NLH-255** Reliability and Resource Adequacy Study 2022 Update, Volume I, Attachment
29 1.
30 (a) Describe whether Daymark should be interpreted as agreeing with all
31 Hydro actions, matters, observations, and circumstances that it notes
32 without explicitly stating agreement, or should be interpreted as

- 1 agreeing only with respect to cases where it expresses agreement
 2 specifically.
- 3 (b) If there are areas where Daymark disagrees regarding Hydro actions,
 4 matters, observations, and circumstances noted without express
 5 statements of its concurrence with them, describe each of those areas
 6 of disagreement.
- 7 (c) Regarding actions Daymark reported as subject to consideration or
 8 possible action, but with respect to which it did not specifically
 9 recommend action, list all that it believes should be done as opposed
 10 to considered for execution.
- 11 (d) Explain whether Daymark’s assessment of Holyrood was undertaken
 12 with knowledge of potential changes identified by studies performed
 13 by others.
- 14 (e) Describe whether Daymark has done any of its own analyses on what
 15 can be changed physically at Holyrood or in its operations and how
 16 effectively or economically changes would allow it to continue serving
 17 longer term
- 18 (f) Provide plans, schedule, and status for further Daymark work.
- 19 (g) Describe in detail specific elements of Daymark views on monitoring
 20 reliance on Holyrood and Hardwoods units and the issues, concerns, or
 21 criteria on which that monitoring bears, given plans for their
 22 retirement and other Daymark statements about the propriety of such
 23 reliance.
- 24
- 25 **PUB-NLH-256** Reliability and Resource Adequacy Study 2022 Update, Volume I, Attachment
 26 2.
- 27 (a) Summarize the scope and results of all Daymark, Hydro, or other
 28 Nalcor/Hydro experts addressing the design bases, conformity of as-
 29 built to design, weather-related design assumptions versus actual
 30 conditions experienced, and other factors bearing on performance
 31 reliability obtained in northern Europe and how they compare with the
 32 same factors regarding the LIL.
- 33 (b) Describe Hydro’s views on how northern Europe data bears on
 34 assessing reliability of the LIL, and specifically how consideration of
 35 that data has affected planning considerations here.
- 36 (c) Given experience to date with respect to the LIL, state and describe
 37 how Hydro considers it is most likely to perform in comparison to the
 38 European group analyzed (*e.g.*, first quartile, fourth quartile, median,
 39 average).
- 40
- 41 **PUB-NLH-257** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 5, line
 42 2 states: “Planning is underway for additional stakeholder engagement
 43 actions...”. The Action Plan in Volume III, page 54, includes, “Execute a
 44 stakeholder engagement process in 2023.” The brochure, “Planning for Today,

- 1 Tomorrow, and the Future,” states on page 7 that “Hydro expects to launch a
 2 customer engagement initiative in 2023, focused on determining the value of
 3 additional reliability to customers.” (a) Describe the relationship between
 4 these three activities, and the intended scope, methodology, schedule,
 5 participants, and expected results of these processes; (b) Explain whether this
 6 process, or either of these processes if different, addresses the value of lost
 7 load substantively and quantitatively and why or why not; (c) Explain how the
 8 results of this process, or either of these processes if different, inform the
 9 decisions the resource adequacy review is intended to make or support; and
 10 (d) Explain how will the timing of this process, or either of these processes if
 11 different, coincide with 2023 or subsequent resource adequacy reviews.
 12
- 13 **PUB-NLH-258** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 5,
 14 Load Forecast. Provide a comparison of forecast values for the Island
 15 Interconnected System customer coincident demand in MW and IIS forecast
 16 energy requirement in GWh, for all scenarios and all years covered by the
 17 forecast, for the following reports and studies:
 18 (1) Reliability and Resource Adequacy Study 2022 Update;
 19 (2) Near-Term Reliability Report - May 2022;
 20 (3) Reliability and Resource Adequacy Study 2021 Update;
 21 (4) Near-Term Reliability Report - May 2021;
 22 (5) Reliability and Resource Adequacy Study 2020 Update; and
 23 (6) 2018 Reliability and Resource Adequacy Study.
 24
- 25 **PUB-NLH-259** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 5.
 26 Further to PUB-NLH-258, provide the comparable actual values for winter
 27 2021 and winter 2022.
 28
- 29 **PUB-NLH-260** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 13,
 30 lines 19-22. Hydro states: “In March 2022, Hydro met with all applicants and
 31 provided the projected cost of supply, possible associated rates, and
 32 estimated timeline to supply. Following this, 21 customers, representing
 33 approximately 1,300 MW of load, confirmed their continued interest in
 34 proceeding with the interconnection process.” Provide an update on the
 35 number and magnitude of requests for additional generation in Labrador, the
 36 approximate timing and size (MW, GWh/year) of significant blocks of this new
 37 demand and explain what options Hydro has considered for meeting this
 38 demand.
 39
- 40 **PUB-NLH-261** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 16.
 41 Provide the most recent update on the status of the commissioning of the LIL
 42 including:

- 1 (a) a description of the cause of the November 24, 2022 LIL offline event,
 2 the actions taken to correct the software failure that led to the event and
 3 how this affects the commissioning schedule, and
 4 (b) the cause of the overheard line damage on the LIL in the Northern
 5 Peninsula discovered on December 2, 2022, its implications for other LIL
 6 line sections and the action Hydro is taking to investigate this incident
 7 and its implications for overall LIL reliability.
 8
- 9 **PUB-NLH-262** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 18,
 10 lines 7-12. Describe and detail what Hydro believes the LIL return period is and
 11 what Hydro will use for planning and analysis, why, and any further study
 12 planned regarding it.
 13
- 14 **PUB-NLH-263** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 18,
 15 lines 7-12. Explain in detail Hydro’s view regarding the propriety of considering
 16 the implications of simultaneous damage on multiple sections on the return
 17 period of the LIL.
 18
- 19 **PUB-NLH-264** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 18,
 20 line 16 to page 19, line 2. Provide an update on the status of all work
 21 undertaken or to be undertaken by Hydro to improve the reliability of the LIL
 22 in response to the recommendations and findings in the Haldar & Associates
 23 reports on the LIL reliability.
 24
- 25 **PUB-NLH-265** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 19,
 26 lines 2-3. Detail and describe each specific change Hydro would make to the
 27 Haldar & Associates worst case weather scenarios and historical data
 28 supporting them.
 29
- 30 **PUB-NLH-266** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 19,
 31 lines 3-5. Describe how weather station locations were determined.
 32
- 33 **PUB-NLH-267** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 19,
 34 lines 5-9. Describe and detail Hydro’s reasons for not accepting the Haldar &
 35 Associates line length and regional correlation analysis.
 36
- 37 **PUB-NLH-268** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 19,
 38 lines 18-23. Describe and detail the basis for the statement that structure
 39 upgrades to 2 percent of the LIL structures would be required if the value
 40 assessment completed by Haldar and Associates were used and what
 41 monitored weather conditions will set the replacement criteria.
 42
- 43 **PUB-NLH-269** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 21,
 44 lines 9-12.

- 1 (a) Describe any plans and schedule of work to be implemented as a result
2 of the Hatch assessment.
- 3 (b) Has Hydro performed an independent detailed cost estimate and
4 schedule analysis of the work to be performed on the Holyrood units as
5 a result of the Hatch assessment? If yes, describe the results of and
6 provide copies of any such assessment.
- 7 (c) Describe the status of the current plans and schedules for further work
8 addressing the modifications to Holyrood, the costs of doing so, the
9 changes in operating capabilities and reliability and the risks in achieving
10 the operating improvements and reliability and provide any plans and
11 schedules for the aforementioned work.
- 12
- 13 **PUB-NLH-270** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 21,
14 lines 13-19. Describe all studies or analyses of economic, operating
15 characteristics and risks of Holyrood generation versus other back-up
16 generation supplies that were considered if any and provide copies of such
17 studies or analyses.
- 18
- 19 **PUB-NLH-271** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 23.
20 Describe any discussion or studies of the Holyrood generation units that have
21 been completed to determine if reliability measure more aligned with a start-
22 up failure rate or perhaps a blend of DAUFOP and a start-up failure rate is
23 appropriate if the units are to be run at a lower power level then run up in
24 power as needed. Provide a copy of any documentation of such discussion or
25 study.
- 26
- 27 **PUB-NLH-272** Reliability and Resource Adequacy Study 2022 Update, Volume III, pages 23-
28 24, Tables 6 and 7. Provide DAFOR corresponding to the values of DAUFOP in
29 these two tables, based on the same data, and DAFOR and DAUFOP for
30 November 1 to April 1, comparable to the DAUFOP values in Table 7, based on
31 the same data.
- 32
- 33 **PUB-NLH-273** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 25,
34 lines 1-4. List and describe the final discussion and delineation of the
35 modifications that would be needed to improve the Holyrood start-up
36 reliability and its ability to run reliably for six weeks that were considered, and
37 provide the detailed list of modifications along with the expected benefit to
38 reliability and the cost and schedule for the modifications.
- 39
- 40 **PUB-NLH-274** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 25,
41 lines 11-14. Identify the full range of alternative modes of backup operation
42 for the Holyrood Plant Hydro considered or plans to consider. (e.g.,
43 anticipatory start-up and to what power levels on all forecasts of severe
44 weather). Provide any studies or discussions for the alternatives.

- 1 **PUB-NLH-275** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 25,
2 lines 11-13. Has Hydro studied the option for using cautions or warnings of
3 approaching severe weather to prepare Holyrood for ramping up quickly as a
4 backup supply resource (as opposed to keeping it regularly available for
5 extended periods to ramp up quickly). If yes, provide the results of any such
6 study. If not, why not?
7
- 8 **PUB-NLH-276** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 25,
9 lines 11-14. Describe what analyses of modifications or operating procedures
10 to reduce costs of the Holyrood Plant as a back-up supply source have been
11 completed, and provide a copy of any documentation of such discussion or
12 study.
13
- 14 **PUB-NLH-277** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 25.
15 Has there been any discussions or studies that address the impact to the
16 reliability of the Holyrood units operating in off-design power levels? Provide
17 a copy of any documentation of such discussion or study.
18
- 19 **PUB-NLH-278** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 25,
20 lines 16-17. Hydro states, "A DAUFOP of approximately 20% will be used for
21 resource adequacy planning purposes." Given that as units continue to
22 degrade and more recent data may be more reflective of unit condition,
23 explain the reasons for using the 20% DAUFOP rather than the higher five-year
24 average in Table 7.
25
- 26 **PUB-NLH-279** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 26
27 Table 8. Describe all the analysis that has been performed regarding
28 modifications needed to improve Holyrood start-up reliability and ability to
29 run six weeks without tripping offline, provide all reports of such analyses, and
30 provide a summary of the capital costs of these modifications and explain
31 whether these potential modifications are included in the capital costs in Table
32 8.
33
- 34 **PUB-NLH-280** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 26-27.
35 Provide any study or assessment of the reliability of the Hardwoods and
36 Stephenville gas turbines that has been completed, including the availability
37 of spare parts for these units.
38
- 39 **PUB-NLH-281** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 27-28.
40 Regarding the analysis of an extended LIL bipole outage, list and explain the
41 conclusions that can be drawn about the impact of considering such an outage
42 on the need for additional generation, and the sensitivity of the additional MW
43 of new generation needed to the assumed duration of such an outage.

- 1 **PUB-NLH-282** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 27-28.
2 In view of the analysis of an extended LIL bipole outage state whether it is
3 correct to expect that an outage is more likely to be multi-versus single-day,
4 and either way, how Hydro interprets, calculates, and uses the 1 day in 10
5 criterion.
6
- 7 **PUB-NLH-283** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 37,
8 Tables 12 and 13. Provide the capacity factors of the incremental generation
9 options in each of the four cases with incremental generation under the
10 average and severe cases.
11
- 12 **PUB-NLH-284** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 37.
13 Provide hourly Reliability Model results for 2032 for each of the cases
14 presented in Tables 12 and 13, in the form of the “Island Calculator” sheet of
15 Island LOLE Calculator October 10, 2018, or something similar.
16
- 17 **PUB-NLH-285** Reliability and Resource Adequacy Study 2022 Update, Volume III, pages 38-
18 40. Modeling the LIL as an energy-only line is discussed. Confirm or correct (and
19 explain such correction) the interpretation that, if a LIL bipole outage is
20 regarded as a first contingency, then whatever the capacity of the next larger
21 contingency is, whenever more than that capacity is scheduled over the LIL,
22 the LIL is the largest contingency, and the full amount of scheduled capacity
23 needs to be backed up by operational reserves, up to 900 MW.
24
- 25 **PUB-NLH-286** Further to PUB-NLH-285, state whether the interpretation as corrected is
26 equivalent to treating the LIL as an energy-only line, and whether a
27 consequence is that 160 more MW of additional generation is needed above
28 the case in which a LIL bipole outage is not regarded as a first contingency.
29
- 30 **PUB-NLH-287** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 38-40.
31 Provide a clear description and discussion of how Hydro’s election not to treat
32 a LIL bipole outage as single largest contingency is consistent with current
33 information about the design of the line, weather and access conditions,
34 expectations, and experience to date.
35
- 36 **PUB-NLH-288** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 42,
37 line 17 to page 43, line 5. Describe all studies and analyses performed of
38 alternatives considered for comparison of the generation/capacity addition
39 alternatives, including comparisons of costs, schedules, needed operating
40 characteristics and risks. Include in the response the date each generation
41 addition alternative was first studied and when it was last revised and
42 updated. Provide copies of any performed.

- 1 **PUB-NLH-289** Reliability and Resource Adequacy Study 2022 Update, Volume III, Section
2 7.1.1, pages 43-48. Various measures “to promote a reduction in customer
3 demand and/or energy requirements” are discussed and uncertainties are
4 expressed about the effectiveness of these measures. Outline Hydro’s plans -
5 including means, methods, and timing—for assessing the impacts of these
6 uncertainties on resource adequacy in this proceeding.
7
- 8 **PUB-NLH-290** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
9 lines 4-8. Explain:
10 (a) Hydro’s continuing inability to address markets purchases and what they
11 offer, and when Hydro will be able to provide specific information on in
12 securing capacity from external markets;
13 (b) Hydro’s assumptions regarding the extent to which Hydro will be able to
14 rely on power on the Maritime Link during an outage that may last for
15 several weeks, and the basis for these assumptions; and
16 (c) Any collaboration/agreement with other connected regions/countries
17 (e.g., the Maritime link), that could provide emergency power to the
18 Island, in case of a long term outage of the LIL. If there is no such
19 collaboration/agreement, describe what steps have been taken toward
20 negotiating one. If no steps have been taken toward negotiating one,
21 why not?
22
- 23 **PUB-NLH-291** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
24 lines 10-14. It is noted that Bay d’Espoir Unit 8 would provide only incremental
25 capacity, and no incremental energy. Describe, including any conditions that
26 impact the answer, and estimate:
27 (a) the quantitative impacts Bay d’Espoir Unit 8 would have on system-wide
28 energy capability;
29 (b) how much energy would have to be reserved to ensure that Bay d’Espoir
30 Unit 8 can generate at full capacity;
31 (c) if there is a reduction in system-wide energy capability, due to the
32 addition of Bay d’Espoir Unit 8, what generation sources would make up
33 for this reduction, with and without Holyrood generating units in service
34 and state the degree to which fossil-fueled generation would serve to
35 provide that makeup;
36 (d) the impact of Bay d’Espoir Unit 8 on satisfaction of the energy criterion,
37 and the year in which incremental energy requirements occur; and
38 (e) to what degree do the answers to the preceding questions in this request
39 for information depend on the need to cover an extended LIL bipole
40 outage, and the duration of the outage.
41
- 42 **PUB-NLH-292** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
43 lines 10-14. It is stated that Bay d’Espoir Unit 8 would provide only incremental
44 capacity, and no incremental energy. Describe and estimate:

- 1 (a) any circumstances that may exist under which total generation from Bay
2 d'Espoir would be reduced (as compared with current dispatch methods
3 and criteria) in order to preserve the ability to serve the need identified
4 for a Unit 8;
- 5 (b) if the most severe hydrological conditions in the most recent 10 and 20
6 year periods were to recur, the amount of any reduction; and
- 7 (c) for the most severe hydrological conditions in the most recent 10 and
8 20 year periods, the portion of reduced Bay d'Espoir generation that
9 would be made up by thermal generation.
- 10
- 11 **PUB-NLH-293** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
12 lines 17-20. Describe the principal cost and schedule affecting assumptions
13 regarding the 2017 SNC cost estimate for Bay d'Espoir Unit 8. Provide a copy
14 of the estimate.
- 15
- 16 **PUB-NLH-294** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
17 lines 17-20. Has there been any review or update to the 2017 SNC Lavaline Inc.
18 cost estimate for Bay d'Espoir Unit 8, other than an adjustment for inflation,
19 to consider such factors as increased labour costs and supply chain issues.
- 20
- 21 **PUB-NLH-295** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
22 lines 21-27. Does Hydro have any plans and schedules for the study of
23 reservoir levels under prolonged loss of the LIL? If yes, do such studies have
24 potential bearing on the feasibility of Bay d'Espoir Unit 8 or its ranking versus
25 other alternatives?
- 26
- 27 **PUB-NLH-296** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
28 lines 21-27. What other renewable fuel sources have been studied for a future
29 source of generation other than Bay d'Espoir Unit 8 and what is the status of
30 the schedule?
- 31
- 32 **PUB-NLH-297** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48,
33 line 27 to page 49, line 2. Provide the schedule for the analysis to be completed
34 on the impact of water surface draw down on the submergence of Bay d'Espoir
35 power intakes.
- 36
- 37 **PUB-NLH-298** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48-49.
38 Considering fossil-fired replacement of Bay d'Espoir generation displaced by
39 the need to hold a reserve for operation as a backup supply source post- Bay
40 d'Espoir Unit 8 and considering the level at which a gas turbine unit as an
41 alternative to Bay d'Espoir Unit 8 would have to operate, compare and
42 quantify the environmental impacts of Bay d'Espoir Unit 8 versus a gas turbine
43 unit as an alternative.

- 1 **PUB-NLH-299** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 48-49.
2 Describe all study and analysis conducted or planned to address the impact on
3 overall capacity or energy from the Bay d’Espoir system if the reservoir level is
4 maintained for potential energy needed for a loss of the LIL, including how this
5 will affect future operation of the system and provide copies of any such work
6 performed to date.
7
- 8 **PUB-NLH-300** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 50,
9 line 9 to page 51, line 5. Has Hydro considered a gas turbine as an alternative
10 to Bay d’Espoir Unit 8? If yes, provide Hydro’s best estimate of the time to
11 place each in service, and provide the annual amounts saved by earlier ending
12 of service by the Holyrood occasioned by which of these two options can be
13 placed in service more quickly. If Hydro has not considered a gas turbine as an
14 alternative, explain why not.
15
- 16 **PUB-NLH-301** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 50,
17 line 9 to page 51, line 5. Further to PUB-NLH-300, In the event that a gas
18 turbine can be placed in service more quickly, describe each principal
19 environmental factor that becomes avoided by earlier Holyrood retirement,
20 and state how long, at expected levels of gas turbine operation into the future
21 it would take for gas turbine operation to negate each principal environmental
22 impact avoided during the period when a gas turbine versus Bay d’Espoir unit
23 8 could be made available.
24
- 25 **PUB-NLH-302** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 54,
26 lines 11 to page 55, line 4. Explain how Hydro’s action planning is expected to
27 consider other alternatives sources of supply to Bay d’Espoir Unit 8, the scope
28 of the study of such alternatives, schedule for completion, major milestones
29 and board/stakeholder visibility and comment at those milestone points, and
30 how that consideration may affect proceeding with planning and execution of
31 Bay d’Espoir Unit 8.
32
- 33 **PUB-NLH-303** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 54,
34 lines 11 to page 55, line 4. Has Hydro engaged external consultants to
35 undertake study, analysis and planning, of supply resource alternatives? If yes,
36 state the outside resources contracted or expected to be contracted, their
37 scope of work committed or expected, and the schedule for completion.
38
- 39 **PUB-NLH-304** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 55,
40 line 2. Has Hydro studied what further efficiencies can be gained at the existing
41 hydro generation facilities? If yes, describe the results of such studies and
42 provide any available documentation of the studies. If not, why not?

- 1 **PUB-NLH-305** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 55,
2 line 3. To what extent has Hydro studied pumped storage generation as
3 available for a back-up generation source? Provide a summary any study or
4 discussion of this potential generation additions.
5
- 6 **PUB-NLH-306** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 55,
7 lines 3-4. Explain what specific efforts remain in determining the viability of
8 extending the life of the Holyrood and Hardwoods generating plants and
9 describe the action taken to date.
10
- 11 **PUB-NLH-307** Reliability and Resource Adequacy Study 2022 Update, Volume III, page 54-55.
12 When Hydro will move from the high level action plan outlined in detailed
13 action plans along with detailed scope documents, detailed schedules and
14 costs?
15
- 16 **PUB-NLH-308** Reliability and Resource Adequacy Study 2022 Update, Volume III,
17 Attachments 6 and 7. Explain:
18 (a) the basis for the 70 month timeframe for Bay d’Espoir Unit 8 and the
19 confidence level regarding this timeframe.
20 (b) the timeframe for construction if an environmental review or
21 environmental impact statement is required for Bay d’Espoir Unit 8.
22 (c) the probability that a contractor would accept a fixed price EPC contract
23 for the construction and commissioning of Bay d’Espoir Unit 8, and if
24 not expected, pricing risk expected to be borne with respect to Bay
25 d’Espoir Unit 8 planning and execution.
26 (d) how Hydro would manage an EPCM contract if a contractor does not
27 accept a fixed price EPC contract.
28
- 29 **PUB-NLH-309** Reliability and Resource Adequacy Study 2022 Update, Volume III, Attachment
30 3, page 4 states: “An additional consideration for Hydro is the need, as
31 discussed in the resource planning and R&RA analyses, for locational resource
32 planning – that is each region of NL must plan assuming there will be no
33 support from outside its current infrastructure.” Discuss Hydro’s current views
34 on provincial version regional planning given questions about long-term LIL
35 reliability.
36
- 37 **PUB-NLH-310** Near Term Reliability Report, November 15, 2022, page 5, lines 9-14. Explain
38 the decrease in Newfoundland Power’s firm hydro capacity.

DATED at St. John's, Newfoundland and Labrador, this 13th day of December 2022.

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES



Cheryl Blundon
Board Secretary