NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES
120 Torbay Road, P.O. Box 21040, St. John's, Newfoundland and Labrador, Canada, A1A 5B2

E-mail: ghayes@newfoundlandpower.com

2014-08-11

Mr. Gerard Hayes
Newfoundland Power Inc.
55 Kenmount Road
P.O. Box 8910
St. John's, NL A1B 3P6

Dear Sir:

Re: The Board's Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System - Requests for Information

Enclosed are Information Requests PUB-NP-170 to PUB-NP-307 regarding the above-noted matter. The deadline for filing the responses to the Requests for Information is September 5, 2014.

If you have any questions, please do not hesitate to contact the Board's Legal Counsel, Ms. Jacqui Glynn, by email, jglynn@pub.nl.ca or telephone, (709) 726-6781.

Yours truly,

C Blundon
Cheryl Blundon
Board Secretary

/cpj
Encl.

cc. **Newfoundland and Labrador Hydro**
Geoffrey Young, E-mail: gyoung@nlh.nl.ca
Island Industrial Customer Group
Mr. Paul Coxworthy, E-mail: pcoxworthy@stewartmckelvey.com
Mr. Dean Porter, E-mail: dporter@pa-law.ca
Grand Riverkeeper® Labrador Inc.
Ms. Roberta Frampton Benefiel, E-Mail: rebnfl@gmail.com
Mr. Charles O'Brien, E-mail: E-mail: bluegreenlaw@gmail.com
Mr. Philip Raphais, E-mail: Philip@centrehelios.org
Newfoundland Power Inc.
Mr. Ian Kelly, QC, E-mail: ikelly@curtisdawe.com
Consumer Advocate
Mr. Thomas Johnson, E-mail: tjohnson@odeaearle.ca
Ms. Colleen Lacey, E-mail: clacey@odeaearle.ca
Mr. Danny Dumaresque
Mr. Danny Dumaresque, E-mail: danny.liberal@gmail.com
Mr. William Kennedy, E-mail:wkennedy@kennedylawoffice.ca

IN THE MATTER OF
the *Electrical Power Control Act, 1994*,
SNL 1994, Chapter E-5.1 (the "*EPCA*")
and the *Public Utilities Act,* RSNL 1990,
Chapter P-47 (the "*Act*"), as amended; and

IN THE MATTER of the Board's Investigation
and Hearing into Supply Issues and Power Outages
on the Island Interconnected System.

PUBLIC UTILITIES BOARD
REQUESTS FOR INFORMATION

PUB-NP-170 to PUB-NP-307

Issued: August 11, 2014

System Planning

PUB-NP-170 How will the integration of Muskrat Falls and the Labrador-Island Link affect the operations and stability of the Newfoundland Power electric systems?

PUB-NP-171 The response to PUB-NP-001 and Note #1 in the response to PUB-NP-002 indicates that Newfoundland Power has approximately 97.5 MW of hydroelectric generation and approximately 41.5 MW of thermal generation (139 MW total). The response to PUB-NP-006, "Purchased Energy and Demand Forecast" table in Appendix C of Attachment A, indicates that the assumed generator credit is 117.93 MW. Explain why Newfoundland Power does not assume a generator credit of 139 MW.

PUB-NP-172 Describe how Newfoundland Power assures that its electric systems have sufficient capacity reserves to account for any actual (non-normalized) peak demands which might exceed forecasted weather-normalized peak demands.

Generation

PUB-NP-173 Explain which personnel in Newfoundland Power are responsible for controlling the hydroelectric, thermal, and gas turbine generators and how the facilities are controlled (by SCADA vs. local).

PUB-NP-174 What were the capital expenditures each year since 2004 for Newfoundland Power's hydroelectric facilities, its diesel generators, and its gas turbine generators?

PUB-NP-175 Describe Newfoundland Power's asset management practices for its generating facilities, including both maintenance and capital refurbishment programs and practices, and how the generator maintenance programs are managed including the use of maintenance management software. In the response provide copies of any documents that describe the policies and practices followed.

PUB-NP-176 Provide Newfoundland Power's generator preventive maintenance backlogs and its corrective maintenance backlogs at the end of 2010, 2011, 2012, 2013 and 2014.

PUB-NP-177 Provide, in tabular form, both the annual and winter season capacity factors and availabilities for each of Newfoundland Power's generating units (including the portable unit(s)), for the past 5 years (2009 – 2013).

PUB-NP-178 What agency or authority manages Newfoundland water resources with regard to hydroelectric availability? Please provide 5 year historical data

of occasions when hydroelectric generation was limited by such authorities.

PUB-NP-179 Describe the coordination that exists between Newfoundland Hydro and Newfoundland Power regarding water usage at their hydroelectric facilities.

PUB-NP-180 State what fuel is used, and what is the normal supply/storage capabilities, for the portable 6.5 MW generator.

Emergency Management

PUB-NP-181 Has Newfoundland Power considered installing AMI meters which could communicate outage and restoration data to the Outage Management System?

PUB-NP-182 The response to PUB-NP-028 states that weather forecasts and alerts come from Environment Canada. No other source is cited. Please provide a summary of how accurate these forecasts have been over the past 5 years, not only for major weather events but for smaller events that have also created multiple outages. Has Newfoundland Power sought weather and/or damage forecasts from any other service? If so, please name the service, when the service was used, and the effect this other service had on emergency planning. Does Newfoundland Power consider the information from Environment Canada sufficient to adequately plan for weather related events?

PUB-NP-183 Does Newfoundland Power typically have line and vegetation contractors working on site or immediately available for severe storm work? How quickly can Fortis or other utilities in Nova Scotia or other Provinces provide additional line and vegetation crews? What mutual aid agreements does Newfoundland Power have with other utilities?

PUB-NP-184 Provide an organization chart indicating the Emergency Management chain of command when preparing for a major event and for during a major event.

PUB-NP-185 Does Newfoundland Power periodically train its employees for major events and does it conduct major event drills? Does the System Control Center have a practice control console for training purposes?

PUB-NP-186 Does Newfoundland Power have an Emergency Command Centre? If so, where is it located? Also, does Newfoundland Power have a backup System Control Centre in case it becomes unusable?

PUB-NP-187 Provide an electronic copy of Newfoundland Power's Restoration Manual referred to in PUB-NP-028.

PUB-NP-188 State the voltages and kVA sizes of Newfoundland Power's portable substations.

PUB-NP-189 Provide electronic copies of all storm restoration reports submitted to the Public Utilities Board related to major storm outage events (especially Hurricane Igor in 2010) since 2004.

PUB-NP-190 Does Newfoundland Power record equipment damaged by severe storms in real time, by locations, to later evaluate how the storms damaged its equipment? If done, are the damage records produced by storm damage assessors or from the Outage Management System?

Asset Management

PUB-NP-191 What are the titles of the persons who make the final recommendations and decisions for determining which capital projects are budgeted each year for transmission, for substations, and for distribution?

PUB-NP-192 Describe Newfoundland Power's Power Line Technician ("PLT") apprenticeship program, including any education requirements before applying. Other than the apprenticeship program, does Newfoundland Power provide specific training for PLTs for substation work, relays, cable splicing, etc.?

PUB-NP-193 Further to the response to PUB-NP-081, out of the 153 Power Line Technicians, how many are usually assigned to (1) distribution (2) transmission, and (3) substation maintenance work?

PUB-NP-194 Further to the response to PUB-NP-081, define the functions and usual assignments (generation, transmission and distribution, substations) of technologists, industrial electricians, and industrial millwrights.

PUB-NP-195 Does Newfoundland Power make use of contractors for construction, maintenance, and vegetation management? Are any contractors dedicated to Newfoundland Power work, or are they called in only when needed? Explain how many contractor personnel, of each type, are typically available.

PUB-NP-196 Further to the response to PUB-NP-081, explain the various functions of "Planners" (as used to inspect lines). Are they all Power Line Technicians? If not what qualifies one to be a Planner?

PUB-NP-197 Who, if not Planners, inspect transmission and distribution lines? Who conducts substation inspections?

PUB-NP-198 Does Newfoundland Power normally use its own Power Line Technicians or does it use contractors for new transmission, distribution and substation construction work?

PUB-NP-199 Further to the response to PUB-NP-082, explain the qualifications of "Relay Technicians" and the training they receive (is there an apprenticeship program?) and their usual functions such as installing relay systems (or does Power Line Technicians do that?), testing relays, and troubleshooting relay issues. Why does Newfoundland Power not include technologists with its Protection and Control personnel?

PUB-NP-200 How are relay and coordination possible misoperations investigated by Newfoundland Power and by whom? Are all misoperations investigated?

PUB-NP-201 The response to PUB-NP-082 states that "Technicians" based in area offices are familiar with relay operations. Assuming that this refers to Power Line Technicians, to what extent are Power Line Technicians, other than recording and resetting relay targets, involved with relays? If it does not refer to Power Line Technicians, to what type of technician does it refer?

PUB-NP-202 Provide any documents describing Newfoundland Power's policies related to performance of completing transmission, distribution and substation inspections, corrective maintenance, and preventive maintenance jobs during priority time limits. Are the Regional Managers and Manager of Operations scored on timely completions and held accountable for failure to meet targets?

PUB-NP-203 The response to PUB-NP-062 states 10 transmission lines were not inspected in 2012 and 8 were not inspected in 2013. Please explain the justifications for not timely inspecting these lines.

PUB-NP-204 Further to the response to PUB-NP-062, were each year's backlogged transmission component repair/replacement items (from 5 to 44 items between 2011 and 2013) completed in the following year? Were they done as higher priority repairs or were they included in clustered capital refurbishment projects?

PUB-NP-205 Please provide a listing indicating the numbers of transmission and distribution poles by age groups (0-10, 11-20, 21-30, 31-40, 41-50, 50-60, and 60+ years old). If no pole age document is available, describe in a subjective manner what is known about the range of ages of Newfoundland Power's transmission and distribution poles.

PUB-NP-206 Please provide a listing indicating the numbers of transmission lines by age groups (0-10, 11-20, 21-30, 31-40, 41-50, 50-60, and 60+ years old).

PUB-NP-207 Please provide a listing indicating the numbers of distribution feeders by age groups (0-10, 11-20, 21-30, 31-40, 41-50, 50-60, and 60+ years old). If feeder age document is not available, describe in a subjective manner what is known about the range of ages of the distribution feeders.

PUB-NP-208 The response to PUB-NP-069 indicated that from 1 to 3 distribution feeders were not timely inspected from 2011 through 2013. Where these feeders inspected during the following years? Why were they not inspected during the years scheduled?

PUB-NP-209 The response to PUB-NP-069 indicated distribution maintenance and repair work backlogs of 277 to 314 items between 201 and 2013. Were each year's backlogged items completed during the following year? Were they clustered or pooled and included in distribution refurbishment projects?

PUB-NP-210 Further to the response to PUB-NP-066, describe the general process Newfoundland Power uses to determine each year's targets for scheduling each year's substation and relay preventive maintenance jobs.

PUB-NP-211 Further to the response to PUB-NP-066: explain the reasons for the low job completion rates for relay maintenance jobs (70%). Is relay technician staffing level a reason? How does Newfoundland Power's relay modernization work affect the testing of relays not being replaced?

PUB-NP-212 Further to the response to PUB-NP-066, explain the reasons for the low job completion rates for power transformer and breaker maintenance jobs (73% and 84%). In the response state whether staffing issues prevent compliance with the schedule.

PUB-NP-213 Do transmission line, distribution line and vegetation management inspectors download inspection results into the Transmission Asset Management System or Avantis programs on a daily basis? Do the inspectors determine the repair priorities or does someone else? Do Regional Planners schedule the repair work?

PUB-NP-214 Does the Vice-President Customer Relations and Engineering have access for monitoring to the Transmission Asset Management System and Avantis? Do the Regional Managers provide the Vice-President with formal periodic transmission and distribution inspection and maintenance performance reports? How often?

PUB-NP-215 Is all lower priority transmission and distribution corrective maintenance jobs clustered or pooled and worked in with capitalized projects later, or are some worked under operating and maintenance work?

PUB-NP-216 Does Newfoundland Power have a policy of repairing and restoring its URD cable loops back to normal configuration within a time limit, such as 30 days, after a cable section fails? Does someone track the amount of time a URD loop is out of configuration?

PUB-NP-217 Does Newfoundland Power have a URD cable replacement program such as when a URD section fails 3 times, it is replaced and maybe the entire run of URD cable sections are replaced?

PUB-NP-218 Describe how (what software) and who schedules and tracks protective relay periodic testing. Who is directly responsible and who is ultimately responsible for completing relay testing consistent with schedules? Are relay records recorded in a computer program? Are relay test sheets hand written or via a computer program?

PUB-NP-219 Does Newfoundland Power have a periodic preventive maintenance program (other than the 7-year feeder inspection) for its feeder-mounted capacitor banks (are any automatically switched?), voltage regulators, and reclosers?

PUB-NP-220 Does Newfoundland Power include vegetation management inspections on its transmission lines? Are these inspections conducted as part of annual ground inspections or otherwise?

PUB-NP-221 Do inspectors record distribution pole GPS locations during the 7-year distribution feeder inspections? Do the inspectors take digital photographs of deficiencies identified during distribution feeder inspections?

PUB-NP-222 Does Newfoundland Power have any formal vegetation management program documents other than the short section on page 3 of the Distribution Inspection and Maintenance Practices attached to the response to PUB-NP-067? If yes, provide the documents and an explanation of the vegetation management policy, program and practices.

PUB-NP-223 Explain what conditions trigger distribution feeder inspectors to sound and bore distribution poles and what conditions trigger when a distribution pole must be replaced.

PUB-NP-224: What have been the operating and maintenance expenditures for transmission line inspections each year between 2010 and 2013? How much was for transmission line corrective maintenance for each of those years?

PUB-NP-225 What have been the operating and maintenance expenditures for distribution feeder inspections each year between 2010 and 2013? How much was for distribution feeder corrective maintenance for each of those years?

PUB-NP-226 Who does the brush cutting, tree trimming, and danger tree removal on Newfoundland Power's distribution lines? Is there a vegetation management contractor who does this work?

PUB-NP-227 Provide the capital expenditures for vegetation management each year for 2010 through 2013.

PUB-NP-228 Has Newfoundland Power formally considered the cost versus the reliability improvement of implementing a proactive 4-5 year cycle preventive vegetation management program conducted by contractors? If yes, explain the analysis completed. If not, why not?

PUB-NP-229 Further to the response to PUB-NP-065, state the extent P1, P2 and minor substation corrective maintenance jobs are charged to operating and maintenance ("O&M") and to capital projects. What were the O&M and the capital expenditures for substation inspections, for substation preventive maintenance, and for substation corrective maintenance each year from 2010 the 2013?

PUB-NP-230 How often are infrared inspections conducted in Newfoundland Power's substations? Does the Company conduct infrared inspections on any transmission and distribution equipment outside of substations?

PUB-NP-231 Further to the response to PUB-NP-064, Attachment A, explain how Substation Maintenance III activities are triggered? If nothing happens to trigger activities does that mean that maintenance, such as lubricating breaker mechanisms, is not done until overhaul at 10 years? Are any Maintenance III activities time-based other that the 10-year overhaul?

PUB-NP-232: Does Newfoundland Power have transmission, distribution and substation equipment specialists? Are these engineers? If not, what are their qualifications? Do they conduct investigations and root-cause analyses of equipment failures?

PUB-NP-233 Describe Newfoundland Power's relay maintenance program and its relay modernization program. How often are electromechanical relays tested? How often are electronic and programmable relays tested? Provide copies of any documents describing these programs.

PUB-NP-234 Does the Newfoundland Power periodically "trip check" its relay/breaker trip schemes by tripping breakers from relays?

PUB-NP-235 The response to PUB-NP-033 indicates that Newfoundland Power maintains an adequate level of transmission, distribution, and substation spare parts and equipment. Provide inventory documents, if practical, which would indicate the amounts of available spare parts and equipment. The response also indicated that the Company has materials sufficient to replace 5 kilometer of transmission lines. Is this for 138kV or 66kV lines?

PUB-NP-236 Quantify, in kilometers, the amount of Newfoundland Power's transmission lines, by voltage, rebuilt each year since 2004.

PUB-NP-237 Quantify, in kilometers, the amount of Newfoundland Power's distribution feeders, by voltage, rebuilt for condition and reliability issues each year since 2004.

System Design

PUB-NP-238 Of Newfoundland Power's 256,000 customers, how many are located on the Avalon Peninsula?

PUB-NP-239 What was Newfoundland Power's peak demand during the 2013/2104 winter? What was the Avalon Peninsula peak demand during Newfoundland 2013/2014 winter?

PUB-NP-240 Provide a list indicating the Newfoundland Power/Newfoundland Hydro interconnection locations by voltage.

PUB-NP-241 Provide the number, kilometers, and voltages of underground transmission lines. Provide the length of underground mainline distribution feeders and the length of URD cable on the system. Where does Newfoundland Power typically use underground transmission, distribution, and URD?

PUB-NP-242 When a distribution feeder is rebuilt, does Newfoundland Power design the new feeder to the same CSA specifications the Company uses for its transmission lines? If not, what is wind and ice loading specifications for new distribution lines?

PUB-NP-243 Approximately what percentage of Newfoundland Power's transmission lines does not meet its current design criteria? Approximately what percentage of its distribution feeders does not meet its current criteria?

PUB-NP-244 How many of Newfoundland Power's 130 substations have more than one power transformer? What is the range of transformer kVA sizes used in the Company's substations?

PUB-NP-245 Why do some of Newfoundland Power's transmission lines not have SCADA control? Which lines do not have SCADA control and what are the voltages?

PUB-NP-246 How many of Newfoundland Power's distribution feeders have line-ties to other feeders?

Power System Operations and Dispatch

PUB-NP-247 Can Newfoundland Power monitor any of Hydro's system operations via the SCADA system? If not, are there any agreements with Hydro to do so?

PUB-NP-248 How many of Newfoundland Power's feeders have underfrequency relays? Describe the frequencies that cause load shedding and indicate the load shedding steps. What are the criteria for selecting which feeders have underfrequency tripping?

PUB-NP-249 How does Newfoundland Power monitor system demand in real time?

PUB-NP-250 Newfoundland Power's Interim Report on page 17 states that January 2, 2014 was the first time Newfoundland Hydro requested Newfoundland Power to undertake rotating outages due to an unexpected system wide generation shortfall. Has Newfoundland Power ever implemented rotating feeder outages prior to January 2, 2014 for any other reason?

PUB-NP-251 Newfoundland Power's Interim Report on page 11 states that it was requested shortly after 4 pm on January 2 to commence rotating outages. What exact time on January 2, 2014 did Newfoundland Hydro's Energy Control Centre request Newfoundland Power to commence with rotating outages?

PUB-NP-252 Did Newfoundland Power or Newfoundland Hydro exercise voltage reductions before implementing rotating outages during the days prior to the January 2, 2014 rotating outages? If not, was it considered and why was the procedure not implemented?

PUB-NP-253 Describe all software tools used by Newfoundland Power's System Control Centre and the Central Dispatch Team.

PUB-NP-254 Please describe the purpose, staffing, and location of the Central Dispatch Team. To whom does the team report? When did Newfoundland Power implement the Central Dispatch Team? Does this team use the Outage Management System to dispatch trouble tickets during the day?

PUB-NP-255 Does the System Control Centre dispatch generation? Explain under what conditions Newfoundland Power's generation is dispatched.

PUB-NP-256 How does the System Control Centre monitor and control transmission distribution lines and feeders where no SCADA is installed?

PUB-NP-257 Does the System Control Center ("SCC") have any form of an Energy Management System (EMS)? If Newfoundland Power does not have an EMS system, explain why not, and explain how the SCC predicts transmission loading issues during short-term peak demand conditions or when the system line outages occur either by failures or for maintenance work? How is system frequency monitored? If Newfoundland Power has an Energy Management System (EMS), please describe it. Is it a third party system, or developed within Newfoundland Power? If a third party system, please identify the system's name and vendor. Does Newfoundland Power have a maintenance agreement with the vendor for ongoing support and maintenance? When was the system installed? When was the most recent upgrade? Does Newfoundland Power have any plans to change or install an EMS system?

PUB-NP-258 Who controls transmission and distribution switching during normal working hours, the System Control Center or the Central Dispatch Team? Who prepares switching procedures?

PUB-NP-259 Please confirm that during normal working hours, outage tickets are dispatched via the Outage Management System by the Central Dispatch Team, and at all other times, by the Power System Operators. Please confirm that the Central Dispatch Team also dispatches crews for capital and planned maintenance work.

PUB-NP-260 Please provide a detailed organization chart of the Power System Operations (System Control Centre and Central Dispatch Team) organization, including all levels of supervision and employees by title and current numbers, and reporting responsibilities.

PUB-NP-261 Please explain Newfoundland Power's Permit and Tag System as it relates to responsibilities of the System Control Center and field forces.

PUB-NP-262 Describe the tools or communications used by Newfoundland Power to predict operational issues both on an on-going basis and for impending storms.

PUB-NP-263 What year were mobile computers delivered to Newfoundland Power's field forces?

PUB-NP-264 Describe if and how Newfoundland Power's System Control Center monitors Newfoundland Hydro's generation and major substation facilities.

PUB-NP-265 Explain why not all transmission lines and distribution feeders are under SCADA/EMS monitoring and control. Please describe how these circuits are monitored and controlled in the absence of SCADA.

PUB-NP-266 Describe if and how Planning Engineers support the Power Systems Operation organization.

PUB-NP-267 Describe how trouble calls are handled after midnight, or other times when district or other offices are not staffed.

PUB-NP-268 Please provide descriptions of the functions performed during storm emergencies by the following: Technologists, Regional Engineers, Senior Engineers, Supervisors, Superintendents, Regional Managers, Relay Technicians, Meter Technicians, and Grounds Personnel.

Transmission and Distribution Planning

PUB-NP-269 Has Newfoundland Power replaced circuit breakers since 2004 because of fault duty limitations? Will any of Newfoundland Power's circuit breakers need to be replaced after the integration of Muskrat Falls and the Labrador-Island Link?

PUB-NP-270 The response to PUB-NP-157 discusses distribution system load growth planning and operational planning but it did not discuss the planning process for the Rebuild Distribution Lines projects or the Distribution Reliability Initiative projects. Describe the process for evaluating these capital programs and how distribution planning engineers are involved.

PUB-NP-271 The response to PUB-NP-155 discusses transmission load flow planning and operational planning, but it did not discuss the planning process for Substation Refurbishment and Modernization projects and Transmission Rebuild projects. Please describe the planning process for these capital programs and how transmission planning engineers and asset management engineers are involved.

PUB-NP-272 Describe the statistical analysis process Newfoundland Power follows to weigh Transmission and Distribution ("T&D") and substation conditions (from inspections) with various reliability indices to determine priorities for capital T&D and substation load growth and rebuild and modernization projects for each year. Does Newfoundland Power consider risk versus outage or loss of contingency issues and use some kind of scoring method or checklist, or are the determinations more based on unwritten engineering judgment? Who is involved with the process and who (title) makes the final decisions on what to include in each year's capital budgets?

PUB-NP-273 Describe, for developing capital load growth projects, how Newfoundland Power forecasts peak demands, in the medium and long term, for each feeder, each substation, and each transmission line. State the levels (e.g. 95%, 100%, or 105% of ratings) of anticipated forecast loads on feeders, substations, or transmission lines that trigger load growth projects.

PUB-NP-274 Provide a list of all Newfoundland Power substation transformers including voltage and KVA ratings. Include in the response the peak demand anticipated for each transformer for next winter. Is it correct to assume that the average demand on each transformer doesn't exceed about 50% of the peak demand?

PUB-NP-275 Provide a list of all Newfoundland Power transmission lines, by voltage. State the ampacity ratings at 0 degrees and peak demand anticipated for each line for next winter. Is it correct to assume that the average demand on each line doesn't exceed about 50% of the peak demand?

PUB-NP-276 Provide a list of all Newfoundland Power distribution feeders, by voltage. State the ampacity ratings at 0 degrees and peak demand anticipated for each line for next winter. Is it correct to assume that the average demand on each feeder doesn't exceed about 50% of the peak demand?

PUB-NP-277 Describe how the Planning group or department assists the System Control Centre Operators to identify short-term peak load operational forecasts. What methods, tools, and software are used?

PUB-NP-278 Describe the approximate accuracy of equipment data and locations in the GIS system. Please describe any programs and processes to improve the accuracy or correct inadequate equipment data.

Transmission and Distribution Protection

PUB-NP-279 Describe Newfoundland Power's protective relaying criteria (standard design philosophies) for its transmission lines, substations, and distribution feeders and provide copies of any documents that describe the criteria. Explain the degree to which Newfoundland Power has not met its relaying criteria.

PUB-NP-280 Describe Newfoundland Power's Relay Replacement Strategy. What types of relays are being replaced and where are they located? Describe the types of new relays being installed and how the new relays improve operations and reliability including how they are used with the SCADA system. Provide tables indicating the numbers of new relay installed and the cost for each year since the beginning of the modernization program.

PUB-NP-281 Describe Newfoundland Power's strategies for protecting its transmission lines and circuit breakers, substation transformers, and distribution feeders from lightning and switching overvoltages. Explain the degree that these strategies have been applied and any practices in place for improving lightning protection in the future.

PUB-NP-282 Describe Newfoundland Power's criteria for clearances between transmission and distribution conductors to trees (horizontal and vertical clearances), to the ground (sag), and to other utilities' equipment. How does Newfoundland Power verify that these clearances are maintained?

PUB-NP-283 Describe Newfoundland Power's criteria for animal protection. Where are animal guards and other devices or designs installed? Explain the degree Newfoundland Power has complied with its criteria and any practices in place for improving animal protection.

PUB-NP-284 Describe how Newfoundland Power prevents galloping of its transmission lines under extreme wind and ice conditions.

System Reliability

PUB-NP-285 Describe how Newfoundland Power uses the Outage Cause Data to improve its reliability. Please state who is responsible for these analyses and how they are used.

PUB-NP-286 Provide data for the past 5 years (2009 – 2013) on the number of outages, CAIDI and SAIFI for each of the 28 cause codes indicated in the response to PUB-NP-154.

PUB-NP-287 In the response to PUB-NP-065 Newfoundland Power provided a chart indicating System SAIFI and SAIDI (excluding major storms). Provide a table for the same 2004-2013 time period indicating system SAIFI and SAIDI, including major events and provide tables (including and excluding major events) for the same time period (2004-2013) separately indicating transmission system SAIFI and SAIDI, distribution system SAIFI and SAIDI, and if possible, substation SAIFI and SAIDI. Please describe the size of excluded major events, and what authority the exclusion is based on.

PUB-NP-288 Please provide tables indicating the causes of customer interruptions ("CI") by year, including total numbers of CIs and Customer Minutes of Interruptions, without and with major events, each year, the number of CIs for each cause each year, and the percentage each cause contributed to the total CIs for each year from 2009 through 2013. For the "equipment malfunction" cause, provide a table for each year indicating the equipment type which failed including, but not limited to, substation transformers,

relays, cutouts, poles, insulators, wires, underground cables, aerial cables, splices, etc.

PUB-NP-289 Describe the process for selecting the feeders where the additional 14 automatic circuit reclosers will be installed for 2015. Did the analysis include improving blue sky reliability, or were the feeders and locations based only on cold load pickup issues? Will any of these be SCADA controlled?

PUB-NP-290 Provide a list of worst performing feeders eventually included for reliability work and included in Newfoundland Power's capital Distribution Reliability Initiative Projects for each year since 2004. Also describe, in general, the analytical process used for selecting worst performing feeders for the Distribution Reliability Initiative Projects.

Outage Management

PUB-NP-291 Liberty understands Newfoundland Power has AMR and not AMI meters and that its Outage Management System would not be able to automatically identify outage locations. Please discuss how Control Centre Operators determine when power has been restored following major storm events. Also, please describe how the Central Dispatch Team is used during round the clock restoration work.

PUB-NP-292 When Power Line Technicians ("PLT") responding to outages apply outage cause codes in their computers, can they also provide additional details in the computer with data and discussions that would be useful for follow up repairs and reliability reasons? Can the responding PLTs initiate repair work orders in their computers when a crew needs to return to complete repair work?

PUB-NP-293 Does Newfoundland Power measure the accuracy of its Estimated Restoration Times during storm restorations? If so indicate accuracy percentage.

PUB-NP-294 Describe Newfoundland Power's Outage Management, both the processes and all software packages used to identify, track, record and report outages on the Company's transmission and distribution systems.

PUB-NP-295 For the Outage Management System used by Newfoundland Power, please state the vendor, the version currently in use, the date this software was first installed, the date of the most recent version update and the annual license fee paid for the software.

PUB-NP-296 Does Newfoundland Power have a separate maintenance agreement with the vendor of the Outage Management System for specific vendor-driven

updates and/or Newfoundland Power specific modifications? If so, what is the annual fee?

PUB-NP-297 How many Newfoundland Power employees have, as part of their job descriptions, responsibilities for the support and maintenance of the Outage Management System? Please identify the department(s), and state the support in terms of equivalent full-time employees.

PUB-NP-298 If the vendor hosts a 'users group' for its Outage Management System, does Newfoundland Power participate in this group financially and through employee representation? If so, what department(s) represent the Company in this group?

PUB-NP-299 Describe the functionality of the Outage Management System software, including:

a) Outage identification by geographical coordinates or specific device(s),
b) Time recording of when the outage begins,
c) Identifying the number of customers affected by the outage,
d) Input of when crews are dispatched to the outage,
e) Calculation of an initial Estimated Restoration Time (ERT),
f) Recording times of both partial and full restoration, along with the number of customers, and
g) Input of cause codes.

PUB-NP-300 Indicate the historic availability of the Outage Management System: annually from 2009 through 2013 (or if the system was installed after 2009, from the year of installation), and during all major storm events in the same time period, including the January 2014 events.

PUB-NP-301 How often does Newfoundland Power, either on its own or in conjunction with the vendor, make the Outage Management System program unavailable to users for maintenance?

PUB-NP-302 Describe Newfoundland Power's training for its Outage Management System: for new and experienced field employees; for new and experienced office employees; as new versions of the software are installed; and for occasional users, who interact with the Outage Management System only during storm emergencies as part of their secondary storm roles.

PUB-NP-303 Describe which Newfoundland Power employees enter initial data into the Outage Management System, and how. Please describe how field employees enter data, including all hardware devices and communications tools, both during normal operations and storm emergencies.

PUB-NP-304 Describe in detail Newfoundland Power's process of developing Estimated Restoration Times ("ERT"). Indicate the roles of the Outage Management System program, field forces, and when appropriate storm restoration management. During normal operations (i.e., day-to-day and non-severe weather related outages), how soon after an outage is identified is an ERT generated?

PUB-NP-305 Describe Newfoundland Power's "quality assurance" process to review Outage Management System outage data for completeness and obvious input errors. Which job titles, in which departments are responsible for the reviews? Please describe how errors or missing information is corrected.

PUB-NP-306 Describe how the Outage Management System ("OMS") program develops, or is used to develop, reliability indices, by circuit, region and system. Are these indices generated within the OMS or by an adjunct program? Please identify the department within Newfoundland Power responsible for the development and reporting of these indices.

PUB-NP-307 Please clarify the roles of the Power System Operators and the Central Dispatch Team with respect to Outage Management during normal weekday hours, during evenings and weekends, and during storm emergencies.

DATED at St. John's, Newfoundland this 11th day of August 2014.

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

Per _____
Cheryl Blundon
Board Secretary