IN THE MATTER OF the *Public Utilities Act*, (the "Act"); and

IN THE MATTER OF an Application by Newfoundland and Labrador Hydro for an Order approving: (1) its 2008 capital budget pursuant to s.41(1) of the Act; (2) its 2008 capital purchases and construction projects in excess of $50,000 pursuant to s. 41(3)(a) of the Act; (3) its leases in excess of $5,000 pursuant to s. 41(3)(b) of the Act; and (4) its estimated contributions in aid of construction for 2008 pursuant to s. 41(5) of the Act and for an Order pursuant to s. 78 of the Act fixing and determining its average rate base for 2006.

TO: The Board of Commissioners of Public Utilities (the "Board")

SUBMISSION OF NEWFOUNDLAND AND LABRADOR HYDRO

Introduction

Newfoundland and Labrador Hydro ("Hydro") has applied for approval of its 2008 Capital Budget in the amount of $45.1 million comprising over 100 projects with values exceeding $50,000. It has also applied for approval of its Capital Purchases and Construction projects in excess of $50,000 as set out in Section B of its Application, for its proposed estimated contributions in aid of construction to be approved as set out in paragraph 11 of its Application, and for its 2006 average rate base to be fixed and approved in the amount of $1,472,184,000.

Hydro's 2008 capital budget application, and indeed the entirety of Hydro's regulated operations, are governed by its legislated mandate under the Act and the *Electrical Power Control Act, 1994* to provide services and facilities that are "reasonably safe and adequate and just and reasonable" (s. 37(1) of the Act), "that would result in power being delivered to consumers in the province at the lowest possible cost consistent with reliable service" (s. 3(b)(iii) of the *Electrical Power Control Act, 1994*).

Safety

Hydro's activities and operations are, of course, also governed by other laws which apply to it such as the *Occupational Health and Safety Act*, R.S.N.L.1990 c. O-3, and the *Environmental Protection Act*, S.N.L. 2002, c. E-14.2.

A number of projects are required to ensure that Hydro provides a safe workplace and safe facilities to ensure the protection of the public. Examples of these types of projects include: Arc Flash Analysis (B10), Upgrade Line TL-212 (B-92), Replace Fire Alarm System – Hopedale and Paradise River (B-142), Installation of Fall Arrest – Various Sites (B-162), and Safety Hazards Removal – Various Sites (B-217).

In the case of safety related projects, Hydro makes no apologies for providing a workplace that is safer than that which would satisfy the minimum thresholds or

standards that appear to be required by the *Occupational Health and Safety Act.* It is Hydro's moral and legal responsibility to provide a safe workplace for its employees and for the contractors who carry out work for Hydro. Moreover, ensuring that Hydro's facilities are safe is required under section 37 of the Act. Likewise, it is Hydro's solemn responsibility to provide safe facilities for Hydro's customers and members of the general public.

The duties to provide a safe workplace entail both the duty to adhere to the specific requirements set out in the *Occupational Health and Safety Act* and Regulations and the general duty as an employer to ensure "where it is reasonably practicable, the health, safety and welfare of his or her workers" (s. 4 of the *Occupational Health and Safety Act*). Under this legislation, workers have duties to refuse to work if there is imminent danger in carrying out a task and to prevent coworkers from engaging in those tasks.

Carrying out these duties in accordance with the law requires employers and workers to be diligent and vigilant as to workplace hazards and to use recognized accident preventative equipment and practices. This necessarily requires a thorough knowledge of the evolving improvements to those practices that enable work to be carried out in a safe fashion. The range of activities carried out in any industry, and the facilities and circumstances encountered in any industrial workplace, are so varied, diverse and dynamic that the specific regulatory provisions cannot possibly enumerate and proscribe all of the specific ways in

which a worker can be exposed to risk. This is especially true in an inherently dangerous industry such as an electric utility and this is the reason that the general legal duties found in the legislation go much farther than ensuring that specifically proscribed activities or conditions are not violated. The general legal duties require that employers and workers take all reasonably necessary steps to ensure that injuries do not occur. The only way to ensure that injuries do not occur is to remove potentially unsafe conditions and to cease carrying out potentially dangerous work practices.

The submission made by counsel for the industrial customers (hereinafter, the IC submission) is very disconcerting in that it discloses an apparent failure to comprehend this essential principle of the duty to provide a safe workplace. We can be thankful that the safety records of Hydro's industrial customers prove that this apparent misapprehension exists in the industrial customers' submission and not at the industrial customers' workplaces.

Expressions of this apparent misunderstanding are found at pages 9-11 of the IC submission. In one instance it is suggested that Hydro has justified its Arc Flash Analysis project (B-9) based purely on changes to Regulations (which is inaccurate) and has failed to establish the need for the project on that basis. The response to Request for Information (RFI) IC 1 NLH provides numerous clear indications of industry recognized standards and legislative standards that

delineate the standard of care of an employer when facing arc flash analysis requirements.

In the discussion of the Salmon Spillway Stop Log Handling System project (B-23), reference is made to the fact that there is “no indication of any actual injury resulting from the present system”. Waiting for an injury to have occurred before taking appropriate preventive action brings to mind the old adage about the barn door and the horses. In the arena of workplace safety, there can be no tolerance for waiting for accidents to occur before action is taken to prevent yet further occurrences. The whole purpose of mandatory occupational health and safety committees, of the right to refuse unsafe work, and of tailboard safety meetings is to identify risks and to take corrective actions before unsafe work commences. Acquiring meaningful knowledge of the risks involved in a task and taking positive corrective actions once a risk has been identified are the means by which a safer workplace can be ensured.

Effectively addressing some safety issues requires that capital expenditures be made to upgrade access trails, to install public address systems, to change the means by which 7-ton stop logs are moved into position, to study and identify hazardous arc potentials, to install off-loading ramps on highways, and to replace uninhabitable survival camps in remote locations.

Reliability

Much of Hydro's 2008 Capital Budget comprises projects required to sustain Hydro's generation, transmission and distribution facilities so that Hydro can continue to provide safe, reliable and adequate service, as required by section 37 of the Act, at least cost. The majority of Hydro's plant was constructed in the 1960's and 1970's. The orderly replacement of the aging components prior to their failure is essential to ensure the integrity of the facilities and the reliability and cost-effective operation of the systems they support. Projects requiring that a replacement occur because assets have reached the end of their useful lives due to age, wear or deterioration, or technological obsolescence include: Replace Cooling Water System – Hinds Lake (B-20), Replace Poles (South Brook and Bay d'Espoir B-105), and Replace Remote Terminal Units (B-197).

Cost-Effectiveness

A number of projects have been proposed due to the enhancements they bring to the efficient or reliable operation of the electrical system. Examples of these types of projects include: Diesel Plant Automation (B-120), Automatic Meter Reading (B-153), and the Energy Systems Water Management Decision Support System (B-168). In these projects, Hydro is leveraging technology to assist in the delivery of its services in a more efficient manner.

Environment

It is essential that Hydro ensures that its impact on the environment is only that which is reasonably necessary. A number of capital project proposals are required so that Hydro can measure and monitor its emissions from the Holyrood Thermal Generating Station, and determine the best options to further mitigate those impacts. Examples of such projects include: Upgrade Continuous Emissions Monitoring System (B-39), Environmental Effects Monitoring of Waste Water (B-52), and Upgrade Ambient Monitoring Station (B-54).

Size of the Capital Budget

The IC submissions regarding this issue demonstrate a misunderstanding of Hydro's and the Board's legislated responsibilities. References to a capital spending criterion, chosen by a paper company, of a 100% payback within the first year of the project, have no relevance to an electric utility that is charged with the responsibility of making prudent long-term investments so that it can provide reliable, safe and environmentally responsible power at least cost. Arbitrarily choosing short payback periods, periods that are shorter than those that are prudent to determine the economics of an electric utility project, runs the risk of discarding numerous projects that should be undertaken in the best interest of the ratepayers. Artificially imposing a "real world" test from an export intensive industry that faces international market cycle pressures adds nothing to the understanding of what best benefits the electricity ratepayer in the longer run.

Similarly, prejudging an absolute level of appropriate capital spending, divorced from the realities of, e.g. pressing asset replacement requirements, would be tantamount to a tethering of the Board's jurisdiction, and would require the Board to disregard its governing legislation and long accepted public utility regulatory principles.

Holyrood Thermal Generating Station (HTGS)

The HTGS is a very important asset in Hydro's inventory of generating plants. Its annual energy output varies considerably, depending on the amount of precipitation received by Hydro's hydraulic plants, but is generally about 35% of our total energy production. The HTGS produces the vast majority of Hydro's air emissions. The Energy Plan indicates that it is Hydro's intention to achieve a significant reduction of its corporate air emissions by addressing this issue. The preferred solution is a High Voltage Direct Current (HVDC) infeed from the Lower Churchill project, which would eliminate Holyrood air emissions altogether, as opposed to scrubbers and precipitators, which reduce most emissions but actually increase the emission of greenhouse gas (Carbon Dioxide).

Hydro is vigorously pursuing the infeed option, with the objective of introducing this energy source in 2015. Until that date, Holyrood must be maintained in a sound operating condition to ensure a reliable and safe supply of electricity to our customers. In fact, should there be any appreciable island load growth (from new industrial customers or from general service and domestic classes) between

now and the commissioning of the HVDC line, Holyrood may well be relied upon to provide a far greater proportion of the Island's energy than it has to date.

The projects that Hydro has proposed for the HTGS are required to ensure that it can be depended upon to operate reliably until 2015, and potentially beyond that date. The fate of Holyrood post HVDC infeed has yet to be determined. Studies are in progress to determine the long term requirement for the Holyrood plant. At this time it appears a virtual certainty that the plant will be required to operate as a synchronous condensing facility to support the HVDC infeed, should that project proceed. This facility may also be required as a backup source of energy, to replace the energy which will normally be supplied by the infeed, during times of emergency. These long term requirements will be confirmed in the 2008 – 2009 timeframe.

In the meantime, the Holyrood plant is encountering a number of issues caused by age and deterioration that require capital works to extend the life of the plant beyond the present. In most cases where a system is failing, or is incapable of functioning as required, it is not meaningful to inquire whether an upgrade is required to bring the life of the plant beyond 2015 or to some other date; the replacement of the asset will be required in either case. In a 500 MW thermal plant, there will be very few instances where a half-measure will be possible to ensure the reliable operation of a critical system.

The Energy Plan also stated the government's intention of developing the infeed and scrubber/precipitator option in parallel. This is why Hydro submitted a proposal for a feasibility study of a scrubber/precipitator facility for Holyrood. This study will result in a preliminary design, capital cost and cash flow estimate, operating cost estimate and other information required to enable Hydro to immediately initiate this project in 2009, should this option for reducing emissions be selected.

Specific Projects

Below are Hydro's submissions on specific projects. Most, but not all of the projects in this application are addressed here; the projects selected here are primarily those about which RFI's were asked. For the Board's convenient reference, the RFI's and reports that correspond to each of these projects are cited.

Upgrade Spherical Valve Maintenance Seals – B-5

The spherical valve seals are required to provide safe isolation of the workers undertaking maintenance work on the Cat Arm turbine. The 127 MW Cat Arm plant is a high-head plant which results in very high water pressures (550 psi) being created at the power house end of the power tunnel. When the spherical seals fail to safely and securely keep water from entering the downstream water passage, carrying out any maintenance work on either of the units requires that the power tunnel be dewatered, thereby removing both units from service. This

has occurred twice in the last eight years. Each dewatering of the power tunnel results in nine days of unit unavailability with the associated lost production. In addition, the dewatering process gives rise to a potential for serious power tunnel damage.

The company that acquired the original equipment manufacturer of the valves has encountered similar problems with these seals in numerous other locations. In response, it has devised a standard sliding seal retrofit which replaces the flexible stainless steel sealing ring.

The spherical seals were installed when the plant was commissioned in 1984 and would normally be expected to have a 30-year useful life. The present seals have leakage rates that are far in excess of acceptable rates. It has been determined that the seals' failures have been caused by inadequate design, not deterioration over time. The alternative to the retrofit replacement of the flexible ring seals with sliding ring seals is to install new spherical seals at a cost of approximately $4 million.

RFI's: PUB 1 - 5

Arc Flash Analysis – Various Sites – B-9

This project will provide specific information as to the arc flash potential for nine hydraulic sites, three gas turbine sites and 24 diesel plants. The information will be used to appropriately label a variety of electrical equipment so that workers can be informed as to the specific arc flash risks associated with performing work on each piece of equipment. A portion of the funding will be used to acquire software and training to enable Hydro to carry out this work with its own resources in the future.

The *Occupational Health and Safety Regulations* and the Canadian Electrical Code require that electrical equipment be marked so that safe work practices and personal protective equipment are used at sites where arc flash hazards are present. Arc flash studies have become a common practice by utilities and industry to provide essential information to workers as to the risk levels and proper procedures and equipment to be used when working on energized equipment.

RFI: IC 1

Replace 40 kW Diesel Generator – Burnt Dam – B-14

Diesel generators are used at this site to provide energy for dam gate operations and to supply domestic load energy for the camp at the site. The need for a third

unit at this site (as opposed to relying upon only the 75 kW and 25 kW gensets as is suggested in the IC submission) is set out in the response to PUB 8.0 NLH:

> *"The total load cannot presently be met by the two smallest gensets (65 kW combined capacity). The ability to meet peak load with the largest genset out of service is the same criteria used for prime power diesel sites."*

It is proposed that the 40 kW diesel generator set at this site be replaced because it has reached the end of its useful life in accordance with Hydro's practice of replacing diesel units at the time that they need their sixth overhaul. In addition, the engine is burning considerable amounts of lubricating oil and the generator is giving voltage output problems, indicative of a unit that is deteriorating beyond reliable use.

The costs of replacing the unit were lower than a rebuild so a cost/benefit analysis was not necessary to justify this project. It was decided that the 40 kW generator set would be replaced with a 50 kW unit because a 50 kW unit would allow all peak requirements to be met with the largest single unit out of service, which forms part of Hydro's reliability criteria. The difference in cost between a 40 kW unit and a 50 kW unit is only $5,000.

RFI's: IC 2 – 5; PUB 8

Install Meteorological Stations – Various Sites – B-16

This proposal is intended to mitigate, and sometimes avoid, spillage at Hydro's hydraulic generation facilities. Spills are a somewhat common occurrence in Hydro's system; they have occurred in seven of the last ten years.

In order for Hydro to maximize the efficiency of its hydraulic resources, it is essential that spillage is avoided to the extent that it can be. Having reliable and timely meteorological data from remote sites in the reservoir catchment areas can provide important opportunities to shift production levels among plants. Without this timely data, hydraulic plant output levels are determined in accordance with historical inflow knowledge as opposed to actual conditions.

Spills can be very costly for the ratepayers – a spill that occurred at Car Arm in the spring of 2006 had a thermal energy production impact of $9 million in additional fuel consumption at Holyrood. While it is probable that some spillage was unavoidable, the magnitude of this spill was exacerbated by the lack of specific and timely knowledge of the amount of water stored in the snowpack. If Hydro had knowledge of the amount of water that was about to be released into the reservoir, it could have scheduled higher production at its Cat Arm plant, and lower production at its other hydraulic plants, so that more of the runoff flowing into the Cat Arm reservoir could be captured and utilized.

Approval of this proposal will provide Hydro with funding to install meteorological stations to measure combinations of precipitation, temperature, reservoir levels

and snow pack densities at two sites in each of the Cat Arm and Bay d'Espoir systems.

RFI's: PUB 9,10

Hydraulic Structures Life Study – B-18

Hydro's intake structures, control structures and spillway structures in its Bay d'Espoir system have been in service since 1967. The failure of any of these structures could result in additional thermal energy costs and the destruction of dykes or other facilities. Experience within the Hydro Group of Companies (at Churchill Falls) has indicated that deterioration occurred in facilities of this type that were 30 years of age. Although regular and prudent maintenance has been carried out on these structures, it is prudent to assess them to determine their remaining useful life and to prepare a replacement strategy.

RFI: IC 6

Replace Cooling Water Piping System – Hinds Lake – B-20

This project involves the replacement of all piping used in the generator cooling system at Hinds Lake. The present piping has become fouled, threatening unit reliability and output, and it is proposed that it be replaced with stainless steel piping which is corrosion and fouling resistant.

The present piping system has been in service since 1980. It was cleaned to correct a fouling problem in 2001. Further cleaning programs and methods were considered but it was determined that due to the characteristics of the present mild steel piping, the benefits of additional cleaning were going to be short-lived and that replacement of the piping would eventually be required in any case.

RFI's: IC 7; PUB 11; see also attachment 3 to PUB 6, at pages 29-30.

Salmon Spillway Stoplog Handling System – B-23

Stoplogs are used as temporary gates to enable the servicing and testing of the permanent spillway gates. The placement of stoplogs at this site using present methods poses an unacceptable safety risk. The present practice is to use a boom truck to move the 7-ton stop logs into place. Prior to 1993, a mobile crane was used. Both the mobile crane and boom truck methods require workers to work in a confined area beneath the stoplogs during aerial maneuvering thereby exposing workers to falling, pinching, and impact risks. This risk is exacerbated by windy conditions. The proposed project will provide for a means to move the stoplogs to the monorail hoist location without endangering employees in the transfer process.

The unsafe nature of this process was first identified through Hydro's internal occupational health and safety processes and resulted in a work refusal. Having recently reviewed this matter and having determined that this was a safety

concern that could not be tolerated, Hydro is now proposing this corrective action.

The rationale behind the argument against this project made in the IC submission, that there is no justification for this project due to the record of operations without an injury, contains two flaws of logic: (1) it overlooks the fact that the movement of the stoplogs without injury could have been the function of good fortune, not proof of a safe work practice; and (2) it ignores the established method of reducing workplace injuries through diligence and constant improvement. The Board can take administrative notice of the fact that work practices, and safety equipment, have continually evolved and improved throughout Hydro's and Newfoundland Power's histories.

RFI's: IC 8 – 10; PUB 12

<u>Upgrade Intake #4 Gate Controls – B-25</u>

The intake gates control the amount of water that enters the penstock. The present intake gate controls, installed with the original commissioning of the penstock in 1977, do not operate reliably or with the appropriate degree of feedback and precision. The problems encountered with the submerged gate control switches have resulted in the penstock filling too quickly. This resulted in major damage to facilities and equipment in two instances, either of which could have resulted in serious personal injury or fatalities.

This project is required to provide an improved gate control system with a redundant means of ensuring that the penstock filling process can be carried out safely.

RFI's: PUB 13 - 15

Upgrade Access Trail – B-30

Access to the Venam's Bight hydro-electric generating station can be gained only via an ATV access trail. The trail has been in use continuously since construction of the plant in 1956. Over time, the overburden on the trail has eroded away, in many places to the bedrock. This is particularly dangerous at several of the steeper sections where travel on the trail exposes employees to risks of injury. Similarly, transporting material and equipment over the access trail exposes them to damage. The proposed work involves the excavation of the steepest and most dangerous sections of the trail to provide for safer traveling conditions.

RFI's: IC 11, 12

Tank Farm Upgrade – B-36

The tank farm at Holyrood has deteriorated since construction (tanks 1 and 2 in 1968; tanks 3 and 4 in 1979). In order to extend the useful life of the tanks for a

further 20 years, or indeed through to 2015, upgrades are required. The facilities have been inspected and assessed by an engineering consultant (SGE-Acres) and the recommendation was made to carry out upgrades in 2008. Hydro has decided to defer many of these upgrades until 2009, however, in the case of tank 2, which requires critical repairs in 2008, there are cost savings in the range of $200,000 if the upgrades for that tank are effected when the tank is drained for repairs in that year, as opposed to deferring that work until 2009.

Report: Section H, Tab 2

RFI's: IC 13 – 20

<u>Replace Unit 2 High Pressure Heater – B-38</u>

High pressure heater 5 on Unit 2 was installed in 1989 and had an expected life of 15-20 years. Often, when the tubes of high pressure heaters deteriorate and leak, the only repair option is to plug the tubes. After 18 years in service, this heater has deteriorated very significantly such that at present, 28.6% of the tubes are plugged (see revised RFI IC-21 NLH). This far surpasses the industry standard of 10% which is the acceptable ratio of plugged tubes, after which performance and efficiency are significantly compromised. Also, at this stage of deterioration, a sudden tube failure can be expected at any time, requiring that this heater and its mate, heater 4, be removed from service. The IC submission challenges Hydro's engineering judgment as to the likelihood of an imminent failure. However, the evidence is that this high pressure heater is at the end of

its chronological useful life and recent inspections have indicated that it has deteriorated drastically. The increased operating costs associated with such a failure would be expected to be in the range of $1.3 million.

RFI's: IC 21 – 23; PUB 16

Upgrade Continuous Emissions Monitoring System – B-39

The Continuous Emissions Monitoring System (CEMS) used by Hydro at the HTGS at present does not meet the requirements of the Holyrood Generating Station Certificate of Approval. In particular, with the adoption into the Certificate of Approval of the federal standard (Environment Canada's 1993 Report Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation (EPS 1/PG/7)), the uptime requirements of the CEMS have to be upgraded. To achieve this, the CEMS has to be converted from a time-shared system (where data is collected in a sequential basis from the various units) to a dedicated design which allows the emissions data for each unit to be continuously monitored. The proposal will provide this capability so that Hydro can adhere to the Certificate of Approval that governs its HTGS operations and its impacts on the environment.

This project is required to ensure Hydro can meet its environmental regulatory requirements and is obtaining reliable and accurate data as to the environmental impacts its operations are having. The present system is subject to data loss

problems when certification testing is on-going or when maintenance is being carried out on the system. Hydro cannot provide appropriate information as to its emissions to its regulators and stakeholders, including the residents living in the vicinity of the HTGS, unless it has equipment that can provide uninterrupted and continuous data.

RFI's: IC 24 - 26

Replace Unit 1 and 2 Condenser Valve Actuators – B-41

This project is proposed so that 10 manually operated (hand wheel mechanism) butterfly valves can be replaced with electrically operated valves. The reason for this replacement is employee safety. The manually operated valves can be very difficult to operate exposing employees to the risk of soft tissue injuries. The operation of these butterfly valves has resulted in a number of incidents over the last number of years including two incidents in 2000 that resulted in 120 lost-time hours.

RFI's: IC 18 - 19

Replace Unit 2 Electromechanical Trip Devices (ETD) – B-43

These devices are required for the protection and control of the Unit 2 turbine generator from an overspeed event, which has the potential to be catastrophic. A similar ETD was installed on Unit 1 in 2006. The ETD will replace the

mechanical bolt overspeed mechanism which has operated inconsistently in recent years, at times tripping the unit at speeds that the device should have tolerated (causing customer outages through under frequency load shedding events) and, on one occasion, failing to trip in a serious overspeed situation caused by a system high frequency event. Operating the unit without reliable overspeed protection exposes the turbine generator to serious damage or, possibly, destruction. Units 1 and 2 are the largest generating units on the island and their reliable availability during the winter season is critical to the system. This proposed project is planned to coincide with the Generator Auto Synchronization project (B-59) so that the consultant's forces can be used in a manner that will permit reduced travel costs and working hours.

RFI: PUB 20

Precipitator and Scrubber Installation Study – B-46

The HTGS is virtually the last large thermal generating station in eastern Canada that does not have air emissions control equipment. The level of public and regulatory scrutiny for emitters is increasing and the level of tolerance for environmental emissions is decreasing. Given that there are technologies available that could be retrofitted to the HTGS to reduce emissions, and given Hydro's environmental impact and the potential for short-term adverse health impacts from the HTGS emissions, Hydro would be remiss if it did not determine the potential effectiveness of these emission reduction technologies, their costs,

and the optimum application of these technologies to the problem at hand. These are complex problems with complex solutions. The proposed project will assess the feasibility of wet scrubbers and precipitators for all three units of the HTGS. The scope of the study will include cost estimates and schedules for the installation and will permit Hydro to compare these options with other solutions.

RFI's: IC 27, 28; PUB 21, 22

Replace Unit 2 Main Steam Stop Valve – B-50

This project is for the installation of a valve acquired in 2006. It was originally intended to be installed shortly after it was acquired however a longer than expected delivery period resulted in it not being installed during the intended outage window. The valve requires replacement to provide isolation for downstream equipment, to prevent damage to equipment downstream of the valve, and to enable pressure testing of boiler components.

RFI: PUB 23

Upgrade Ambient monitoring Station - B-54

The present ambient air monitoring equipment is 15 years old and due to the unavailability or lead times associated with acquiring spare parts and the risk of component failure, this equipment is at risk of not being able to meet its

availability target. The availability target is a condition of the operating certificate issued by the Department of Environment and Conservation.

RFI's: PUB 24 – 26

Soot Blowing Controls Study – B-55

This proposed project is for an engineering study to determine available alternatives to the present soot blowing systems so as to reduce the magnitude and frequency of soot blowing events which exceed regulatory opacity limits. The stack opacity monitoring system indicates that the opacity limits are exceeded while soot blowing.

RFI: IC 29

Stack Breeching Study – B-56

The high temperature flue gases, which include sulfuric acid, cause significant damage to the borosilicate tiles in the stack breeching (the ductwork which carries exhaust gases from the boiler to the exhaust stacks). This stack breeching was originally installed in 1969 and 1979 and was replaced on the three units between 1989 and 1991. This project will involve assessment of the condition of the breeching, investigation of the type and cost of alternate repair methods and will recommend whether they should be repaired or replaced.

RFI's: IC 30 – 31; PUB 27 – 29

Replace Champion Grader V-9797 – Bay d'Espoir – B-68

This grader has received heavy use over its 15-year life to maintain some 400 km of dirt roads that access Hydro's hydro-electric facilities in the Bay'd'Espoir system, to plow snow to keep critical roads open in winter, and to perform maintenance activities on Hydro's dams and dykes. It is effectively at the end of its useful life due to the imminent requirement of a $150,000 overhaul and the fact that maintenance costs have averaged $15,000 per year (as opposed to the expected amount of $8,000 per year).

The positive net present worth of purchasing versus retaining this piece of equipment is $41,000 over the last three years of the unit's life. In addition, when a replacement grader is purchased, it will be a more robust machine that is better suited to the tasks it will be expected to perform.

RFI's: PUB 30 – 33

Replace Battery Banks and Chargers – Various Stations – B-71

This project will provide the replacement of a variety of battery banks and charger systems at seven terminal stations and two generating stations. Reliable battery banks are essential components to the system's remote control, protection and control, and communications equipment. It is particularly critical

that they function reliably in the instance of a power outage. Hydro's battery replacement program is intended to ensure that batteries are replaced before they reach the end of their useful lives based upon age alone (18-20 years for flooded cell batteries; 7-10 years for Value Regulated Lead Acid batteries) or based upon capacity testing that shows that their capacities are deteriorating to values approaching 80% of original.

Due to their proven superior longevity and reliability, and favourable cost-benefit analysis preference, Hydro proposes to deploy flooded-cell batteries in all locations except the English Harbour West Terminal Station, where a Value Regulated Lead Acid battery will be used due to space limitations.

Report: Section H, Tab 4

RFI'S: PUB 34 - 35

<u>Replace Disconnect Switches – B-73</u>

Hydro is proposing to replace 12, 69 kV disconnect switches located at the Cow Head and Daniel's Harbour Terminal Stations. These are of such an age (30 years old) and have deteriorated to such an extent that they cannot be reliably repaired to ensure safe and reliable operation. In total, Hydro has 110, 69 kV disconnect switches, most of which are operating satisfactorily. There are 22 disconnect switches that are in need of repair or replacement, however, except for the 12 disconnect switches at the Cow Head and Daniel's Harbour Terminal

Stations, the remainder can be repaired with available parts. Reliable, effective disconnect switches are essential for worker safety and for system reliability.

RFI's: PUB 36, 37

Upgrade Circuit Breakers- Various locations – B-74

Many of Hydro's Air Blast Circuit Breakers are reaching 40 years of age and Hydro, among other utilities, is encountering problems with air leaks and other problems that are requiring increased maintenance costs and are rendering the breakers unreliable or unavailable. Hydro is proposing that 2008 be the second year of a long-term plan to upgrade these breakers to cure their deteriorating state. Four circuit breakers are scheduled to be upgraded in 2008. Upgrading, as opposed to replacing, was determined to be the cost effective alternative to restore these circuit breakers to full reliability and performance.

RFI: PUB 39

Wood Pole Line Management Program – B-83

This is the fourth year of Hydro's Wood Pole Line Management program that was initially approved by this Board for 2005. The purpose of the program is twofold: to identify, through testing, poles and associated components that are deteriorating so that they can be replaced or refurbished prior to their failure, and to provide a means of identifying those assets for which replacement can be

prudently deferred. This reliability centered maintenance program was determined to be an appropriate strategy to cost-effectively manage the maintenance programs for Hydro's 26,000 wood poles on its 2400 km of transmission lines.

Report: Section H, Tab 5

RFI: PUB 40

Replace Line Camp 98 – TL-228 – B-89

This project is for the demolition and replacement of a 35 year old survival camp. The camp is located in a remote area along TL-228, a 230 kV transmission line that runs across the Buchan's Plateau between Hydro's Buchans and Massey Drive Terminal Stations. This camp was used for a three-month period in the 1980's when transmission line crews were replacing and rebuilding transmission towers and lines that were destroyed by an ice storm.

By their nature, survival camps are intended to be used very infrequently but they must be sound, secure and habitable when needed. This camp has deteriorated beyond repair and has become uninhabitable. It is essential that Hydro has adequate and safe strategically located survival camps in remote locations where emergency transmission line work may need to be carried out during severe weather conditions. Hydro has considered alternatives to survival camps but has determined that helicopter travel is not an option because it can be unsafe and

often impossible in extreme weather. Also, because this area can experience extremely cold and windy conditions that would endanger Hydro's transmission line crews, and because the survival camp is left unattended for years on end, a temporary structure such as a heated tent facility, as suggested in the IC submission, would not be a safe or dependable alternative.

RFI's: IC 34 – 36; PUB 43

Upgrade Line TL-212 – B-92

This project will upgrade this 138 kV line located on the Burin Peninsula. At present, 14 locations on the line have lower than standard clearances (22 feet). These will be rectified. This line was constructed in 1966 and the clearances of the line met the design standards of the day. Experience has shown that actual ice loads have been much greater than predicted by the data available at the time that the line was designed. The sag induced in the line by these ice loads can expose employees and the general public to risks of electrocution caused by flashovers. In addition, in 2005 there were two outages associated with flashovers to the ground caused by ice loading.

RFI's: PUB 47 - 50

Construct Transmission Line Equipment Off-Loading Ramps – B-93

This project is needed to ensure the safety of Hydro's transmission maintenance crews and of the public traveling on the province's secondary highways.

The Applicant owns and maintains approximately 4800 km of transmission lines in the province ranging in voltages from 69 kV to 230 kV. In order to maintain and repair these transmission lines, Hydro must be able to gain access to the transmission line right-of-ways with its mobile transmission line maintenance equipment. Travel across public lands with off-road vehicles is restricted by Provincial regulations to specified trails. In many instances, access to these transmission lines is gained over a designated trail that runs between the transmission line and a secondary highway. This effectively restricts the choice of off-loading locations for Hydro's mobile equipment to particular sites along these secondary high-ways.

In numerous locations Hydro's transmission line crews are required to off-load mobile equipment from the surface of the secondary highway thereby obstructing traffic. Narrow shoulders, short roadway sight lines, and steep embankments are also problematic in many locations resulting in off-loading that takes place under conditions that are hazardous to our employees and to the public. Additional personnel are often required for traffic control and, in many locations, travel is required from the off-loading site to a location several kilometers away where the on-road vehicles can be safely parked.

The proposed solution is to construct off-loading ramps at strategic locations to permit the safe and efficient off-loading of mobile equipment. While Hydro has identified approximately 100 sites that could be appropriate for these purposes and which would have these ramps constructed over a period of five years, for 2008, these sites have been prioritized and it is proposed that 20 sites be addressed in 2008 on the Burgeo and Burin highways (which are the sites that were identified in Hydro's 2007 application for this matter, and which application was subsequently withdrawn).

The precise sites of these off-loading ramps will be selected in consultation with the Department of Transportation and Works; in fact, that provincial department will have final say over each of the site locations, taking into consideration proper road site lines and other essential highway safety considerations.

Report – Section H, Tab 6;
RFI's: IC 33, 58; PUB 51

<u>Replace Insulators – B-96</u>

This is year three of a five-year program to replace station post and suspension Canadian Ohio Brass (COB) insulators in Hydro's terminal stations. The equipment voltages affected are 230, 138, 69 and 25 kV. The failure problems associated with COB insulators are well documented in the electric utility industry. The problems result from moisture being absorbed in the cement in the

insulator which expands (cement growth) causing cracks to occur in the insulator porcelain. Hydro has had outages attributable to this source of insulator failure in its terminal stations, notably a 2002 insulator failure at Hydro's Massey Drive Terminal Station caused an outage to Corner Brook Pulp and Paper.

In addition to reliability problems, cement growth weakens the mechanical strength of the insulators resulting in insulators that break when maintenance work is being performed on them. This project also addresses this safety issue.

RFI: PUB 52

Upgrade Distribution Systems – Varous Systems - B-98

This is a pooled distribution upgrade proposal to address aging and deteriorating distribution equipment on seven different distribution systems serving customers on the Island Interconnected System, the Labrador Interconnected System and two Labrador isolated systems. Under this project, insulators, cutout fuses, cross arms, conductor and other distribution components and equipment will be replaced. These systems range from 36 to 40 years of age and the upgrades are needed to extend their lives into the future so as to provide reliable service at least cost, and to remove safety hazards that result from maintaining disintegrating insulators and cutouts.

PUB 53, 54

Upgrade Distribution Systems – All Systems - B-101

This project proposal is for an annual allotment to carry out replacement work for distribution equipment that is identified as requiring replacement in preventive inspections or when addressing damage caused by storms. The amount proposed has been based upon historical experience and pertains to distribution upgrade work in all three of Hydro's regions: Central, Northern and Labrador.

RFI: PUB 56

Provide Service Extensions – B-103

This project proposal is for an annual allotment to carry out service extensions for new customers (including streetlights) in Hydro's distribution areas. The amount proposed has been based upon historical experience, based upon a five-year average, and pertains to service extensions in all three of Hydro's regions: Central, Northern and Labrador.

RFI: PUB 57

Replace Poles South Brook and Bay d'Espoir – B-105

This project is for the replacement of 75 deteriorated poles in the South Brook area and 50 poles in the Bay d'Espoir area. In both cases the poles are 37 years old and have near vertical splits, rendering them unsafe to climb and unreliable to

retain in service. These poles were identified as requiring replacement during inspections carried out between 2003 and 2006.

RFI: PUB 58

Replace Recloser Panels B-109

Reclosers are mechanisms that restore power quickly after momentary line faults. The proper operation of reclosers is essential for the reliable supply of power to distribution systems. The sensitive electronic devices of the recloser panels must be effectively protected from the elements.

This project will replace eight painted steel recloser panels which, despite regular painting and maintenance, have rusted and deteriorated since their installation in the 1980's. They will be replaced with stainless steel recloser panels which protect the components from salt contamination. There have been 27 failure incidents associated with the eight reclosers scheduled to be replaced. Retrofitting the aging painted steel reclosers is problematic due to problems associated with acquiring replacement parts (there are long delivery times associated with reverse engineering the parts). Also, the costs of retrofitting the aging equipment runs to 80% of the cost of acquiring and installing new stainless steel recloser panels.

RFI: PUB 59

Reconfigure Feeders – Happy Valley - B-112

Load growth in the area requires that either (1) an extension to a feeder be constructed, or (2) that another distribution line be reconductored and reclosers in the terminal station be replaced with circuit breakers. Though it is unusual for the construction of an additional feeder to be the least cost option, in this case extending the feeder a distance of 400 metres effects a least cost reconfiguration (by orders of magnitude) when compared to the option of reconductoring the existing lines and upgrading the terminal station equipment.

RFI: PUB 60

Replace Diesel Units – Norman Bay, Cartwright and Black Tickle – B-117

This is a pooled project to replace three diesel units on the Labrador coast, two of which (Unit 561 at Norman Bay and Unit 287 at Black Tickle) are being replaced after being overhauled three and four times, respectively, and both have long service-hour records.

The unit proposed to be replaced in Cartwright has been unreliable and long delays have been encountered in obtaining replacement parts. It has accumulated a relatively small number of operating hours which is a direct result of operators being unwilling to run this unit, even when it was nominally available. Due to its limited usage, it has not attained the number of hours that required scheduled outages for overhauls. This unit has been derated from 600 kW to

350 kW due to low compression on two cylinders and has been placed in restricted use. Due to its poor performance and the difficulties encountered in obtaining replacement parts in a timely manner, Hydro would not deploy this unit elsewhere.

The proposed project also includes the replacement of the unit control switchgear for Norman Bay and Black Tickle to address reliability problems. In the Norman Bay system, there have been 50 forced system outages in the last five years which have resulted from the failure of the automatic control system to start the genset in a timely manner. The existing master load controller (installed in the 1980's) is incapable of reacting quickly enough to short-lived load increases; the result has often been total plant outages. The new plant automation system will improve system reliability by reducing plant outages and will also provide data to allow the timely determination of the cause of any power system disturbances or outages.

RFI's: PUB 61 - 67

<u>Diesel Plant Automation – Makkovik and Rigolet - B-120</u>

This proposed project is for a programmable logic controller and personal computer for each of these diesel generating systems. Justification is based upon cost-benefit analyses whereby there are operating cost reductions derived from fuel savings. A number of additional benefits have been identified ranging

from improved reliability and reduced emissions to lower maintenance costs due to reduced fouling.

RFI's: PUB 68 - 69

Increase Generation Capacity – Charlottetown – B-122

At present, this community's load is being served from a five-unit diesel plant comprising two 750kW units, two 250 kW units and a 300 kW unit. One of the 250 kW units will reach its maximum operating hours by 2009 and the other 250 kW unit will require replacement in 2010 for the same reason. Meanwhile, in order to meet the load growth in this community the plant capacity must be upgraded before 2010 or else the forecast peak load will exceed the plant's firm capacity.

Hydro considered three different plant configurations and unit installation schedules and determined that the optimum solution is the replacement of both 250 kW units with a single 750 kW unit. This will provide for the timely replacement of the aging units, will ensure that peak load can be met by installed capacity, and will enable the operators to meet a range of loads using larger units (750 kW) for large load increments, while dispatching the 300 kW unit for the steps between these larger load increments. This configuration is least cost from

a capital perspective and will result in increased fuel efficiency, reduced emissions and reduced operating costs.

RFI: PUB 70

Replace Switchgear – Cartwright – B-125

The present switchgear control panels were installed in 1988 but due to additional switchgear being installed since that time, they have become undersized and are inadequate for the amount of equipment they contain. Equipment is mounted in these panels in close proximity to the 600 kV bus which is a safety hazard for maintenance work. Also, the panels are located close to the exhaust manifolds of one of the diesel units which exposes them to excessive heat, vibration and humidity. This has caused additional maintenance costs to be incurred. Hydro's current engineering standards for switchgear of this voltage (600 kV) requires a separate compartment for control equipment. This project is required so that this generating plant can be operated and maintained in a safe and reliable manner.

RFI's: PUB 71 - 73

Replace Mufflers – L'Anse au Loup and St. Anthony – B-128

At present, the mufflers on both of these diesel plants are made from carbon steel. Both plants are operated in stand-by mode. These factors have

contributed to the deterioration (cracking) of the mufflers resulting from corrosion and condensation. These mufflers are, therefore, in need of replacement. It has been determined that the replacement of these carbon steel mufflers with stainless steel mufflers will result in prolonged muffler life and reduced exhaust system maintenance costs. Hydro will adhere to all applicable environmental regulations when choosing a design for these replacement mufflers.

RFI's: PUB 74 - 76

Construct New Office, Warehouse and Line Depot Facilities – Happy Valley – B-135

This project is required to provide staff with office, warehouse and storage space for its Labrador Region operations. The present office facility has faced numerous problems with mold and air quality problems. At present, the building is being leased on a month-by-month basis. The line depot and warehouse building is in need of major upgrades for a variety of reasons including asbestos removal, the installation of a complete new electrical system and the replacement of exterior metal siding.

A decision on new building construction was deferred for one year while the review of available options to deal with the health issues at the present office building was carried out. A search for suitable alternative buildings in the area that could be available to be leased was unsuccessful. Having considered the

costs, permitting, and environmental issues involved with building an office/warehouse facility at one of the locations owned by Hydro at present, it was determined that a new building site was the most feasible option.

Report: Section H – Tab 7

RFI's: PUB 77, 78

Construct Bushing Storage Building – Bishop's Falls – B-136

Spare bushings are critical spare parts for transformers and oil circuit breakers. These bushings deteriorate when exposed to the elements for long periods of time and manufacturers recommend that bushings be stored in a dry indoor location. The proposed project is for the construction of an unheated building which will provide adequate protection for these critical equipment components. No alternative warehouse space is available. Testing of present spare bushings has indicated that 25% of those stored (at present all are stored outdoors) are not serviceable and a further 25% require further investigation and testing to determine whether they are serviceable. Lead time for bushing deliveries is typically twenty weeks.

RFI: PUB 79 - 83

Upgrade Ventilation System – Makkovik – B-138

The ventilation system for this diesel plant was designed and installed when the plant capacity was 500 kW; the present plant capacity is 1162 kW. The ventilation is not adequate to provide safe and efficient maintenance activities at the plant, particularly during warm summer days. Engine hall temperatures often exceed industry-accepted limits for safe work conditions. This project will increase the ventilation capacity to a level that can safely cool the engine hall to tolerable and acceptable levels.

RFI's: PUB 84 - 85

Construct Diesel Plant Extension – William's Harbour – B-140

The plant in William's Harbour was constructed in 1987 prior to present-day requirements for additional space for computer systems, programmable logic controls, and the requisite heating and ventilation controls. The addition of these features has resulted in a present requirement for this equipment to be installed in the washroom space. The accommodations trailer, which is in the community a distance away from the diesel plant, is now being used for lunch room and washroom facilities. The extension to the diesel plant is proposed so that there will be sufficient space in that building for the generating station, all related equipment, an office facility, a lunch room and a washroom.

RFI's: PUB 86, 87

Replace Fire Alarm System – Hopedale and Paradise River - B-142

Testing has determined that the Hopedale diesel plant's fire alarm system has failed and is beyond repair due to obsolescence and unavailability of replacement parts. No fire alarm system has ever been installed at the Paradise River diesel plant. The proposed fire alarm systems will sound alarms and automatically dial Hydro plant operators; they will also shut down the diesel units, disrupt the flow of fuel from bulk storage and shut down the ventilation system, thereby mitigating the spread of a fire. The inclusion of a fire alarm system is considered a prudent and standard part of diesel plant design. The prevention of a major fire in a diesel plant can protect lives and avoid the destruction of the generating source, thereby avoiding an extended outage.

RFI's: PUB 88, 89

Install Storage Ramps – Holyrood and Port Saunders – B-144

Storage ramps are means by which equipment can be safely stored and quickly accessed outdoors and the prevent damage from occurring during handling, snow clearing operations and from yard traffic. They facilitate the orderly storage and efficient movement of inventory. They also provide a means of inspecting oil containing equipment such as transformers so that leaks can be identified.

RFI: PUB 90

Replace Off Road Track Vehicles – Bishop's Falls and Whitbourne - B-158

This project involves the normal replacement of two 1988 vehicles with similarly configured vehicles. These vehicles have reached the end of their useful lives in accordance with their replacement criteria of 15 – 20 years. These vehicles provide essential support for Hydro's transmission maintenance and repair. A lease/purchase analysis will be performed prior to acquisition.

RFI's: IC 38 - 40

Installation of Fall Arrest Equipment – B-162

The work to be undertaken under this project in 2008 is intended to complete the priority one projects. These projects comprise a variety of equipment installations including Cat Arm, the HTGS and Nain. The equipment types include guardrails, rigid rail systems, fixed ladders and horizontal life lines, all of which are to be installed so as to ensure compliance with section 60 of the *Occupational Health & Safety Regulations*, CNR 1165 / 96 (O C 96-478).

RFI's: IC 41 – 43; PUB 92, 93

Applications Enhancements – Work Protection Code – B-166

This project is being proposed so that Hydro can avail of a sophisticated software tool that will help eliminate hazards associated with the issuance, control,

monitoring and surrendering of permits under the work protection code. The complex nature of the HTGS, and the fact that 30% of Hydro's losses and near misses (651 of 2159) that have occurred since 1998 have occurred at the HTGS, indicate that additional resources are required to ensure a safer work place at this facility. The proposed system provides an automated and centralized means for operators to generate, monitor and control the five to ten work permits generated daily at the Holyrood plant.

Hydro disagrees with the unsubstantiated and dismissive suggestion in the IC submission that computerized systems are subject to more error problems, or error problems that are more difficult to rectify, than handwritten systems. This comment disregards the very important positive attributes of a data system that allows users to view data and drawings online and to use a consistent Master Equipment List for a complex process. This software is being used successfully by other owners in four thermal plants and 44 hydro-electric plants.

Report: Section H, Tab 8

RFI's: IC 44 – 49; PUB 95 -102

<u>Video Conferencing – B-185</u>

Hydro has used video conferencing to reduce travel costs, reduce travel time, and to provide for the quick and efficient coordination of communications and decision making. Hydro's present system has limitations that prevent this

method of face-to-face communication from being used to its full potential. The proposed system will allow all ten of Hydro's offices to be linked together to discuss matters of system wide importance and applicability. At present, only four locations can be joined in a single video conference.

Hydro has provided cost/benefit information that indicates that the system would be cost effective if Hydro is able to save 3.1 trips per month through the use of this proposed enhanced system. Hydro is confident that this threshold will be exceeded.

RFI: PUB 109

Public Address System – Holyrood – B-192

The Public Address (PA) system is an essential piece of the safety and security infrastructure of the HTGS and would be used to signal Hydro and contractor personnel when evacuation is required. It is the fire alarm system and is critical to the functioning of the Station Safety, Communication, Warning and Evacuation Plan.

The present system has deteriorated such that pages and announcements are often unintelligible and there are numerous areas within the plant and around the plant's external facilities where coverage with the present system is unreliable or

unavailable. Failure to replace the system could jeopardize the safety of plant personnel.

The proposed system will ensure that personnel present at all of the plant's facilities can be reached through the PA system so that emergencies can be responded to in a timely fashion including, if necessary, evacuation.

Personal pagers were considered as an alternative but were rejected as they are unsuitable in a high noise environment and in circumstances where workers are performing work using both hands at the time that the communication is being sent.

RFI's: IC 50 – 53: PUB 111 – 114

<u>Replace Power Line Carrier – TL212 Sunnyside to Paradise River – B-195</u>

The power line carrier is the means by which communications (power system protection circuits, voice and data for the Energy Control Center operations) occur between the Paradise River hydro-electric plant and the Sunnyside Terminal Station. The present system is 20 years old and has become obsolete because the manufacturer has discontinued its support of some of the chief components. Failure of the power system protection component to send a trip signal to the Paradise River plant because of failure of the power line carrier

could result in the generating unit supplying power to a faulted line for an indefinite period, thereby posing a safety risk to the general public.

RFI's: PUB 115, 116

Refurbish Microwave Site – Gull Pond Hill – B-199

This project is required to extend the useful life of this component of Hydro's west Coast Microwave communications system. The microwave system is a crucial part of Hydro's communication network in that it connects the Energy Control Center to all plants and terminal stations through the Supervisory Control and Data Acquisition (SCADA) system, supports the operational voice network used by the Energy Control Center, and supports the VHF mobile radio system.

The work proposed ranges from the refurbishment of rusting guys to the installation of lightning protection. This asset was originally installed in 1979 and has not been refurbished to date.

RFI: PUB 118 (with attached consultant's engineering report)

Replace Dial Backup System – B-201

Hydro is proposing to replace this system due its age and obsolescence as the components have been manufacturer discontinued since 1995 and replacement parts are not available. The system is critical to the functioning of Hydro's

Energy Control Centre, allowing access to remote terminal units when the primary communications medium is unavailable due to scheduled or unscheduled outages.

RFI: PUB 119

Upgrade System Security - B-212

This is the second year of a three-year program approved for Hydro's 2007 capital budget application. Hydro, guided by security consultants, is prioritizing its projects associated with this proposal including the installation of fencing, outdoor lighting systems, card access systems, etc. The goal of the program is to ensure that Hydro's security systems meet standards set by the industry. Hydro takes no comfort in the complacency as to security concerns that is proffered in the IC submission.

RFI's: IC 54 – 57

Install Computer Room Inergen Fire Protection System – B-216

The computer equipment in the Information Systems Computer Room is critically important to Hydro's operations. Installing this proposed fire protection system will enable Hydro to extinguish a fire in its computer room without deploying the water sprinkler system, an event that would likely cause substantial damage to the computer equipment in that room. The inergen system extinguishes fires by

injecting into a room a mixture of naturally occurring atmospheric gases that effectively and safely reduce the amount of oxygen available in the room to non-combustible levels.

RFI's: PUB 122, 123

Safety Hazards Removal - B-217

A number of safety deficiencies have been observed under Hydro's Safe Work Observation Program that have gone undetected, unreported, or unresolved for a number of years. Many of the deficiencies identified were acceptable under legislation and standards which existed when the facilities were constructed. They are not acceptable today under current legislation and standards. As well, other conditions have been identified which, although they may meet the letter of legislation or regulation, pose a real hazard to workers.

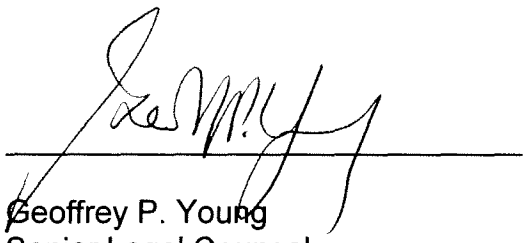
While many unsafe practices and conditions can be properly addressed through training or changes in work methods, often, resolving an unsafe work place condition requires the expenditure of capital funds to modify or upgrade facilities. The hazardous conditions requiring capital upgrades that would be corrected under this proposal range from inadequate railings, ladders, ventilation and lighting to inappropriate personal protection equipment and grounding deficiencies.

RFI's: PUB 124 - 126

Conclusion

Hydro submits that through the Application, appended materials, responses to Request for Information, and this Submission, it has established that all of the projects for which Hydro is seeking approval in this application are prudent and necessary for Hydro to carry out its legislated responsibility of providing power and energy to its customers at the least cost consistent with providing safe, reliable and adequate service.

All of which is respectfully submitted on behalf of the Applicant, Newfoundland and Labrador Hydro, on this the 16th day of October, 2007.



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