

# **JRP REPORT RECOMMENDATION REVIEW**

## **LOWER CHURCHILL HYDROELECTRIC GENERATION PROJECT**

Prepared By: Nalcor Energy

November 21, 2011



## Preface



**RECOMMENDATION NO. 4.1: Government Confirmation of Projected Long-Term Returns**

The Panel recommends that, if the Project is approved, before making the sanction decision for each of Muskrat Falls and Gull Island, the Government of Newfoundland and Labrador undertake a separate and formal review of the projected cash flow of the Project component being considered for sanctioning (either Muskrat Falls or Gull Island) to confirm whether that component would in fact provide significant long-term financial returns to Government for the benefit of the people of the Province. Such financial returns must be over and above revenues required to cover operating costs, expenditures for monitoring, mitigation and adaptive management, and financial obligations to Innu Nation. The Panel further recommends that the Government of Newfoundland and Labrador base these reviews on information on energy sales, costs and market returns that have been updated at the time of sanction decision, and make the results of the reviews public at that time. The financial reviews should also take into account the results of the independent alternatives assessment recommended in Recommendation 4.2.

**Responsibility: Government of Newfoundland and Labrador**

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The Panel recommends specific conditions on Government in its capacity as shareholder of Nalcor and as the entity with jurisdiction over Newfoundland and Labrador electricity policy.

Specific points:

- 1) The specific condition ‘whether that component would in fact provide significant long-term financial returns to Government for the benefit of the people of the Province’ ignores the public benefit provided by low cost energy. The word ‘significant’ is undefined by the Panel in this context.
- 2) This recommendation also applies to Gull Island, so Government should consider whether it is prepared to apply an export oriented project to an external review.
- 3) In its report, the Panel acknowledged Nalcor’s expertise and experience in this area, but also stated that ‘concerns were raised’ by others. The Panel did not make a determination regarding the credibility of presenters and of the information presented, but nonetheless suggested that ‘another review be undertaken.’

To the extent that export decisions are not regulated, the Panel appears to have exceeded its mandate by recommending that decisions that can competently be made by Nalcor management, its Board of Directors, and its shareholder, be subject to another level of ‘independent review.’

Government will undertake a full financial review of the Project before sanctioning it to ensure that economics are satisfactory; this review will consider many of the topics and issues raised by the Panel as well as others.

Nalcor understands the intent of this recommendation is to confirm at sanction that Gull Island and Muskrat Falls are compliant with applicable energy policy, have acceptable risk, and will earn appropriate returns for the shareholder. Nalcor believes the objectives of the recommendation are being fulfilled by government and will be satisfied prior to project sanction.

**RECOMMENDATION NO. 4.2: Independent Analysis of Alternatives to Meeting Domestic Demand**

The Panel recommends that, before governments make their decision on the Project, the Government of Newfoundland and Labrador and Nalcor commission an independent analysis to address the question “What would be the best way to meet domestic demand under the ‘No Project’ option, including the possibility of a Labrador-Island interconnection no later than 2041 to access Churchill Falls power at that time, or earlier, based on available recall?” The analysis should address the following considerations:

- why Nalcor’s least cost alternative to meet domestic demand to 2067 does not include Churchill Falls power which would be available in large quantities from 2041, or any recall power in excess of Labrador’s needs prior to that date, especially since both would be available at near zero generation cost (recognizing that there would be transmission costs involved);
- the use of Gull Island power when and if it becomes available since it has a lower per unit generation cost than Muskrat Falls;
- the extent to which Nalcor’s analysis looked only at current technology and systems versus factoring in developing technology;
- a review of Nalcor’s assumptions regarding the price of oil till 2067, since the analysis provided was particularly sensitive to this variable;
- a review of Nalcor’s estimates of domestic demand growth (including the various projections to 2027 in the EIS (2007, 2008, 2009 and the 0.8 percent annual growth to 2067 provided at the hearing);
- Nalcor’s assumptions and analysis with respect to demand management programs (compare Nalcor’s conservative targets to targets and objectives of similar programs in other jurisdictions and consider the specific recommendations, including the use of incentives to curtail electric base board heating, from Helios Corporation, among others);
- the suggestion made by the Helios Corporation that an 800 MW wind farm on the Avalon Peninsula would be equivalent to Muskrat Falls in terms of supplying domestic needs, could be constructed with a capital cost of \$2.5 billion, and would have an annual operating cost of \$50 million and a levelized cost of power of 7.5 cents per kilowatt-hour;
- whether natural gas could be a lower cost option for Holyrood than oil; and
- potential for renewable energy sources on the Island (wind, small scale hydro, tidal) to supply a portion of Island demand.

**Responsibility: Government of Newfoundland and Labrador**


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This recommendation generally outlines the scope of the Navigant and PUB reviews; however certain specific recommendations appear to be inconsistent with Provincial electricity policy and with good utility practice.

In respect of the application of emerging technology and other technical points, the Panel lacks the subject matter expertise to make specific technical recommendations to Government. No evidence was provided on the record to support a potential role for emerging technologies.

Government has previously and will continue to assess alternatives to meet future supply and demand through normal electricity regulatory processes.

The viability of renewables and natural gas, as well as assumptions for demand-side management were all previously considered in depth and included in planning and project assumptions.

As indicated in comments to recommendation 4.1, government will undertake a full financial review of the Project before sanctioning it to ensure that economics are satisfactory.

Finally, Nalcor defined the purpose of the project within the guidelines provided by the Canadian Environmental Assessment Agency.

**RECOMMENDATION NO. 4.3: Integrated Resource Planning**

The Panel recommends that the Government of Newfoundland and Labrador and Nalcor consider using Integrated Resource Planning, a concept successfully used in other jurisdictions. Such an approach would involve interested stakeholders and look simultaneously at demand and supply solutions and alternative uses of resources over the medium and long term.

**Responsibility: Government of Newfoundland and Labrador**

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IRP is not universally used in other jurisdictions, and the Province's least cost approach to domestic electricity supply was confirmed in the *Energy Plan*.

"The primary principle in setting rates is to provide power at the lowest possible cost. This will be maintained as an objective; however, we must also have the flexibility to encourage other important priorities such as energy conservation and environmental considerations."

The PUB has considered IRP in the past, and has indicated that it will consider its merits in the future.

"The Board will convene a meeting of stakeholders including Hydro and the parties to this proceeding to discuss the scope of an IRP process with the timing of such an exercise to be determined by the Board." P.U. 8(2007).



**RECOMMENDATION NO. 4.4: Project Sequencing and Applying Lessons Learned**

The Panel recommends that, if the Project is approved, and if for any reason construction of the Gull Island portion of the Project occurs before Muskrat Falls, Nalcor should be expected to apply the lessons learned from the construction of Gull Island to the construction of Muskrat Falls.

**Responsibility: Government of Newfoundland and Labrador**

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The application of lessons learned from previous projects to future projects is a standard component of Nalcor's Gateway process.<sup>i</sup>

No matter which site proceeds first, Nalcor will apply lessons learned from the first project to the second.

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<sup>i</sup> EIS, Volume IA, 3.3.1

**RECOMMENDATION NO. 4.5: Full Clearing of the Muskrat Falls Reservoir**

The Panel recommends that, if the Project is approved, Nalcor be required to apply its 'full clearing' reservoir preparation option to the Muskrat Falls reservoir.

**Responsibility: Nalcor**

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In its conclusion on this topic, the JRP notes that the more trees cleared, incremental benefits in terms of reducing methyl mercury accumulation and greenhouse gas emissions will occur. Nalcor assumes this statement is based on a previous statement on page 40 of the report which states:

“In terms of Community Health, clearing of the reservoir has the potential to modestly reduce peak fish mercury levels in fish, by reducing decomposition rates and the associated production of methylmercury (MeHg). However, regardless of whether full or partial clearing is implemented reservoir clearing will result in effectively the same modest reductions (within the level of accuracy possible for predictions) in peak fish mercury concentrations (as compared to peak mercury levels calculated for a no clearing scenario), **on the order of 10% for full or partial clearing.**” (emphasis added)<sup>i</sup>

To clarify, this was in comparison to the “No clearing” option, not the partial clearing option. Nalcor did predict both MeHg and greenhouse gas emissions from the future reservoir for both the full and partial clearing alternatives. Based on these predictions, there would be an overall approximate reduction in mercury concentrations and in greenhouse gas emissions in the reservoirs when comparing the full and partial clearing of three (3) percent (which is within the margin of error for the prediction techniques employed). This represents a negligible difference. The average emissions over the first 100 years of operation for full and partial clearing are 55,000 and 55,900 tonnes respectively, for a difference of 1.6%. Nalcor’s predicted differences in GHG emissions for full and partial clearing were presented in Table 4 of Nalcor’s response to information request IR# JRP.148, reproduced below. This conclusion was supported by regulators<sup>ii</sup>. In its submissions to the JRP, Natural Resources Canada determined that the methods Nalcor used to model the fate of mercury in the environment were appropriate. Environment Canada determined that the methods Nalcor used to model green house gas emissions from the reservoirs were appropriate.

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<sup>i</sup> Joint Panel Review Report, Page 40

<sup>ii</sup> Michael Parent, CEAR 908, pg. 87, Keith Clarke, CEAR 908, pg. 93, Neil Burgess, CEAR 908, pg. 97, Environment Canada, CEAR 835, p. 169

Emissions Calculation Method	Electricity Generation <sup>A</sup>		Total Tonnes		Emissions per kWh	
	(GWh/yr)		(CO <sub>2</sub> e/yr)		(g CO <sub>2</sub> e/kWh)	
	Gull Island	Muskrat Falls	Gull Island	Muskrat Falls	Gull Island	Muskrat Falls
IPCC Tier 3 Net Emissions (Average - first 100 years - Full Clearing)	11,826	4,331	127,100	55,000	10.7	12.7
IPCC Tier 3 Net Emissions (Year 2 - Partial Clearing)	11,826	4,331	732,750	331,128	62.0	76.5
IPCC Tier 3 Net Emissions (Year 20 - Partial Clearing)	11,826	4,331	86,566	36,523	7.3	8.4
IPCC Tier 3 Net Emissions (Average - first 50 years - Partial Clearing)	11,826	4,331	171,400	75,200	14.5	17.4
IPCC Tier 3 Net Emissions (Average - first 100 years - Partial Clearing)	11,826	4,331	129,000	55,900	10.9	12.9

There are terrestrial wildlife issues associated with ‘full’ clearing (e.g., Volume IIB, Section 5.7.10 and 5.7.11):

- The preferred approach would be to leave riparian and other sensitive wildlife habitat in place as long as possible prior to the inundation. This would allow additional years of production in these biologically richer habitats during the construction phase.
- Nalcor plans to establish alternative limited habitat that would be available for displaced associated wildlife. The longer this habitat has to establish, the more attractive the initiative would be for displaced wildlife following the inundation.
- Forest harvesting practices in NL require riparian buffer strips remain around waterbodies

The environmental effects management of the construction phase<sup>iii</sup> considered the interactions associated with riparian and other sensitive habitat that would be left in place until the inundation. At least some of the supporting criteria<sup>iv</sup> would be negatively influenced by removing all protective habitat prior to the inundation.

Also, partial clearing reduces adverse environmental effects by:

- Reducing erosion and sediment control issues; and
- Reducing fuel consumption and associated greenhouse gas emissions during construction.

It is the view of Nalcor, and the view of regulators, that full clearing offers no clear additional biophysical environmental benefit over the partial clearing option. This view was supported by Innu Nation during its presentation to the JRP. During their presentation Innu Nation agreed that partial and what it termed “proper” clearing (or full clearing) are similar environmentally<sup>v</sup>.

The JRP states that there was some disagreement on the value of the timber to be harvested. Nalcor’s numbers are based on industry published data<sup>vi</sup> and were supported by the Forestry Division of the Department of Natural Resources. No evidence was submitted that contradicts this data, so Nalcor is unsure of the source of the alternative value indicated in the report. Based on the data provided, the value of the additional timber to be cleared under the full clearing alternative is \$10 million dollars.

<sup>iii</sup> Volume IIB, Section 5.10

<sup>iv</sup> Volume IIB, Section 5.5

<sup>v</sup> CEAR 805

<sup>vi</sup> North American Wood Fiber Review 2009

Following the discussion on the environmental benefits of full clearing the JRP goes on to compare the volume of wood associated with full versus partial clearing and associated cost of harvesting. Table 1 in the report provides a relative comparison of the volumes and is based on data provided by Nalcor. Nalcor concurs with the volume analysis provided. Based on the volume comparison the JRP concludes that the full clearing would result in no more than a 25% - 30% cost increase for the Project for reservoir clearing. Nalcor also concurs with this conclusion and has estimated a similar level of cost increase from partial to full clearing in its detailed cost estimates. However, reservoir clearing operations will be carried out in relatively remote areas and in areas of steep terrain. Road construction is the only feasible access alternative and log-driving will not be permitted. As such the unit cost of extraction is high. Based on this the total increase to the Project is approximately \$50 million dollars.<sup>vii</sup>

The JRP also concludes that additional clearing requirements can be completed within the seven year construction schedule and will not impact the first power date. However the seven year construction date includes commissioning and rehabilitation, which will take place after impoundment.<sup>viii</sup> Reservoir clearing will have to be completed prior to impoundment which is currently scheduled to take place four years after the start of construction. Partial clearing is estimated to take four years. This schedule is based on a ten month working year and may need to be modified based on field conditions and schedule constraints for environmental mitigations (ie nesting migratory birds). Increasing the amount of timber to be cleared increases the schedule risk. The JRP states that the additional time required for full clearing could be managed by modest addition to the resources. However, given the linear nature of reservoir clearing activities there are limited work fronts. There will be a point of saturation of resources, whereby increases in equipment and labor will not result in comparable increases in productivity.

Nalcor believes the Panel misinterpreted the evidence in formulating this recommendation based on the cost benefit analysis provided in IR# JRP.148. As stated above there is no clear environmental benefit to full clearing from a biophysical perspective. Full clearing of the reservoir will result in an additional direct cost to the Project of \$50 million dollars and add a schedule risk to the Project. The JRP notes that additional volumes harvested by the application of the “full clearing” option for the Muskrat Falls reservoir would mean additional harvesting employment. Full clearing would result in additional direct employment and associated positive and negative socioeconomic effects, however at a significant cost to the Project with no associated benefit operational or environmentally. While \$10 million of additional timber could be harvested, this would cost Nalcor \$50 million, and is therefore not financially viable. In terms of indirect employment, it has been noted that a forestry industry is not currently present in Labrador. Partial clearing makes a substantial amount of timber available for other uses, which could be the catalyst for some secondary forestry industry in central Labrador without placing a substantial cost burden on the Project. In the event that a secondary wood processing industry is developed NE supports the clearing of timber in the flood zone by a third party, provided Project operations and schedule are not impacted.

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<sup>vii</sup> IR# JRP.148

<sup>viii</sup> Volume IA, Section 4.3, Figure 4-16

**RECOMMENDATION NO. 4.6: Preparation Approach for Gull Island Reservoir**

The Panel recommends that, if the Project is approved, the reservoir preparation approach for the Gull Island reservoir be finalized and approved by the provincial Department of Natural Resources at the time of the sanction decision for Gull Island. The approach should take into account lessons learned from the preparation of the Muskrat Falls reservoir and should make all reasonable effort to increase harvested volumes above those currently projected by Nalcor under its 'partial clearing' option for the Gull Island reservoir.

**Responsibility: Department of Natural Resources**

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The volume of timber cleared is based on safety considerations, accessibility, in consultation with the Department of Natural Resources, and cost and schedule implications<sup>i</sup>.

Based on these considerations, if increased clearing efforts are feasible to Nalcor at sanction of Gull Island, then Nalcor will implement this recommendation.

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<sup>i</sup> IR# JRP.148

**RECOMMENDATION NO. 4.7: Utilization of Merchantable Timber**

The part of Panel recommends that, if the Project is approved, Nalcor be required to ensure utilization of both the harvested timber from reservoir preparation and the merchantable wood taken from the reservoir as its 'trash and debris' removal program after impoundment. Nalcor would retain the right to determine how this would be achieved, but should work with relevant Provincial Government departments and third party commercial interests to identify options.

**Responsibility: Department of Natural Resources**

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Regarding the utilization of timber, the JRP states that it is the view of NE that our responsibility ends once the cleared timber is placed in storage yards above the flood line. However it is the JRP's view that the cleared timber be utilized because of the related socio-economic benefits and other environmental benefits. NE concurs with this view and will continue to support the efforts of the Forestry Division, Department of Natural Resources, with the Province of Newfoundland and Labrador to develop a secondary wood processing facility in Labrador. NE agrees with the intent of Recommendation 4.7, which is to achieve utilization of the timber cleared from the reservoir, regardless of whether full or partial clearing is employed.

As stated by Keith Deering with the Department of Natural Resources, it is their goal to maximum the production of solid wood products and the full utilization of timber resources from the Lower Churchill Project.<sup>i</sup> To this end the Department has already initiated an expression of interest for the utilization of timber from the Project. It the view of NE that the Forestry Division has the mandate, experience and expertise to achieve this goal and are best positioned to ensure the industry developed is viable and will have long-term benefits to the region. NE is committed to supporting the Division throughout this process.

Nalcor will undertake reasonable efforts to find economically feasible markets for merchantable timber and will continue to work with DNR on this issue and will follow their direction.

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<sup>i</sup> CEAR 846, p. 71

**RECOMMENDATION NO. 5.1: Use of Best Available Technology**

The Panel recommends that, if the Project is approved, Nalcor be required to implement its mitigation commitments to minimize air pollution, noise and greenhouse gas emissions resulting from the Project. In addition, Nalcor should be required to use best available technology for any new construction and harvesting equipment purchased for the Project. This means that any new equipment purchased after Project approval should be required to meet the highest current emissions standards for such equipment, even if such standards are above current regulatory requirements.

**Responsibility: Nalcor**

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Nalcor has committed to ensure that equipment purchased for the project will, at a minimum, meet or exceed emission standards for construction and harvesting equipment<sup>i</sup>, as established by Environment Canada<sup>ii</sup>. In the event that emission standards are amended, the standards in effect at the time of equipment purchase would apply.

Nalcor's procurement professionals include environmental criteria in the purchase of goods and services, as part of the procurement decision making process and strive to achieve best available technology where practical. This includes the application of environmental criteria in the evaluation of construction contractors through Nalcor's competitive procurement processes. While all equipment used will comply with regulatory requirements, it is not reasonable to commit to the use of best available technology in all instances, as other considerations (e.g. cost, serviceability) may render the use of best available technology not reasonable<sup>iii</sup>.

[should test whether further evidence to support the use of 'better than required' technology was presented before the Panel.]

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<sup>i</sup> EIS, Volume IIB, Table 7-1

<sup>ii</sup> <http://www.ec.gc.ca/lcpe-cepa/eng/Regulations/DetailReg.cfm?intReg=88>

<sup>iii</sup> IR# JRP.75/IR# JRP.85S; IR# JRP.100 (Page 2)

**RECOMMENDATION NO. 5.2: Backing Up Intermittent Renewable Energy**

The Panel recommends that, if the Project is approved, Nalcor be required to make all reasonable efforts to maximize the potential to utilize power from the Project to back-up wind power and other intermittent renewable sources of electricity. The results of Nalcor's efforts should be reported to the public through its annual report.

**Responsibility: Nalcor**

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The Project will facilitate Nalcor's ability to integrate wind power and other intermittent renewable sources of energy. Nalcor will continue to report the outcome of its efforts to develop other renewables.

The feasibility of integrating with renewables in other markets is dependent on market rules established by others and also by transmission access to those markets, so its feasibility is less certain.



**RECOMMENDATION NO. 5.3: Displacement of High Greenhouse Gas Energy Sources**

The Panel recommends that, if the Project is approved, Nalcor be required to take all reasonable steps to ensure that power from the Project is used to displace energy from high greenhouse gas emission sources and does not displace demand management, conservation, efficiency, and the generation of power from renewable, low greenhouse gas emission energy sources. The results of Nalcor's efforts should be reported to the public through its annual report.

**Responsibility: Nalcor**

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With the displacement of thermal generation at Holyrood, Nalcor has taken action to displace high GHG energy sources. As outlined the response to IR# JRP.7S / IR# JRP.85S, additional specific sources of energy displaced by the Project in each of the potential markets will be determined by the dispatch decisions within the respective markets. The factors that affect dispatch decisions in each of the different types of markets are outlined the response to IR# JRP.5S / IR# JRP.25Sa. It is not possible for Nalcor Energy (Nalcor) to identify specific sources that would be displaced with any greater certainty than what is presented in the response to IR# JRP.7a because dispatch decisions on individual facilities are made by the operators of the facilities and not by the sellers in the market. The absence of a formal federal GHG policy framework both in the Canada and in the United States results in additional uncertainty in relation to the effect of the Project on displacing alternative energy sources and GHG emissions in each of the markets.

Demand management, energy conservation, and energy efficiency programs continue to be important components of energy management plans in Newfoundland and Labrador and indeed across other North American jurisdictions; these programs and are not expected to be negatively affected by the transmission link project. Regarding the displacement of power generation from renewable, low greenhouse gas emission energy sources, similar to hydroelectric developments, most other renewable energy sources such as wind have low marginal operating costs and as such Nalcor does not expect to displace other in-service renewable production, as outlined in Nalcor's response to IR# JRP.7S / IR# JRP.85S.

Nalcor's environmental performance, including the reduction of GHG emissions, will be reported in Nalcor's Annual Performance Report Transparency and Accountability. In addition, the Government of Newfoundland and Labrador's Office of Climate Change, Energy Efficiency and Emissions Trading will report on GHG emission reductions for the province<sup>1</sup>.

Nalcor has committed to replace production at Holyrood and our arrangement with Emera will see the retirement of a coal fired unit in Nova Scotia – concrete action to displace GHG emissions.

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<sup>1</sup> EIS Volume 1A; IR# JRP.7; IR# JRP.85; IR# JRP.7S/IR# JRP.85S; IR# JRP.146

**RECOMMENDATION NO. 5.4: Atmospheric Monitoring**

The Panel recommends that, if the Project is approved and in addition to its monitoring commitments, Nalcor should carry out the following monitoring programs using methodologies approved by federal and provincial regulators:

- monitor greenhouse gas emissions related to construction;
- monitor greenhouse gas emissions related to operation;
- track the displacement of greenhouse gas emissions in the various markets for Project power and report annually based on transparent methodologies approved by federal and provincial regulators, taking into account relevant issues identified by the Panel; and
- work with appropriate government agencies to ensure that there are active climate change monitoring programs on appropriate rivers in Labrador not affected by the Project, so that there is a better chance to separate Project impacts from climate change impacts based on local weather data collected within the Project area.

**Responsibility: Nalcor**

Nalcor will work with relevant government agencies to establish appropriate greenhouse gas monitoring programs during construction and operation<sup>i</sup>. Additionally, Nalcor has proposed several mitigation measures to reduce impacts to the atmospheric environment<sup>ii</sup>.

Electricity markets requires that dispatch decisions are made on a cost and reliability basis<sup>iii</sup>. Therefore, there is no method at this time to provide an accurate measure of the greenhouse gas displacement caused by the Project.

As indicated in the environmental assessment, greenhouse gas displacement will far outweigh that produced during construction and operation. Environment Canada has stated that the power that is produced will result in much less greenhouse gas emissions per unit of electricity than coal, gas, or oil-fired power plant<sup>iv</sup>. Nalcor estimates show that the Project has the potential to displace 11.5 mega tonnes of greenhouse gas emissions from existing facilities, including the Holyrood Plant<sup>v</sup>. As a result, Environment Canada did indicate that the displacement of greenhouse gases elsewhere would be a positive environmental effect<sup>vi</sup>.

With respect to the fourth recommendation, the effects of climate change are felt on a widespread basis, and atmospheric monitoring can take place on a widespread basis (not necessarily on rivers) to capture the effects of climate change. While Nalcor appreciates the intent of this recommendation, weather data is collected at many locations in the Province and further 'river-based' atmospheric monitoring is unwarranted. Nalcor will continue to fund climate change research at Memorial University. The ongoing studies use hydrological models based on actual flow and climate data from the Lower Churchill and certain tributaries. The hydrological model will

<sup>i</sup> EIS, Volume IIB, Table 7-3; EIS, Volume IIB, Section 3.12

<sup>ii</sup> EIS Volume IIB, Table 7-1

<sup>iii</sup> CEAR 1148

<sup>iv</sup> CEAR 667

<sup>v</sup> IR# JRP.7, p. 115, Table 2; IR# JRP.85d

<sup>vi</sup> CEAR 667

provide a baseline to help determine the effect of climate change on the overall hydrological cycle for the lower Churchill watershed<sup>vii</sup>.

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<sup>vii</sup> IR# JRP.63(o)

**RECOMMENDATION NO. 6.1: Timing of Reservoir Impoundment**

The Panel recommends that, if the Project is approved, Fisheries and Oceans Canada require Nalcor to carry out impoundment of both the Muskrat Falls and Gull Island reservoirs during the period mid-July to the end of September, and to prepare a detailed mitigation plan for approval by Fisheries and Oceans Canada. The mitigation plan should include information on how the effects of dewatering would be monitored, thresholds to trigger further mitigation, and identification of specific adaptive management measures and how they would be applied.

**Responsibility: Department of Fisheries and Oceans**

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Nalcor would prefer to impound within the range specified by the JRP, unless alternative impoundment protocols were indicated as preferable by the Department of Fisheries and Oceans, and have a detailed construction schedule that will increase the likelihood for this to occur. There exist sensitivities to various terrestrial and aquatic species at varying times throughout the year; therefore if the current schedule cannot be maintained, an alternative impoundment strategy will be developed in consultation with all relevant regulators<sup>i</sup>. Additionally, Nalcor has proposed a number of mitigation strategies to minimize impoundment effects, regardless of the timing<sup>ii</sup>. Finally, as part of the required authorization under the Fisheries Act, Nalcor's strategy will require approval by the Minister of the Department of Fisheries and Oceans.

Nalcor has indicated that a delay in impoundment following the construction stage would result in considerable financial loss and significantly affect project feasibility<sup>iii</sup>.

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<sup>i</sup> G. Bennett, CEAR 846, p. 144

<sup>ii</sup> CEAR 1039

<sup>iii</sup> CEAR 835, p.60

**RECOMMENDATION NO. 6.2: Environmental Flow Standards**

The Panel recommends that, if the Project is approved, the provincial Department of Environment and Conservation, in consultation with Fisheries and Oceans Canada, Nalcor, Churchill Falls (Labrador) Corporation Limited, and Aboriginal groups and stakeholders, develop environmental flow standards for the lower Churchill River with respect to flows (magnitude, frequency, duration, timing, and rate of change) designed to promote the maintenance of ecological functions and the conservation of riparian and fish habitat. The environmental flow standards should be incorporated by regulation under appropriate provincial legislation and acknowledged in the Water Management Agreement. The Panel further suggests that the Department of Environment and Conservation consider developing environmental flow standards for the upper Churchill River, recognizing the importance of addressing the entire watershed as an integrated system.

**Responsibility: Department of Fisheries and Oceans; Department of Environment and Conservation; Nalcor; CF(L)Co.**

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The effectiveness of flows and alterations to the habitat as they relate to the aquatic system, with respect to the Project, will be required within the Fish Habitat Compensation Plan and the Environmental Effects Monitoring Plans. These plans are currently regulated by the federal and provincial authorities under various regulations and acts such as the Fisheries Act. The Fish Habitat Compensation Plan has incorporated Adaptive Management to effectively monitor and adapt mitigations if and when required. In this respect, the Fisheries Act and its Authorization already embodies the principle of environmental flow<sup>i</sup>.

Furthermore, Nalcor is evaluating further optimization of its proposed operating regime for the Muskrat Falls reservoir to allow spring flooding above full supply level<sup>ii</sup>. This will better enhance the viability of all riparian habitats, both artificial and natural, by mimicking to a great degree the spring flood that is currently experienced on the River. Details are provided in Response to Recommendation 7.1. The analysis regarding this potential mitigation measure will be provided to appropriate regulators when complete. Otherwise, wetland engineering and other techniques will be utilized to compensate for lost riparian habitat.

The Water Management Agreement that was concluded between Nalcor and the operator of the Churchill Falls Power Station, CF(L)Co., on March 9, 2010 will ensure that enough water is released into the lower Churchill River from the Churchill Falls Power Station to at least provide the minimum flow levels that Nalcor has committed<sup>iii</sup>. In addition, with the exception of drawdown in the spring of each year, the reservoirs for the Project will be operated as close as possible to the full supply level<sup>iv</sup>. This means that the amount of water that is released from the Churchill Falls Power Station must also be released at both the Gull Island and Muskrat Falls facilities. In turn, this ensures that flows downstream of Muskrat Falls during operation of the Project remain consistent with the existing flow regime, which is also dependent on releases from the Churchill Falls Power Station.

Therefore, Nalcor has already committed to ensuring flows are maintained at feasible optimal levels. Altering flows from the Upper Churchill system is beyond the scope of this project and assessment.

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<sup>i</sup> IR# JRP.153

<sup>ii</sup> Marion Organ, CEAR 1136, p. 270; Perry Trimper, CEAR 1136, pp. 284 and 285

<sup>iii</sup> Response to IR# JRP.149(a), p. 3

<sup>iv</sup> Response to IR# JRP.84(a)

**RECOMMENDATION NO. 6.3: Erosion and Sedimentation Prevention**

The Panel recommends that, if the Project is approved, Nalcor be required to prepare an erosion and sedimentation prevention strategy including the use of 15-metre vegetated buffer areas during reservoir preparation, best practices at all construction and cleared areas, and specified adaptive management measures to be applied should these mitigation measures fail.

**Responsibility: Nalcor**

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The Reservoir Preparation Plan and project Environmental Protection Plans, including those specific to general construction, reservoir preparation, impoundment, and fish habitat compensation will incorporate these requirements.<sup>i</sup> Additionally, Nalcor has committed to certain mitigation measures to prevent erosion and sedimentation, for example, reservoir draw-down procedures.<sup>ii</sup>

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<sup>i</sup> IR# JRP.148; IR# JRP.114

<sup>ii</sup> CEAR 1312

**RECOMMENDATION NO. 6.4: Mitigating Entrainment Effects**

The Panel recommends that, if the Project is approved, Fisheries and Oceans Canada require Nalcor to take the following steps before receiving a Section 35(2) authorization with respect to potential entrainment losses: (a) carry out further baseline sampling at Gull Island to verify both juvenile and adult fish movements in this area; and (b) prepare a mitigation and adaptive management strategy that establishes thresholds for further action, and identifies what adaptive measures would be taken when, and for what species. The strategy should also address compensation measures should it become apparent that high losses of a specific species are inevitable.

**Responsibility: Department of Fisheries and Oceans**

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Nalcor collected baseline data on movement near both dams to effectively and adequately predict the likely effect of entrainment at the population level (as supported by the Panel's conclusion in the first paragraph of Section 6.3.3 – page 71). DFO stated that adequate mitigation for entrainment will depend on the species and the level of effect; therefore post-project monitoring will be required to determine the most effective mitigation, if required. This monitoring requirement will most likely be part of a Fisheries Act Authorization and would be incorporated into an Environmental Effects Monitoring program for the project. Therefore additional baseline data collection prior to monitoring would provide no value.

**RECOMMENDATION NO. 6.5: Pilot Study for Methylmercury Mitigation through Soil Removal**

The Panel recommends that Natural Resources Canada, in consultation with Nalcor and, if possible, other hydroelectricity developers in Canada, carry out a pilot study to determine (a) the technical, economic and environmental feasibility of mitigating the production of methylmercury in reservoirs by removing vegetation and soils in the drawdown zone, and (b) the effectiveness of this mitigation measure. The pilot study should take place in a location where the relevant parameters can be effectively controlled (i.e. not in the Lower Churchill watershed) and every effort should be made to complete the pilot before sanction decisions are made for Gull Island. If the results of the pilot study are positive, Nalcor should undertake to employ this mitigation measure in Gull Island to the extent possible and monitor the results.

**Responsibility: Department of Natural Resources (Federal); Nalcor; other hydro developers**

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Nalcor would consider participating in a phased approach to this study led by Natural Resources Canada, including the use of existing knowledge and expertise to examine the potential benefits and costs of vegetation and soil removal from an environmental and financial perspective. Natural Resources Canada, as well as relevant stakeholders and utilities would be invited to contribute to this assessment. Following a re-examination of the merits and drawbacks of organic removal mitigation methods, a decision would be made whether to continue into a pilot study phase.

Nalcor would consider contributing to the research on effects from hydroelectric developments on a national scale, but the study indicated should be implemented independent of the proposed project.



**RECOMMENDATION NO. 6.6: Fish Habitat Compensation**

The Panel recommends that, if the Project is approved, Fisheries and Oceans Canada require Nalcor to:

- prepare a detailed fish habitat compensation plan in consultation with stakeholders and Aboriginal groups that addresses to the extent possible the likely interactions between species and life stages, including predator-prey relationships and also the potential to replace tributary-type habitats;
- prepare a habitat monitoring plan including thresholds for further action and identified adaptive management measures;
- implement the proposed plan, documenting the process;
- evaluate the extent to which new, stable habitat has been created, its use and productivity; and
- apply any lessons learned from implementing the Muskrat Falls compensation plan to the proposed Gull Island compensation works.

If, after all feasible adaptive management measures have been applied, Fisheries and Oceans Canada determines that there has been a significant shortfall in the amount of habitat successfully created and maintained, compared to the original proposal, Nalcor should be required to compensate by carrying out habitat compensation works in other watersheds in Labrador. Preference should be given to remediation and enhancement in areas adversely affected by the Churchill Falls project.

**Responsibility: Department of Fisheries and Oceans**

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These are standard elements of the legal requirement for a fish habitat compensation plan which will be part of the authorization under the Fisheries Act reviewed for approval by the Department of Fisheries and Oceans.

**RECOMMENDATION NO. 6.7: Assessment of Downstream Effects**

The Panel recommends that, if the Project is approved and before Nalcor is permitted to begin impoundment, Fisheries and Oceans Canada require Nalcor to carry out a comprehensive assessment of downstream effects including:

- identifying all possible pathways for mercury throughout the food web, and incorporating lessons learned from the Churchill Falls project;
- baseline mercury data collection in water, sediments and biota, (revised modelling taking into account additional pathways, and particularly mercury accumulation in the benthos) to predict the fate of mercury in the downstream environment;
- quantification of the likely changes to the estuarine environment associated with reduction of sediment and nutrient inputs and temperature changes; and
- identification of any additional mitigation or adaptive management measures.

The results of this assessment should be reviewed by Fisheries and Oceans Canada and by an independent third-party expert or experts, and the revised predictions and review comments discussed at a forum to include participation by Aboriginal groups and stakeholders, in order to provide advice to Fisheries and Oceans Canada on next steps.

**Responsibility: Department of Fisheries and Oceans**

DFO has recommended that Nalcor augment baseline data downstream of Muskrat Falls for the following parameters:

- nutrients and primary production;
- fish habitat and its utilization;
- fish growth, condition and spawning times; and
- temporal changes in mercury, particularly in estuarine fish.

Nalcor has committed to these studies over the period prior to impoundment<sup>i</sup> and is presently collecting water, sediment, macroinvertebrate and plankton data.

Nalcor has undertaken extensive studies to inform predictions on effects downstream of Muskrat Falls ranging from the mouth of the river at Goose Bay to Lake Melville. Minor changes are expected but changes in the parameters indicated will not have significant effects on key indicators downstream.<sup>ii</sup>

The EIS<sup>iii</sup> has already addressed likely changes in the estuarine environment associated with reduction of sediment and nutrient inputs and temperature changes. The effect of predicted increased sediment is expected to be offset by the expected increase in water depth from climate change influences.<sup>iv</sup>

The information acquired will provide the necessary baseline to assist developing the environmental effects monitoring program in the project area, as well as downstream. The monitoring, adaptive management and

<sup>i</sup> CEAR 1312

<sup>ii</sup> IR# JRP.166, pp.3, 8, 9, 11, and 14

<sup>iii</sup> Volume IIA, 4.0

<sup>iv</sup> CEAR 1164, pp. 93, 94

mitigation measures proposed in the Fish Habitat Compensation Plan, for upstream and downstream of Muskrat Falls, will be reviewed by external consultants. In the case that the monitoring programs indicate that predictions are inaccurate the proposed adaptive management and further mitigation indicated in the plan will be implemented.<sup>v</sup>

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<sup>v</sup> IR# JRP.153

**RECOMMENDATION NO. 6.8: Published Analysis of Downstream Effects over Time**

The Panel recommends that, if the Project is approved, Nalcor contribute to the overall knowledge about the effects of hydroelectric projects in northern regions by ensuring that a longitudinal analysis of the effects of the Project on the downstream environment (Goose Bay and Lake Melville) over an appropriate time period, including both mercury transport and bioaccumulation and other ecological parameters, is published in a peer-reviewed journal or the equivalent. The Panel suggests that Nalcor consider collaborating with an appropriate independent research organization to carry out this recommendation by providing knowledge, data and financial resources.

**Responsibility: Department of Fisheries and Oceans**

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Nalcor has committed to an extensive monitoring program, as well as baseline data augmentation of fish, fish habitat and seals downstream of the project.<sup>i</sup> Nalcor would consider a collaborative relationship with an academic organization to contribute to the knowledge of the effects of hydroelectric projects.

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<sup>i</sup> CEAR 1312

**RECOMMENDATION NO. 6.9: Development of the Aquatic Monitoring Program**

The Panel recommends that, if the Project is approved, Fisheries and Oceans Canada require Nalcor to organize a workshop with third-party facilitation and invited participation by Aboriginal groups, stakeholder organizations, knowledgeable local people, and independent experts from academic or equivalent organizations to review and advise on a detailed draft monitoring plan.

**Responsibility: Department of Fisheries and Oceans**

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As part of the Fish Habitat Compensation Planning process, the Adaptive Monitoring Plan is reviewed by regulators, stakeholders, locals and experts in the respective field. Public consultation is required for Plan development and prior to final acceptance by DFO. A total of four workshops with Aboriginal groups, stakeholders, and knowledgeable local people have already been conducted in St. John's and Goose Bay to incorporate comments on both the Compensation Framework and the Compensation Strategy.<sup>i</sup> In addition, comments from the Panel Hearing process have also been incorporated into the ongoing Plan development.

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<sup>i</sup> IR# JRP.153

**RECOMMENDATION NO. 7.1: Wetland Compensation Plan**

The Panel recommends that, if the Project is approved, Nalcor be required to develop a detailed wetland compensation plan in consultation with Environment Canada, the provincial Department of Environment and Conservation, Aboriginal groups and appropriate stakeholders. The plan should set appropriate goals for the re-establishment of wetlands taking into account the purpose served by each type of wetland in the context of the surrounding ecosystem.

**Responsibility: Nalcor Energy**

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Nalcor has committed to develop a wetland compensation plan in consultation with government regulators. Nalcor will consult with appropriate agencies and stakeholders on the recreation of riparian wetland habitat and implementing a monitoring and follow-up program to determine the effectiveness of the habitat creation.<sup>i</sup>

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<sup>i</sup> CEAR 1312

**RECOMMENDATION NO. 7.2: Riparian Compensation Plan**

The Panel recommends that, if the Project is approved, Fisheries and Oceans Canada require Nalcor to develop a detailed riparian habitat compensation plan in consultation with Fisheries and Oceans Canada, the provincial Department of Environment and Conservation, Aboriginal groups and appropriate stakeholders, that looks closely at water levels and variations in the levels needed to ensure healthy and resilient riparian habitat and coordinates with the environmental flow standards referenced in recommendation 6.2.

**Responsibility: Fisheries and Oceans Canada**

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As indicated in the Response to Recommendation 6.2 the Fisheries Act authorization already embodies the principle of environmental flow. Additionally, the outcome of Nalcor's assessment into the environmental flow regime indicated in Response to Recommendation 6.2 will be factored into Nalcor's riparian compensation plan.

**RECOMMENDATION NO. 7.3: Recovery Strategies for Endangered Species**

The Panel recommends that, if the Project is approved, federal and provincial governments make all reasonable efforts to ensure that recovery strategies are in place and critical habitat is identified for each listed species found in the assessment area before a final decision is made about the effects of the Project on those species. Compliance with federal and provincial species protection legislation should be seen as a minimum standard. In fairness to Nalcor, this work should be given the priority needed to ensure that the Project decision is not unduly delayed. A final Project decision should only be made once government decision makers are satisfied that the recovery of listed species would not be compromised by the Project. Where Environment Canada is relying on provincial efforts to fulfill its obligations under the safety net provisions of the federal *Species at Risk Act*, before a federal decision is made about the Project it should satisfy itself that the provincial efforts for any species at risk are sufficient for its recovery and will not be compromised by the Project.

**Responsibility: Federal and Provincial Governments**

Nalcor's approach to environmental assessment included all federally SARA-listed species as key indicators. These included the Red Wine Mountains caribou herd, Harlequin Duck, Common Nighthawk, Olive-sided Flycatcher, Gray-cheeked Thrush and Rusty Blackbird. During the hearings Environment Canada provided to the Panel a list of the expected dates of these federally listed species recovery strategies or management plans as one of their undertakings.<sup>i</sup> To date, none of these species have federal recovery strategies or action plans, with the exception of the Harlequin Duck which has an Eastern Population Management Plan<sup>i</sup>. Subsequently, no critical habitat has been identified for any of these species.<sup>ii</sup>

Dr. Hanson with Environment Canada indicated during the hearings critical habitat identification follows from the development of the recovery strategy which has not been completed for woodland boreal caribou, but that work is ongoing.<sup>iii</sup> Dr. Schmelzer and Ms. Moores of the Province indicated that the published provincial recovery strategy for sedentary woodland caribou does not include identification of critical habitat.<sup>iv</sup> However, Nalcor, all of the experts on caribou agreed during the hearing that predation and hunting, not the availability of habitat, are the primary limitation on the Red Wine Mountains caribou herd.<sup>v</sup>

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<sup>i</sup> CEAR#251 IR.JRP105 p.4

<sup>ii</sup> CEAR# 923 p.179

<sup>iii</sup> CEAR# 923 p.179

<sup>iv</sup> CEAR# 923 p.316

<sup>v</sup> CEAR 940 p. 321



**RECOMMENDATION NO. 7.4: Compliance with Species at Risk Legislation**

The Panel recommends that, if the Project is approved, Nalcor should work with federal and provincial departments responsible for species at risk legislation to ensure all Project-related activities comply with restrictions and prohibitions against harassment, disturbance, injuring or killing of listed species or destroying and disturbing their residence.

**Responsibility: Nalcor Energy**

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Discussion took place during the hearings regarding the species at risk legislation, definition of critical habitat and recovery strategies with both provincial and federal regulators.<sup>i</sup> Nalcor has committed to work with federal and provincial regulators their effects management measures,<sup>ii</sup> as well as in the development of biophysical monitoring programs.<sup>iii</sup> Nalcor will comply with all species at risk legislation.

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<sup>i</sup> CEAR 923, pp. 175-183 and pp. 313-317; CEAR 1046, p. 2

<sup>ii</sup> CEAR 108 EIS Volume IIB, Chapter 5, Table 5-10, p. 5-36

<sup>iii</sup> CEAR 1189, p. 4; CEAR 108 EIS Volume IIB, Chapter 7, Table 7-3, p. 7-8

**RECOMMENDATION NO. 7.5: Road Construction and Decommissioning**

The Panel recommends that, if the Project is approved, the provincial Department of Natural Resources require Nalcor to minimize road construction outside the reservoirs, by locating new roads inside the impoundment area as much as possible. Any new roads proposed by Nalcor to be located outside the impoundment areas should be carefully reviewed by the Forestry Branch of the Department of Natural Resources and only approved if there is no reasonable alternative. In order to ensure that conservation objectives are met, all temporary roads outside the reservoir should be decommissioned as soon as possible to the satisfaction of the provincial Department of Environment and Conservation.

**Responsibility: Department of Natural Resources**

Nalcor has made the commitment to locate the roads within the flood zone of the reservoir where it is safe and technically and economically feasible.<sup>i</sup> This commitment was further clarified in the Reservoir Preparation Report (Nalcor, 2009) which was submitted as Appendix A of IR# JRP.148 which stated that the roads for reservoir clearing would be located wherever possible within the ice zone or the stick up zone and where access roads had to be relocated to go around an area too steep to operate on, where possible they were located within the flood zone. Locating roads above the ice zone would be a last alternative.

Nalcor has also agreed to the following measures:<sup>ii</sup>

- bridges and culverts at stream crossings along all temporary access roads will be removed as these structures are designed to be temporary in nature;
- road surfaces will be scarified to promote natural regeneration of a productive forest;
- roadside ditches along temporary access roads will be backfilled using existing road surface or other suitable material; and
- stream banks around disturbed areas will be stabilized to provide erosion protection.

Finally, the Reservoir Preparation Report<sup>iii</sup> indicated the following measures:

- roads below the flood line will be inundated and will not be rehabilitated with the exception of any identified habitat enhancement activities;
- roads above the full supply level will be rehabilitated where possible;
- the extent of road rehabilitation will vary and will range from disturbing the road surface using an excavator and restricting access to complete rehabilitation;
- complete rehabilitation will include removing the road way, re-grading the area and backfilling ditches;
- priority areas will be identified such that in the event of scheduling issues these areas will have been addressed; and
- the backfill of ditches may be limited as the ditches have been identified and as potential habitat for certain species of wildlife.

<sup>i</sup> IR# JRP.248

EIS Volume IIA, Table 5-9

<sup>ii</sup> Nalcor, 2009 Volume 1A, Section 4.6.1.3

<sup>iii</sup> IR# JRP.148, Appendix A

Nalcor will continue to work with the Department of Natural Resources to ensure the effective use and decommissioning of access roads.

**RECOMMENDATION NO. 7.6: Recovery of the Red Wine Mountain Caribou Herd**

The Panel recommends that, if the Project is approved, the provincial Department of Environment and Conservation ensure that adequate resources are available so that all reasonable efforts to ensure the recovery of the Red Wine Mountain caribou herd are taken. In addition, the Department should require Nalcor to play an enhanced role in the recovery process for the Red Wine Mountain caribou herd by putting resources into the process for research and recovery efforts and to participate actively in the overall effort to ensure the recovery of the caribou herd.

**Responsibility: Department of Environment and Conservation**

The provincial Department of Environment and Conservation demonstrated during the hearings their extensive knowledge, involvement, and initiation of programs and studies regarding the Red Wine Mountain Caribou.<sup>i</sup> The Province in conjunction with many of its partners has been investing a significant amount of effort into the understanding caribou habitat relationships including undertaking a series of studies that attempt to integrate remotely sensing information with field data to create base maps of ecological community relative to caribou.<sup>ii</sup> The Province has also initiated a study which attempts to gain some insights into wolf kill rates and hunting patterns of sedentary caribou,<sup>iii</sup> and there is a published, endorsed recovery strategy.<sup>iv</sup>

Although residual environmental effects from the Project on the Red Wine Mountains caribou herd are expected to be not significant,<sup>v</sup> Nalcor has committed to implementing several mitigation measures to minimize the Project's effect on Red Wine Mountains caribou. These include a No Harvesting (or other harassment) Policy, designing work schedules to minimize travel in designated areas during calving and post-calving periods, and removing trees from the riparian zone surrounding the reservoirs to provide unimpeded access for wildlife.<sup>vi</sup> Nalcor has committed to continuing its role on the Labrador Woodland Caribou Recovery Team regarding the Red Wine Mountains Herd and will support regional research and telemetry work to monitor population numbers, calf survival, and movement and distribution patterns.<sup>vii</sup>

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<sup>i</sup> CEAR 923, p. 246

<sup>ii</sup> CEAR 923, p. 268

<sup>iii</sup> CEAR 923, p. 266

<sup>iv</sup> CEAR 923, p. 315

<sup>v</sup> CEAR 108, EIS Volume IIB, p. 5-80 and 5-81

<sup>vi</sup> CEAR 108, EIS Volume IIB, Appendix IIB-A, pp. 11 and 13

<sup>vii</sup> CEAR 108, EIS Volume IIB, P. 7-6; CEAR 1189, p. 4

**RECOMMENDATION NO. 7.7: Management of the George River Caribou Herd**

The Panel recommends that, if the Project is approved, the provinces of Quebec and Newfoundland and Labrador, Environment Canada and all interested Aboriginal communities initiate a dedicated range-wide joint management program for the George River caribou herd, and through this program cooperatively carry out a comprehensive cumulative effects assessment of the impact of human activities on the herd to be updated periodically as required.

**Responsibility: Provinces of Quebec and Newfoundland and Labrador; Environment Canada; and all interested Aboriginal communities**

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While the intention of this recommendation has merit, it is beyond the scope of the present assessment and project. However, the George River caribou herd was assessed because the Project overlaps a portion of its wintering habitat, and this herd has socio-economic and cultural importance for the residents of surrounding communities.<sup>i</sup> The results of the assessment concluded that the effects on the George River herd were not significant.<sup>ii</sup> However, Nalcor has committed to monitoring both the Red Wine Mountains herd and the George River herd to ensure that its effects predictions are accurate.<sup>iii</sup>

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<sup>i</sup> CEAR 108, EIS Volume IIB, Chapter 5, p. 5-3

<sup>ii</sup> CEAR 108: EIS Volume IIB, Chapter 5, p.5-79

<sup>iii</sup> CEAR 1189, p.4

**RECOMMENDATION NO. 7.8: Effect of Reservoir Preparation Activities on Migratory Birds**

The Panel recommends that, if the Project is approved, Nalcor and Environment Canada negotiate an agreement prior to reservoir preparation regarding whether and how clearing could proceed between May and July without violating the *Migratory Birds Convention Act*. To initiate this process, Nalcor should be required to submit a plan describing how it would carry out clearing activities during this period in compliance with the *Migratory Birds Convention Act*.

**Responsibility: Nalcor Energy and Environment Canada**

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Nalcor's environmental assessment considered the effects of construction activities on terrestrial wildlife throughout the year and found that if Nalcor implemented the mitigation strategies (e.g., follow best management practices and demonstrate due diligence in terms of incidental take) proposed in the EIS the Project would not likely result in any significant adverse environmental effects on terrestrial wildlife.<sup>i</sup> During the hearing, Nalcor clearly stated that it will not violate the *Migratory Birds Convention Act*<sup>ii</sup> and has committed to developing Avifauna management plans for this Project,<sup>iii</sup> as they have been developed in the past to ensure that Nalcor does not violate this Act.<sup>iv</sup> Nalcor commits to working closely with Environment Canada in formulating the details of this plan.<sup>v</sup>

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<sup>i</sup> CEAR 108 EIS Volume IIB, Chapter 7 Table 7-1 p. 7-2 and Table 7-3 p. 7-6

<sup>ii</sup> CEAR 923 p.140

<sup>iii</sup> CEAR 108 EIS Volume IIB, Chapter 5 Table 5-10 p. 5-36; CEAR 251: IR# JRP.95, p.2

<sup>iv</sup> CEAR 835 p.79 and CEAR 923 p.131

<sup>v</sup> CEAR 923 p.137; CEAR 251 IR# JRP.95, p.2

**RECOMMENDATION NO. 7.9: Vegetation Control**

The Panel recommends that, if the Project is approved, Nalcor be required to restrict the use of chemical herbicides to areas where alternative vegetation control is not reasonably possible. Approval of the use of herbicides should only be granted after Nalcor has submitted an overall vegetation control plan to the provincial Department of Environment and Conservation, demonstrating that all alternatives have been adequately explored and the use of non-chemical approaches maximized.

**Responsibility: Nalcor Energy**

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Industrial herbicide application is a provincially regulated activity, requiring operator and applicator licenses, and the requirement of weekly reporting to the provincial government regarding where treatment is applied, how much and what type of chemical was used.<sup>i</sup> The Provincial Department of Environment and Conservation is responsible for regulating the use of these federally registered products in Newfoundland and Labrador, and the Province is responsible for the requirements associated with the application, storage and handling of these products within NL.<sup>ii</sup>

Karen Linfield of the Province of Newfoundland and Labrador Water Resources Management Division in her presentation on industrial management on herbicide control stated the role of the Department of Environment and Conservation with respect to the use and application of pesticides and the licensing process for any vegetation management program employing the use of pesticides such as herbicides.<sup>iii</sup> The role and process as she outlined is well aligned to that stated by Nalcor in response to IR# JRP.91.

Nalcor has committed to in the EIS, in their vegetation management planning and effects management measures that any herbicide use will be by hand and sprayed from the ground to control drift. Trees and tall shrubs will be cut and herbicide applied to stumps.<sup>iv</sup> Nalcor has also indicated that it will meet or exceed the regulations as outlined by the Province, and in addition employs knowledgeable and experienced inspectors to oversee all operations of herbicide use in the field in ensure compliance during mixing, loading, and application are adhered to and prepare Daily Application Reports to support their observation.<sup>v</sup>

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<sup>i</sup> CEAR 251, IR# JRP.91(a) p.2

<sup>ii</sup> CEAR 251, IR# JRP.91(b) p.3

<sup>iii</sup> CEAR 940, Transcript March 18 p.181, line 19

<sup>iv</sup> CEAR 108, EIS Volume IIB Table 5-9, p.5-39 and Table 7-1, p. 7-2

<sup>v</sup> CEAR 251 IR# JRP.91(b), p.3

## RECOMMENDATION NO. 7.10: Monitoring, Follow-up and Adaptive Management for the Terrestrial Environment

The Panel recommends that, if the Project is approved and in addition to its monitoring commitments listed in Chapter 7, Terrestrial Environment, Nalcor should carry out the following monitoring programs:

- monitor the effectiveness of riparian and wetland habitat compensation work, including the effect on wetland sparrows;
- monitor the response of the Red Wine Mountain caribou herd including any population changes through the construction phase and in the early part of the operation phase;
- monitor wolf predation of caribou, particularly the Red Wine Mountain herd; monitor interactions of the George River caribou herd with Project activities and facilities and identify any impacts;
- monitor ashkui formation in the Project area;
- monitor direct and indirect impacts on waterfowl, such as waterfowl adjustment to changes in riparian habitat, and changes in the location and formation of ashkui;
- confirm the presence of and monitor the impact of the Project on salamanders and spring peepers;
- develop a detailed mitigation and monitoring plan for all listed species for approval by the provincial Department of Environment and Conservation;
- confirm the presence outside the flood zone of the eight plant species identified by Nalcor as unique to the river valley plus the two additional species listed by the Department of Environment and Conservation (marsh horsetail and hidden fruit bladderwort) and develop a detailed mitigation plan for these plant species for approval by the Department;
- monitor the impact of the Project on furbearers, small game, small mammals, and black bears; and
- collaborate with the Department of Environment and Conservation to develop an appropriate approach to monitor pine marten in areas affected by the Project where there is no trapping activity.

### Responsibility: Nalcor Energy

Nalcor has proposed comprehensive monitoring and follow-up programs to verify the predictions made in this environmental assessment.<sup>i</sup> Many of the monitoring and follow-up programs will require further regulatory approval following the conclusion of the environmental assessment process, and will require ongoing stakeholder consultation. Nalcor has committed to working with all appropriate regulators during the development and design of monitoring programs.<sup>ii</sup> In the event these monitoring and follow-up programs identify any unexpected effects of the Project, Nalcor has committed to implement adaptive management strategies if need be to mitigate any such effects.<sup>iii</sup>

During the hearings as an undertaking for the Panel, Nalcor provided a comprehensive list of terrestrial monitoring programs grouped into five areas of interest: monitoring habitat enhancement; methylmercury; monitoring relocation efforts; general behavioral monitoring; and specific behavioral monitoring. In this list

<sup>i</sup> CEAR 1189, p.1

<sup>ii</sup> CEAR 1189, p.4; CEAR 108 EIS Volume IIB, Chapter 7 Table 7-3

<sup>iii</sup> CEAR 692 p.39-40



these recommendations were specifically addressed<sup>iv</sup> and remain consistent with the commitments Nalcor made to monitoring and follow-up programs in the EIS.<sup>v</sup>

In response to the recommendations above, Nalcor has committed to monitoring the following in undertaking 84:<sup>vi</sup>

- Wetland habitat creation and development will be monitored to evaluate effectiveness of the sites to attract closely associated wildlife (i.e. wetland sparrows).
- Red Wine Mountain Caribou monitoring through on-going participation with the Labrador Woodland Caribou Recovery Team, including support of satellite GPS work or other work directly related to the effects of the project George River Caribou monitoring through participation with the George River Caribou Herd Co-Management Team that will be created to contribute to the management of the herd.
- An ice observation program, including timing of formation / break-up, area covered and open water areas, including ashkui, will be conducted. The ice observation program will be carried out throughout the reservoirs and downstream of Muskrat Falls, including ice formation around the mouth of the Churchill River and Lake Melville. As well as, aerial and behavioral surveys of ashkui and late nesting water fowl (i.e. surf scoter) activity will be completed pre-construction in late spring. Follow up surveys of adjacent breeding areas will be included in this program.
- Monitoring herpetiles relocated from locations within the reservoir to locations of suitable existing habitat, engineered wetlands, riparian habitat and decommissioned facility locations (e.g., access roads, borrow pits, quarries).
- Monitoring of the relocation success of regionally uncommon plants (including Canada Yew) will be conducted.
- Winter and summer ground surveys of wildlife habitat association transects established as part of baseline to examine changes to distribution and abundance, will be conducted for furbearers and other wildlife (e.g., porcupine, marten, snowshoe hare) and assessment of trapping data pre and post project will be conducted.

Therefore, Nalcor believes the intent of this recommendation is fulfilled through the monitoring commitments already made.

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<sup>iv</sup> CEAR 1189, p.4

<sup>v</sup> CEAR 108 EIS Volume IIB, Chapter 7 Table 7-3

<sup>vi</sup> CEAR 1189, p.2 and 4

**RECOMMENDATION NO. 8.1: Trapping Compensation Program**

The Panel recommends that, if the Project is approved, Nalcor be required to establish a compensation program for all bona fide trappers along the lower Churchill River, without requiring proof of ten years' use as an entry point. Instead, compensation should be commensurate with the total extent of trapping activity during the previous ten years, as shown by the recorded income attributable to the Project area. Compensation should be awarded within six months after an individual trapper has established eligibility.

**Responsibility: Nalcor Energy**

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Nalcor has committed to developing and finalizing the Trapping Compensation Program prior to commencing construction. Nalcor is in agreement that proof of ten years' persistent usage will not be a condition to entitlement to compensation. Nalcor will endeavor to settle all compensation claims promptly in a manner mutually agreeable among parties.<sup>i</sup>

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<sup>i</sup> CEAR 251, IR# JRP.110, p.2

**RECOMMENDATION NO. 8.2: Mud Lake Ice Bridge Mitigation**

The Panel recommends that, if the Project is approved, Nalcor, the Government of Newfoundland and Labrador and the Mud Lake Improvement Committee negotiate an agreement to address how any future adverse changes to the ice bridge that would lengthen the existing period of time when residents are unable to cross the river by boat or snowmobile would be assessed and mitigated. Alternative transportation options should be provided if travel across the river is prevented during the freeze-up or break-up for periods in excess of two weeks. The selected solution should adequately meet the residents' needs for everyday and emergency travel and should respect the character of the community. Road access should not be imposed on the community as a solution to address ice bridge changes without its consent. The primary onus to cover the costs of this mitigation should be placed on Nalcor. The agreement should also address the role of the Province in mitigating any cumulative effects caused by climate change.

**Responsibility: Nalcor Energy; Government of Newfoundland and Labrador; and Mud Lake Improvement Committee**

In Nalcor's final written submission to the Panel it was stated that Nalcor has conducted two different types of studies to determine the effects of the Project on ice formation. First, baseline data was collected to determine the existing physical characteristics and processes of ice on the lower Churchill River. This study included field work to document the extent of ice cover and break-up processes. Secondly, Nalcor conducted thorough thermal and dynamic ice modelling to enable prediction of changes that might occur as a result of the Project.<sup>i</sup>

These studies produced several conclusions. First, the timing of freeze-up and break-up in any given year currently fluctuates considerably.<sup>ii</sup> Therefore, at present no one is able to predict with absolute certainty what week of the year the main stem below Muskrat Falls will freeze or what week it will break-up. Secondly, the studies predicted that the timing of freeze-up post-inundation would occur up to two weeks later than it does at present, and the timing of break-up would be delayed by approximately one week.<sup>iii</sup> However, the total "transition" time between open water and ice and vice versa – i.e. the amount of time that Mud Lake residents would be unable to travel across the river – would not change, nor would the stability or thickness of the ice.<sup>iv</sup> The Water Resources Management Division of the Department of Environment and Conservation concurred with Nalcor's predictions for ice formation, especially in the vicinity of Happy Valley-Goose Bay and Mud Lake.<sup>v</sup>

Therefore, while the timing of river crossings will likely shift for Mud Lake residents, the effects of the Project on navigation are not predicted to be significant.<sup>vi</sup> Transport Canada has reached the same conclusion.<sup>vii</sup> In addition, Nalcor has committed to monitoring ice formation in select locations downstream of Muskrat Falls to verify that its predictions of ice formation are accurate and to communicate ice stability information to local residents.<sup>viii</sup> While unlikely, if Nalcor's predictions are wrong and the Project is found to result in residents of

<sup>i</sup> CEAR 108: EIS Vol. IA, p. 9-9

<sup>ii</sup> CEAR 251: IR# JRP.71(d)

<sup>iii</sup> CEAR 108: EIS Vol. III, p. 5-19

<sup>iv</sup> CEAR 108: EIS Vol. III, p. 5-19; CEAR 109 Ice Dynamics Component Study, p. 7-2.

<sup>v</sup> CEAR 884, p. 207

<sup>vi</sup> CEAR 251: IR# JRP.71(e)

<sup>vii</sup> CEAR 635, p. 12

<sup>viii</sup> CEAR 432: IR# JRP.164, p. 4.

Mud Lake being unable to travel to Happy Valley-Goose Bay for a longer period than they are currently experiencing, Nalcor will provide alternative travel arrangements for those additional periods.<sup>ix</sup>

This is a natural environment and records from the past two years have indicated that the freeze up / break up transition has exceeded two weeks.<sup>x</sup> Nalcor has agreed to undertake mitigation efforts that are attributable to the Project, but is not responsible for providing alternative transportation or other mitigation efforts for travel during this transition period that is unrelated to the project.

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<sup>ix</sup> CEAR 952, p. 198

<sup>x</sup> IR# JRP.71

**RECOMMENDATION NO. 8.3: Navigation During Impoundment**

The Panel recommends that, if the Project is approved, Nalcor be required to develop a mitigation plan in consultation with the Mud Lake Improvement Committee to address temporary transportation difficulties during reservoir impoundment periods. If transportation is impeded, Nalcor should provide and pay for alternative transportation that minimizes inconvenience to the residents.

**Responsibility: Nalcor Energy**

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Nalcor has committed to providing alternative means of traveling to Happy Valley-Goose Bay, if required, during impoundment for the residents of Mud Lake. Nalcor has consulted and commits to continuing consultation with the residents of Mud Lake to determine the most effective means of providing alternative transportation during impoundment<sup>i</sup>.

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<sup>i</sup> CEAR 251: IR# JRP.34, p.12

**RECOMMENDATION NO. 8.4: Lower Churchill Navigation Mitigation and Monitoring Plan**

The Panel recommends that, if the Project is approved, Transport Canada require Nalcor to develop a mitigation and monitoring plan for each reservoir, in consultation with river users, to address navigation issues on the river, including both reservoirs and the downstream portion of the main stem. The plan would address (a) navigation issues during the construction and impoundment periods, (b) provision of boat launches and portages, (c) identification of areas that need to be cleared before impoundment to create safe shoreline access areas for small boats, (d) management of the stick-up zones, including how and when Nalcor would manually remove trees left standing three years after impoundment, (e) management of trash and debris in the reservoirs, (f) charts to show navigational hazards, signage and information, and (g) monitoring and specific adaptive management measures to address any navigational problems downstream from Muskrat Falls.

**Responsibility: Transport Canada**

Nalcor assessed potential impacts on navigation during the construction and impoundment periods and noted various mitigation efforts to ensure the public's safe navigation during these periods. These mitigations included safety signage, portages, and safety floating booms.<sup>i</sup> Nalcor has committed to replacing affected boat launches with new boat launches as close as feasibly possible to existing boat launches and consulting stakeholders regarding preferred locations and factors such as accessibility, safety and technical constraints of boat launch locations.<sup>ii</sup> Nalcor has also proposed safety and/or warning measures for during the operation of the facilities, including safety signage, portages and floating booms.<sup>iii</sup> Nalcor has also committed to clearing the riparian zone around the perimeter of the reservoir to enable access to the shoreline and/or reservoir and enable safe navigation of the reservoir.<sup>iv</sup> Nalcor has also committed to monitoring and managing the stick-up zones and any hazards they present to navigation.<sup>v</sup> Nalcor has stated that it will work with Transport Canada, as per their recommendations to identify issues with navigation and implement necessary mitigations.<sup>vi</sup>

Nalcor considers this recommendation is fulfilled through commitments made throughout the assessment, therefore accepts the intent.

<sup>i</sup> CEAR 251 IR# JRP.34(a), p.3 and (b) p.4; CEAR 108; EIS Volume III, Chapter 5, p.5-13

<sup>ii</sup> CEAR 251 IR# JRP.34(d), p.7

<sup>iii</sup> CEAR 251 IR# JRP.36(a), p.2; CEAR 108: EIS Volume III, Chapter 8, Table 8-1, p.8-4; CEAR 1086, p.23 and p.24

<sup>iv</sup> CEAR 108: EIS Volume III, Chapter 8, Table 8-1, p.8-4

<sup>v</sup> CEAR 836: p.45 and p.46

<sup>vi</sup> CEAR 1086: p.23

**RECOMMENDATION NO. 8.5: Allowing Local Forestry Operators to Clear Additional Areas**

The Panel recommends that, if the Project is approved, the provincial Department of Natural Resources require Nalcor to allow local forestry operators to clear timber from areas not otherwise scheduled to be cleared, provided they can demonstrate a safe approach. Nalcor should be required to pay the stumpage fees for the forestry operators salvaging the extra timber.

**Responsibility: Department of Natural Resources**

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Nalcor has indicated that in the event that timber in the flood zone is usable by a third party, Nalcor will cooperate to facilitate the utilization of the timber by the third party<sup>i</sup>. However, as stated previously by NE and the Department of Natural Resources (DNR) during the Panel hearings, such activities will have to coordinate with construction activities and must not interfere with the Project schedule or construction operations<sup>ii</sup>. Unrestricted access to the reservoir also cannot be granted due to safety considerations.

The fee and royalty structure for timber to be cleared from the reservoir is currently being developed in discussion with DNR. As stated by DNR<sup>iii</sup>, reservoir clearing is not considered a harvesting activity and Nalcor may not have the infrastructure in place to scale timber as would a typical harvesting activity. Implementing a system to scale timber as would be required under a typical harvesting activity would increase the overall cost of clearing operations. Nalcor will be providing access to the reservoir, providing substantive volumes of timber as part of clearing activities which will be a key element to develop a more viable forestry industry in Labrador. Nalcor concurs with the JRPs intent to develop a more viable forestry industry in Labrador and will continue to work with DNR to facilitate this goal, while maintaining a high standard for safety and the Projects schedule and budget.

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<sup>i</sup> IR# JRP.148

<sup>ii</sup> CEAR 846, p. 71

<sup>iii</sup> CEAR 846, P. 71

**RECOMMENDATION NO. 9.1: Noise and Dust Management**

The Panel recommends that, if the Project is approved, and to avoid disturbance of persons carrying out traditional land and resource use activities, Nalcor be required to monitor and manage construction traffic and borrow pit activities to minimize dust problems, noise and sleeping disturbance for occupants of cabins and camps along the roads.

**Responsibility: Nalcor Energy**

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Nalcor will commit to use reasonable efforts to manage dust and noise in order to minimize disturbance to occupants of cabins and camps along the roads. Nalcor has committed to following the recommendations of the World Health Organization Guideline (1999) for the sounds pressure within the workers sleeping quarters of the workers accommodations.<sup>i</sup> As part of Nalcor's effects management Nalcor is committed to implementing dust control measures, including the use of dust suppressants where and when needed, complying with Newfoundland and Labrador Air Pollution Regulations.<sup>ii</sup>

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<sup>i</sup> CEAR 251 IR# JRP.87, p.12

<sup>ii</sup> CEAR 108 EIS Volume IIA, Table 3-7, p.3-11 and p.4-3; CEAR 251 IR# JRP.88S, p.4; CEAR 251: IR# JRP.116, p.8



**RECOMMENDATION NO. 9.2: Relocation of Canada Yew**

The Panel recommends that, if the Project is approved, Nalcor be required to collaborate with Innu Elders on where and how to relocate Canada yew plants, conduct regular field visits with Elders for assessment, and employ any adaptive management procedures required to maintain a stable population of the plant.

**Responsibility: Nalcor Energy**

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In the EIS Nalcor recognized the importance of the Canada yew to the Innu Elders<sup>i</sup> and that traditional knowledge is an important component in the successful relocation and re-establishment of the plant.<sup>ii</sup> Nalcor has committed to consulting with Innu to determine their involvement in the selection of relocation sites<sup>iii</sup> and the design and field assessment of Canada Yew in Nalcor's Follow-up and Monitoring Program, including any adaptive management procedures required.<sup>iv</sup>

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<sup>i</sup> CEAR 108: EIS Volume IIA, Chapter 2, p.2-79.

<sup>ii</sup> CEAR 251: IR.103 p.4

<sup>iii</sup> CEAR 251: IR.103 p.3

<sup>iv</sup> CEAR 251: IR.103 p.4

**RECOMMENDATION NO. 9.3: Community Level Land and Resource Use Monitoring**

The Panel recommends that, if the Project is approved, Nalcor involve all Aboriginal groups in the design and implementation of its proposed community land and resource use monitoring program for the duration of the construction period to ensure that parameters of importance to these groups and Traditional Knowledge are included.

**Responsibility: Nalcor Energy**

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Nalcor has proposed comprehensive monitoring and follow-up programs to verify the predictions made in the environmental assessment. These monitoring programs include the socioeconomic environment (economy, employment, business, communities, land and resource use and cultural heritage resources). Nalcor has committed to developing these monitoring programs for community and land and resource use in conjunction with the appropriate regulators and through stakeholder engagement, as appropriate.<sup>i</sup> Adaptive management measures will be undertaken pending the results of these programs, in consideration of land and resource use patterns and will be used to refine and optimize related monitoring and mitigation measures, if needed.<sup>ii</sup> Nalcor has committed to provide Project-related information to provincial and federal agencies authorities in order to assist them in carrying out their responsibilities, but the nature and extent of this information will be based on the requirements of the responsible government agencies.<sup>iii</sup>

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<sup>i</sup> CEAR 1189, p.5

<sup>ii</sup> CEAR 108 EIS Volume III, Chapter 5, p. 5-37; CEAR 692, p.39 and 40

<sup>iii</sup> CEAR 251 IR#.JRP 113, p.2; CEAR 108 EIS Volume III, Chapter 5, p. 5-37

**RECOMMENDATION NO. 11.1: Involvement of Aboriginal Groups in the Management and Protection of Historic and Archaeological Resources**

The Panel recommends that, if the Project is approved, Nalcor, in collaboration with the Provincial Archaeology Office, establish and support a program to involve all three Labrador Aboriginal groups in (a) the documentation and interpretation of known historic and archaeological sites and artifacts and (b) the process to be followed in the case of inadvertent discoveries of previously unknown sites and artifacts during construction, including notification of the three groups. Nalcor should also give consideration to inviting participation by interested Aboriginal communities in Quebec. Nalcor should share with Aboriginal groups the results of its work on the monitoring of historic and archeological resources to be compiled and provided annually to the Provincial Archaeology Office.

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Consistent with past practice<sup>i</sup>, Nalcor will work with the Provincial Archaeology Office to ensure adherence to established processes and will comply with any directives issued by the Provincial Archaeology Office, including guidelines or policies respecting the involvement of one or more Aboriginal groups.

Nalcor will develop a Historic Resources and Archaeological Resources Contingency and Response Plan for Project construction, operation and maintenance.<sup>ii</sup> The Plan will include Follow-up to assess the condition of any new sites or materials discovered.

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<sup>i</sup> CEAR 753

<sup>ii</sup> EIS Volume III, Table 8-3. IR# JRP.164

**RECOMMENDATION NO. 11.2: Commemoration Initiatives**

The Panel recommends that, if the Project is approved, Nalcor work in collaboration with local communities and Aboriginal groups to (a) identify sites, artifacts and intangible elements (including portages, traplines, trails and personal stories) to be documented and commemorated, (b) determine how commemoration should occur and (c) implement specific commemorative initiatives (such as plaques and story boards) at appropriate locations in communities and throughout the river valley. Local heritage organizations could benefit by receiving funding to undertake part of this work and to implement education and interpretation programs.

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This recommendation is consistent with commitments previously given by Nalcor<sup>iii</sup>.

Nalcor will work with local heritage organizations to determine appropriate commemorative initiatives such as plaques and story boards and will provide reasonable funding to undertake part of this work.

Nalcor will also provide reasonable funds in support of educational and interpretational tools related to commemorative initiatives (e.g. booklets, brochures, and community information sessions). Nalcor will support applications by heritage organizations for funding by external agencies in support of general education and interpretation programs.

Nalcor outlined the legislative requirements that will ensure the proper commemoration and interpretive initiatives are implemented during the hearing process.<sup>iii</sup>

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<sup>i</sup> CEAR 1136, pages 3 and 4

<sup>ii</sup> CEAR 1331, page 177

<sup>iii</sup> CEAR 1120

**RECOMMENDATION NO. 11.3: Naming Project-related Features**

The Panel recommends that, if the Project is approved, the Government of Newfoundland and Labrador develop an approach to the naming of Project-related features in consultation with local communities and Aboriginal groups that recognizes the importance of place names in Aboriginal cultures.

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Nalcor has no comment on this recommendation.

**RECOMMENDATION NO. 12.1: Early Candidate Selection and Training**

The Panel recommends that, if the Project is approved, Nalcor take a more proactive approach to providing early and specific training programs to certain Labrador candidates. This approach could include measures such as early candidate selection, conditional letters of intended employment, and, on-the-job training at other Nalcor operations or with other entities with which Nalcor has influence.

**Responsibility: Nalcor**

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Nalcor has committed to encourage preconstruction training initiatives (e.g. Labrador Aboriginal Training Partnership), work with contractors to implement apprenticeship programs, offer technical expertise and assist in the coordination of training, encourage journeypersons to participate in post-journeyperson training, and provide on-the-job training opportunities during the construction phase.<sup>i</sup> In addition to these commitments, Nalcor understands the importance of liaising and providing project information to the Department of Education and other relevant agencies to assist in facilitating planning for training programs and have already developed a relationship with the Department.<sup>ii</sup>

Hiring is subject to the terms and conditions of collective agreements and the Benefits Strategy,<sup>iii</sup> with its basis being to provide first consideration to qualified workers adjacent to the resource. Finally, the Benefits Strategy requires the approval of relevant government agencies to ensure optimization of project-related benefits to stakeholders.

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<sup>i</sup> EIS Volume III, Table 8-1; IR# JRP.12e

<sup>ii</sup> EIS Volume III, Table 8-3; CEAR 817, p. 185

<sup>iii</sup> EIS Volume III, 8.0; IR# JRP.115, Table 7; CEAR 1193

**RECOMMENDATION NO. 12.2: Workplace Attachment for Apprenticeship Graduates**

The Panel recommends that, if the Project is approved, Nalcor commit to providing workplace attachment for both first and second year graduates of apprenticeship programs to the maximum extent possible.

**Responsibility: Nalcor**

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Apprentice hiring and the ratio of apprentice to journeyperson is covered in collective agreements. Nalcor has committed to working with contractors to implement apprenticeship programs and to provide adequate workplace training.<sup>i</sup>

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<sup>i</sup> EIS, Volume III, Table 8-1

**RECOMMENDATION NO. 12.3: Training to ‘Journeyman’ Level in Community of Residence**

The Panel recommends that, if the Project is approved, relevant provincial departments commit to explore with Nalcor, other educational entities and agencies and relevant communities in Labrador, how to implement to the extent practical, training to ‘journeyman’ level in the community of residence.

**Responsibility: Relevant Provincial Departments**

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Nalcor has committed to liaise with relevant government agencies and training institutions and provide relevant project-related information to facilitate planning.<sup>i</sup> The existing Labrador Aboriginal Training Partnership has had success in delivering apprenticeship opportunities to some communities. Training throughout various locations in Labrador is beyond the scope of the assessment and project.

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<sup>i</sup> IR# JRP.115; EIS, Volume III, Table 8-1; IR# JRP.151, p. 7-15



**RECOMMENDATION NO. 12.4: Address Wage Subsidy Stigma**

The Panel recommends that, if the Project is approved, to the extent that wage subsidies might be available and used for new job entrants, Nalcor implement an education and communications program to address and remove the stigma that some might feel is associated with such a practice.

**Responsibility: Nalcor**

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Nalcor has committed to the development of appropriate workplace policies to address discrimination, cultural sensitivity. Additionally, procedures and policies will be in place with regard to harassment and respectful workplaces. Finally, as part of the Equity and Diversity Plans, gender, cultural and diversity sensitivity will be part of all new hire orientations. Nalcor will incorporate monitoring and feedback mechanisms to determine requirements for adaptive management of all workplace policies.<sup>i</sup> Each of these programs will involve education and communication relating to wage subsidy stigmas, if wage subsidies are, in fact, used for the project.

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<sup>i</sup> IR# JRP.115; EIS Volume III, Table 8-1

**RECOMMENDATION NO. 12.5: Preparing for Participation in Wage Economy**

The Panel recommends that, if the Project is approved, Nalcor develop and implement, in consultation with Aboriginal groups, an appropriate orientation and information process to assist prospective employees who might have little or no experience of participation in a wage economy. Nalcor should also expand training programs to include, in addition to skills training, training to equip potential Aboriginal employees to deal with various financial, social and cultural challenges as a result of employment in the construction industry. In consultation with Aboriginal groups, Nalcor should also consider providing additional money management programs such as payroll saving schemes.

**Responsibility: Nalcor**

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Nalcor have committed to sponsoring financial counseling and workplace programs and policies to discourage spending on alcohol and similar actions will help Project employment create a positive socio-economic effect on personal health and well-being for those who choose to make it so, especially when provided to those first entering the wage economy.<sup>i</sup> Additional counseling services will be provided through the Employee Assistance Program.<sup>ii</sup>

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<sup>i</sup> EIS Volume III, 4.7.5.1, p. 4-36

<sup>ii</sup> IR# JRP.140a

**RECOMMENDATION NO. 12.6: Continuation of Labrador Aboriginal Training Partnership**

The Panel recommends that, if the Project is approved, Nalcor support the continuation of the Labrador Aboriginal Training Partnership beyond 2012, including making a financial contribution if required to both enable current participants to complete their training and to meet additional training requirements.

**Responsibility: Nalcor**

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As indicated in Nalcor's response to recommendation 12.1, training is the mandate of the Department of Education, with which Nalcor has committed to liaising with all relevant government agencies regarding implications of the project on policy decisions.<sup>i</sup> Nalcor is supportive of LATP, and is prepared to continue to support the partnership as it does currently.

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<sup>i</sup> EIS Volume III, Table 8-1; IR# JRP.12e; EIS Volume III, Table 8-3; CEAR 817, p. 185

**RECOMMENDATION NO. 12.7: Employment Outreach to Quebec Aboriginal Communities**

The Panel recommends that, if the Project is approved, Nalcor initiate an employment outreach program for interested Aboriginal groups in Quebec; such a program could include among other measures, a specific recruitment program, transportation assistance from Sept-Iles, and measures to address social and cultural issues including any associated language barriers.

**Responsibility: Nalcor**

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Labour supply and training programs are discussed in Section 3.6.5 of the EIS. Project related training opportunities are expected at the College of the North Atlantic (Happy Valley-Goose Bay and Labrador City campuses) and at Labrador's Coastal Learning Centres which will be available to Aboriginal groups in Quebec. Employment opportunities for Quebec Aboriginal workers with appropriate skills and training are anticipated. Section 4.2.3 of the EIS describes the proposed commute system for construction workers, including transportation and accommodation.<sup>i</sup> This proposed commute system will be available to qualified workers of Quebec Aboriginal groups.

As stated in Section 3.5.6 of the EIS, Nalcor is proposing an engagement and benefits strategy<sup>ii</sup> with stakeholder groups, including Quebec Aboriginal communities, which will be developed in consultation with these groups. Such an engagement and benefits strategy may address social and cultural issues, in addition to any language barriers faced by Quebec's Aboriginal communities. Beyond this, Nalcor is not prepared to initiate a separate employment outreach program for interested Aboriginal groups in Quebec and considers the proposed programs sufficient to address concerns raised throughout the environmental assessment process.

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<sup>i</sup> CEAR 838

<sup>ii</sup> CEAR 806

**RECOMMENDATION NO. 12.8: Quantitative Targets for Goods and Services**

The Panel recommends that, if the Project is approved, the concept of quantitative objectives or targets be applied to the provision of goods and services, with targets established both for the province as a whole, and for Labrador.

**Responsibility: Nalcor**

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The objective of this recommendation is fulfilled through the provisions of the Benefits Strategy and the Impacts and Benefits Agreement with the Innu Nation. Nalcor cannot establish targets for goods and services and be consistent with the Benefits Strategy.<sup>i</sup> Our procurement process supports the benefits commitments with the province as well as the IBA agreement. These are based on the principles of full and fair opportunity, international competitive bidding and established evaluation criteria.

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<sup>i</sup> CEAR 806

**RECOMMENDATION NO. 12.9: Enhanced Supplier Development Program**

The Panel recommends that, if the Project is approved, Nalcor enhance its supplier development program by implementing the following measures: (a) establish the Labrador Business Opportunities Committee and appoint the full time Coordinator in Happy Valley-Goose Bay as soon as possible, (b) ensure the Coordinator (a Nalcor employee) has sufficient seniority within the organization to influence relevant procurement decisions and has full access to all procurement information and related decision making, (c) release as soon as possible the list of goods and services required by the Project, with specific indications of time frame, approximate volumes and dollar values or ranges as appropriate, and (d) ensure immediately that all engineering management personnel involved in specifications, bidder prequalification, and procurement are fully aware of Nalcor's commitments towards maximizing benefits in this area and act accordingly.

**Responsibility: Nalcor**

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Nalcor has committed to establishing the Labrador Business Opportunities Committee and will appoint the full time Coordinator as soon as possible, as committed to in the EIS.<sup>i</sup> Nalcor will continue to engage the local supplier community and ensure they have timely information and access to procurement. Under the IBA, Nalcor will establish an Innu Business Advisory Committee. Nalcor will publish all work packages to both the Nalcor and EPCM contractor's websites and will provide the Department of Natural Resources with all necessary information within the confines of standard bidding practice. This protocol has been implemented for the initial work packages in anticipation of a possible release from the environmental assessment process. The engineering, procurement, construction and management contractor is committed to fulfilling Nalcor's commitments via the agreed upon contract. Additionally, all request for proposal documents contain a benefits section.<sup>ii</sup>

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<sup>i</sup> EIS Volume III, Table 8-1

<sup>ii</sup> CEAR 806

**RECOMMENDATION NO. 12.10: Update Quantitative Targets at Time of Sanction**

The Panel recommends that, if the Project is approved, Nalcor update at the time of Muskrat Falls sanction, the quantitative objectives or targets and the detailed list of goods and services required by the Project. Further, that this update be done in consultation with interested parties and the information be provided for Muskrat Falls construction and, to the extent possible, for the Project as a whole.

**Responsibility: Nalcor**

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The objective of this recommendation is fulfilled through the provisions of the Benefits Strategy and the Impacts and Benefits Agreement with the Innu Nation. Nalcor will complete the list of works, goods and services and provide the information to the supplier community through publication on websites, distribution to trade organizations, publication in newspapers, submission to the relevant government agencies and implement supplier information sessions. As indicated in Nalcor's response to recommendation 12.8, the procurement process is based on principles of full and fair opportunity, and therefore setting targets would be inconsistent with the benefits strategy.<sup>i</sup>

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<sup>i</sup> CEAR 806

**RECOMMENDATION NO. 12.11: Transparent Bidding Process**

The Panel recommends that, if the Project is approved, Nalcor implement a transparent bidding process that ensures that bidders are fully aware of the decision-making process, unsuccessful bidders can find out the reasons why and thereby improve, and Nalcor's commitments and programs apply and are enforced by all its contractors, sub-contractors and suppliers.

**Responsibility: Nalcor**

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Nalcor will engage the engineering, procurement and construction management (EPCM) contractor perform and manage the procurement and contracting process for Nalcor. Nalcor will issue all contracts and purchasing orders and the EPCM will manage them on our behalf. Nalcor's bid process is a sealed bid process, meaning general evaluation criteria is known and unsuccessful bidders will be given a debrief upon request. Nalcor's commitments to benefits and to the IBA will be required of contractors and subcontractors via the EPCM binding contract.<sup>i</sup>

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<sup>i</sup> CEAR 806



**RECOMMENDATION NO. 12.12: Modifications to the Benefits Strategy**

The Panel recommends that, if the Project is approved, Nalcor and the provincial Department of Natural Resources modify two overall provisions of the Benefits Strategy. The first is to ensure that both the monthly reports on employment and goods and services and the quarterly reports on compliance are publically available and not restricted by the confidentiality provisions of Nalcor's legislation. The second is to remove the provision that allows the Minister to modify the benefits targets and other commitments regarding this Project at the Minister's sole discretion.

**Responsibility: Nalcor and Department of Natural Resources**

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Section 7 of the Benefits Strategy states that the confidentiality provisions of the *Energy Corporation Act* apply. If the information to be released is not commercially confidential, then Nalcor will make it available to the public.<sup>i</sup>

It is the discretion of the Minister of the Department of Natural Resources to resolve issues with respect to resource availability constraints between any jurisdictional projects.

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<sup>i</sup> CEAR 806

**RECOMMENDATION NO. 13.1: Sheshatshiu Social Effects Mitigation**

The Panel recommends that, if the Project is approved, Innu Nation, Sheshatshiu Innu Band Council, Nalcor, the provincial Department of Health and Community Services, and relevant federal government departments develop a Memorandum of Understanding with regard to identifying and implementing (a) mechanisms to prevent the exacerbation of existing social problems and (b) mitigation measures such as mental health and addictions services and family support required to address any Project-related increases in social problems. Each party would bring to the table its relevant knowledge and resources. In the case of Innu Nation and Sheshatshiu Innu Band Council, this would include any provisions of the Impacts and Benefits Agreement component of the *Tshash Petapen* Agreement that directly address this issue. In the case of Nalcor, its role would be to adjust hiring, employment and employee assistance arrangements where possible and appropriate to assist or reinforce mitigation. The federal and provincial governments should provide resources to discharge their responsibilities in these areas.

**Responsibility: Innu Nation; Sheshatshiu Innu Band Council; Nalcor; Department of Health and Community Services; and Relevant Federal Government Departments**

Nalcor agrees with the recommendation that an MOU be established among relevant parties and that resources be provided by federal and provincial governments, on condition that the MOU is established in a timely manner and that Nalcor's role is as described in recommendation 13.1.

The Panel's recommendation with respect to Nalcor's role is consistent with the provisions of the IBA. The IBA contains a wide range of provisions requiring Nalcor to assist Innu in the transition to the wage economy through measures related to the training, hiring and retention of Innu employees. These measures include support for cultural activities at the workplace, the development of training and orientation programs for Innu,<sup>i</sup> educational support for Innu, the development, in consultation with Innu Nation, of specific workplace policies and conditions relating to Innu employees and the provision of on-site Innu counseling services.<sup>ii</sup>

<sup>i</sup> Volume III EIS, 4.7.5.1 Income, Employment and Social Status, p. 4-36

Volume III EIS, 3.6.5.2 Hiring and Training Policies, p. 3-24

<sup>ii</sup> Volume III EIS, 3.7.5.2 Contracting Policy and Practice, p. 3-32

Volume III EIS, 3.8.3 Business, p. 3-36

Volume III EIS, 3.8.4 Effects Management Measures, p. 3-37

IR# JRP.140, p. 4

IR# JRP.140, p. 3

IR# JRP.133, p. 3

IR# JRP.133, p. 2

IR# JRP.115, p. 13

IR# JRP.115, p.12

Volume III EIS, 4.7.5.3 Personal Health Practices and Coping Skills, p. 4-41

Volume III EIS, 4.7.5.3 Personal Health Practices and Coping Skills, p. 4-41

Volume III EIS, 4.7.5.2 Health Services, p. 4-39

Volume III EIS, 4.7.5.1 Income, Employment and Social Status, p. 4-36

Volume III EIS, 4.7.5.1 Income, Employment and Social Status, p. 4-36

Volume III EIS, 4.6.5.1 Security, p. 4-26

**RECOMMENDATION NO. 13.2: Social Effects Needs Assessment and Research**

The Panel recommends that, if the Project is approved, the provincial Department of Health and Community Services, in consultation with Aboriginal groups, and appropriate government and community agencies from the Upper Lake Melville area, conduct a social effects needs assessment, including an appropriately resourced participatory research component, that would determine the parameters to monitor, collect baseline data, and provide recommendations for social effects mitigation measures and an approach to on-going monitoring. It is expected that Innu Nation would be a participant in the research and that the results would inform and enhance the social effects mitigation measures suggested in Recommendation 13.1. The results of the needs assessment would be documented in a public report and, subject to the agreement of participants, the results of the research would be published in a peer-reviewed journal.

**Responsibility: Department of Health and Community Services; Aboriginal Groups; and appropriate government and communities agencies from Upper Lake Melville area.**

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Nalcor has committed to a number of monitoring and follow-up initiatives that would largely address the requirements of this recommendation. These programs will be dependent on consultation with relevant government agencies, communities and stakeholders. Part of the consultation will deal with finalizing and implementing monitoring, follow-up, mitigation and adaptive management measures as well as the incorporation of traditional and community knowledge, elders, women and youth in these plans.<sup>i</sup>

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<sup>i</sup> IR# JRP.112, p. 4

IR# JRP.112, p. 5

IR# JRP.164, p.2

IR# JRP.164, p.6

Volume III EIS, 4.9 Monitoring and Follow-Up, p. 4-56

**RECOMMENDATION NO. 13.3: Worksite measures to address addictions issues**

The Panel recommends that, if the Project is approved, Nalcor conduct careful monitoring of the effectiveness of the policy of controlled access to alcohol at the accommodation camps and provide professional addictions counseling to employees.

**Responsibility: Nalcor**

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Nalcor has already committed to providing an employee assistance program with appropriate privacy safeguards in place. Nalcor will establish mentoring and counseling programs to assist workers with money management, and personal coping skills with respect to alcohol and substance abuse and gambling. The objective is to maximize the positive socio-economic effects of the Project and reduce potential adverse ones.<sup>i</sup>

Nalcor will monitor the effectiveness of all workplace policies and programs.

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<sup>i</sup> EIS Volume III, 4.7.5.2 Child, Youth and Family Protection Services, p. 4-39  
EIS Volume III, 4.8.4 Effects Management Measures, p. 4-56

**RECOMMENDATION NO. 13.4: Variety of Work Schedules**

The Panel recommends that, if the Project is approved, Nalcor offer a variety of work schedules, and require the same of its contractors, to accommodate different groups of workers and to assist in meeting its employment goals, particularly for Aboriginal employees and women.

**Responsibility: Nalcor**

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Nalcor has previously committed to provide flexibility in work schedules and job rotations where work conditions make such flexibility possible.<sup>i</sup>

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<sup>i</sup> EIS Volume III, 3.6.5.2 Hiring and Training Policies, p. 3-25

EIS Volume III, 4.7.5.1 Personal Health and Well-Being p. 4-36

EIS Volume III, 4.7.5.1 Self-Esteem, p. 4-37

EIS Volume III, 4.7.5.3 Work-Related Stress, p. 4-43

EIS Volume III, 5.5.5.1 Wage-related Change in Opportunity for Hunting/Fishing/Trapping, p. 5-12

EIS Volume III, 5.6.1.1 Construction, p. 5-33

IR# JRP.39, p. 2

IR# JRP.39, p. 4

IR# JRP.115, p. 13

**RECOMMENDATION NO. 13.5: Health and Social Services**

The Panel recommends that, if the Project is approved, the provincial Department of Health and Community Services formally commit to provide the human resources required to address any Project-related increases in the demand for mental health, addictions and other health and social services at the Labrador Health Centre, as identified in the needs assessment. Nalcor's contribution to mitigation measures to address this should be clarified through a Memorandum of Understanding with the Labrador-Grenfell Regional Health Authority.

**Responsibility: Department of Health and Community Services**

As stated by the Department of Health and Community Services at Panel Hearings,<sup>i</sup> the Department is mandated to deliver health services. The Department will assess the health and social services needs and will work with Nalcor to provide any additional services required.<sup>ii</sup>

The Department of Finance stated at Panel Hearings that it would not be appropriate for Nalcor to spend money on areas that are more appropriately in the purview of the Province to determine priorities.<sup>iii</sup>

Nalcor agrees with the position of both Departments and recommends that it is more appropriate for the Labrador-Grenfell Regional Health Authority to work with the Department of Health and Community Services in this regard and does not see the need for a Memorandum of Understanding with the Regional Authority.

The Labrador-Grenfell Health Authority has submitted that it is responsible for ensuring adequate health care capacity in the region and that it will plan so that Project-related needs are met.<sup>iv</sup> The Province has committed to providing all of the resources that the Health Authority requires to assess additional needs that will arise from the Project and to ensure that sufficient health capacity exists if and when the Project proceeds.

Nalcor will provide relevant Project-related information as requested by the Department of Health.<sup>v</sup>

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<sup>i</sup> CEAR 751

<sup>ii</sup> Volume III EIS, 4.7.5.2 Primary Health Care, p. 4-38  
 Volume III EIS, 4.7.5.2 Mental Health, Addictions and Counselling Services, p. 4-39  
 Volume III EIS, 4.8.3 Community Health, p. 4-54  
 Volume III EIS, 4.8.4 Effects Management Measures, p. 4-56

<sup>iii</sup> CEAR 817, pg. 71

<sup>iv</sup> CEAR 751

<sup>v</sup> Volume III EIS, 4.5.5 Socio-economic Effects Analysis and Effects Management, p. 4-16

**RECOMMENDATION NO. 13.6: Capacity Agreement with Happy Valley-Goose Bay**

The Panel recommends that, if the Project is approved, the Government of Newfoundland and Labrador and Nalcor negotiate a capacity agreement with the Town of Happy Valley-Goose Bay to provide financial resources to increase the Town's capacity to address additional administrative demands related to the Project. The time period for the agreement would be negotiated by the parties and should relate to the needs expected at different stages of the Project. The resources would be intended to enable the Town to:

- establish baseline data on infrastructure capacity and use prior to the start of construction;
- monitor Project-related infrastructure effects throughout the construction period of the Project and identify needed mitigation;
- prepare, publicize and update on a regular basis, emergency preparedness plans to address the possibility of a catastrophic flood event; prepare a low income housing strategy; and
- address issues related to Project-related in-migration and the potential economic downturn at the end of the construction phase, and any other Project-related effects within the Town, not otherwise mitigated.

**Responsibility:**

Nalcor has committed to providing project information to the appropriate government agencies to facilitate their planning and to discuss potential Project-related implications for local Social Infrastructure and Services and ways to address those issues.<sup>i</sup> Nalcor has collected and presented baseline data on infrastructure capacity and use during the EA.<sup>ii</sup> Nalcor will monitor project effects and apply adaptive management measures, if necessary, during construction and operations.<sup>iii</sup>

The town is responsible for developing emergency preparedness plans for any emergency. Nalcor will continue to work with the Town of Happy Valley-Goose Bay on municipal planning issues, through on-going workshops, with the objective of addressing issues that might occur during Project construction, including emergency preparedness.

The agencies responsible for community infrastructure and services that may be affected by the Project have ensured that the local infrastructure and services are able to accommodate the Project. For example, the Department of Innovation, Trade and Rural Development explained during the hearings that the Department works with municipalities, other provincial departments and the federal government to ensure adequate infrastructure is in place to support development in the Province.<sup>iv</sup>

<sup>i</sup> EIA, Volume III, Table 8-1; EIS Volume III, 4.6.5, p. 4-25

<sup>ii</sup> EIS Volume III, 2.0

<sup>iii</sup> EIS Volume III, 4.6.5 Socio-economic Effects Analysis and Effects Management, p. 4-25

<sup>iv</sup> CEAR 737

**RECOMMENDATION NO. 13.7: Funding for Infrastructure Mitigation**

The Panel recommends that, prior to Project sanction, a binding and firm commitment be given by Nalcor and the Government of Newfoundland and Labrador that sufficient funds and resources be made available to fully mitigate Project-related adverse impacts on infrastructure in Happy Valley-Goose Bay.

**Responsibility: Nalcor and Government of Newfoundland and Labrador**

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Nalcor Energy will continue to evaluate potential Project-related implications on the use of local, regional and provincial infrastructure and services. Nalcor Energy will consult regularly with the relevant agencies and organizations to provide Project information and to identify and discuss potential Project-related implications for local Social Infrastructure and Services and ways to address those issues.<sup>i</sup>

The Community Information Centre in Happy Valley-Goose Bay will continue to be used as a means of providing current information and updates on the Project. This will continue throughout the environmental assessment process and into the Project planning and development, thereby facilitating understanding of the Project within the local community and offering an ongoing opportunity for stakeholders to provide feedback on Project plans and activities.

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<sup>i</sup> EIS Volume III, 4.5.5 Socio-economic Effects Analysis and Effects Management, p. 4-16



**RECOMMENDATION NO. 13.8: Low-Income Housing Strategy**

The Panel recommends that, if the Project is approved, before construction begins, Nalcor support the efforts of the Town of Happy Valley-Goose Bay, relevant federal and provincial departments, and local low-income housing agencies, to develop and implement a strategy to set measurable targets, address the existing low-income housing needs and mitigate the adverse impacts of Project-related in-migration on low-income housing.

**Responsibility: Nalcor**

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Nalcor has committed to support responses to new housing demands through liaison with, and provision of information to, the responsible provincial and municipal authorities.<sup>i</sup>

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<sup>i</sup> EIS volume III, 4.9.2 Social Infrastructure and Services, p. 4-56  
EIS Volume III, 4.6.5.3 Housing and Accommodations, p. 4-27  
EIS Volume III, 4.8.2 Social Infrastructure and Services, p. 4-53  
EIS Volume III, 4.5.5.1 Construction, p. 4-19

**RECOMMENDATION NO. 13.9: Possible Requirements for Consumption Advisories in Goose Bay or Lake Melville**

The Panel recommends that, if the Project is approved and the outcome of the downstream mercury assessment (Recommendation 6.7) indicates that consumption advisories would be required for Goose Bay or Lake Melville, Nalcor enter into negotiations prior to impoundment with the parties representing – as appropriate – Goose Bay and Lake Melville resource users. Depending on where the consumption advisories would apply, these could include Aboriginal groups, the Town of Happy Valley-Goose Bay, Mud Lake Improvement Committee, the Town of North West River and the community of Rigolet. The purpose of the negotiations would be to reach agreement regarding further mitigation where possible and compensation measures, including financial redress if necessary. This recommendation would also apply later in the process if the downstream mercury assessment indicated that advisories were not likely, but monitoring subsequently required their application.

**Responsibility: Nalcor**

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The socio-economic effects of the Project on health services will be managed through liaison with health authorities, as part of their planning process.<sup>i</sup> Nalcor has conducted a downstream assessment and does not believe that consumption advisories will be required for Lake Melville and are also unlikely for Goose Bay. Requirement for consumption advisories in these areas would be considered as an adaptive management measure. If future monitoring indicates the need for consumption advisories Nalcor will consult with each of the listed groups that would be affected by the consumption advisory to discuss future mitigation where possible.

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<sup>i</sup> CEAR 108 EIS Volume III, Chapter 4 p. 4-54

**RECOMMENDATION NO. 13.10: Consumption Advisory Implementation**

The Panel recommends that, if the Project is approved and fish and seal monitoring indicates that consumption advisories are required, Nalcor:

- follow Health Canada guidelines regarding the establishment of human mercury hazard quotient levels and fish consumption advisories;
- consult with Aboriginal Affairs and Northern Development Canada regarding best practices for the communication of advisories;
- consult with Aboriginal groups and affected communities regarding an effective approach to the communication and implementation of consumption advisories that ensures that affected communities have an understanding of the quantities and types of fish that can be consumed safely and the health benefits of including fish in one's diet;
- ensure that notifications of the consumption advisories are placed at regular intervals in easily visible locations along the shorelines of affected water bodies;
- ensure that consumption advisories are updated as necessary to reflect any changes detected in mercury levels in fish or seal; and provide publicly accessible, up-to-date and accurate information through the internet, radio, newspapers and other means regarding the health risks of mercury and the status of the advisories.

**Responsibility:**

Nalcor has committed to collecting baseline data on the methylmercury exposure of the local human population before the reservoirs are impounded. The residual adverse socio-economic effects resulting from elevated mercury levels will be mitigated through the development and posting of consumption for fish caught from the lower section of the Churchill River.<sup>i</sup>

Mercury levels in fish are anticipated to increase initially, reaching peak levels in 10 to 15 years and then declining to baseline levels within 35 years. Nalcor has committed to monitoring mercury levels in fish as the Project becomes operational, as well as baseline exposure levels in the local human population.<sup>ii</sup> Nalcor plans to monitor increased levels of methylmercury in fish on an annual basis for the first 10 years following reservoir impoundment. In addition, methylmercury exposure of residents of Sheshatshiu, Mud Lake, North West River, Happy Valley-Goose Bay and Churchill Falls will be monitored through dietary surveys and hair sampling. The risks to future mercury exposure by residents will be evaluated by updating the HHRA using the monitoring data as input. Nalcor will work with government authorities to develop fish consumption advisories, as required.<sup>iii</sup> Findings from community health authorities and Nalcor-sponsored follow-up will contribute to ongoing evaluation, as necessary, the modification of strategies designs to reduce and any adverse effects the Project might have on Community Health, and the further promotion of strategies that have beneficial effects.<sup>iv</sup>

Nalcor has met with representatives from government agencies (Health Canada, DFO) to ensure that the data to support the HHRA and the approach and methodology of the HHRA is adequate to satisfy the requirements of

<sup>i</sup> CEAR 108 EIS Volume III, Chapter 4 p. 4-49 and 4-54

<sup>ii</sup> CEAR 108 EIS volume III, Chapter 8 p. 8-10; EIS Volume III, Chapter 4 p. 4-49

<sup>iii</sup> CEAR 251 IR# JRP.78, p. 7

<sup>iv</sup> CEAR 251 IR# JRP.78, p. 10

the EIS Guidelines<sup>v</sup>. In addition, Nalcor will lead consultations with the potentially affected Aboriginal groups to ensure that they have a full understanding of the study, and that appropriate protocols are followed in the collection of data within the Aboriginal communities. Both government and Aboriginal groups will be provided an opportunity to comment on the study plan; updates on study activities will be provided as well over the course of the study and the resulting report will also be provided for review.<sup>vi</sup>

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<sup>v</sup> CEAR 99

<sup>vi</sup> CEAR 251 IR# JRP.78, p. 2; CEAR 251 IR# JRP.82, p. 5

**RECOMMENDATION NO. 13.11: Human Health and Mercury Monitoring**

The Panel recommends that, if the Project is approved, Nalcor, in collaboration with Health Canada and the provincial Department of Health and Community Services:

- consult with Aboriginal groups and affected communities regarding the approach to be taken to baseline and follow-up mercury testing and the communication of results for each group; and
- establish baseline human mercury levels in Churchill Falls, Upper Lake Melville communities and Rigolet, with consideration given to offering blood tests as well as hair samples for Innu participants, due to inconsistencies noted in the correlation between hair sample results and dietary consumption.

If consumption advisories are required, it is further recommended that Nalcor ensure that a human health mercury monitoring program is established concurrently with the issuing of consumption advisories. This monitoring would continue until five years after the lifting of consumption advisories, or until such time as determined by Health Canada, and would be overseen by the Monitoring and Community Liaison Committee described in Chapter 15.

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Nalcor has initiated a Human Health Risk Assessment (HHRA) to assess the potential human health risk associated with mercury exposure. The overall approach of the HHRA is to use available baseline mercury data from previous studies and to collect additional baseline mercury data by conducting a food consumption survey and hair sampling in the communities of Mud Lake, North West River, Happy Valley-Goose Bay, Churchill Falls and Sheshatshiu.

Nalcor has met with representatives from government agencies (Health Canada, DFO) to ensure that the data to support the HHRA and the approach and methodology of the HHRA is adequate to satisfy the requirements of the EIS Guidelines. In addition, Nalcor will lead consultations with the potentially affected Aboriginal groups to ensure that they have a full understanding of the study, and that appropriate protocols are followed in the collection of data within the Aboriginal communities. Both government and Aboriginal groups will be provided an opportunity to comment on the study plan; updates on study activities will be provided as well over the course of the study and the resulting report will also be provided for review.<sup>i</sup>

Nalcor has committed to monitor increased levels of methylmercury in fish on an annual basis for the first 10 years following reservoir impoundment. In addition, methylmercury exposure of residents of Sheshatshiu, Mud Lake, North West River, Happy Valley-Goose Bay and Churchill Falls will be monitored through dietary surveys and hair sampling. The risks to future mercury exposure by residents will be evaluated by updating the HHRA using the monitoring data as input. Nalcor will work with government authorities to develop fish consumption advisories, as required.<sup>ii</sup>

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<sup>i</sup> CEAR 251 IR# JRP.82, p.5

<sup>ii</sup> CEAR 251 IR# JRP.78, p.7; EIS Volume III, Chapter 8, p. 8-10

**RECOMMENDATION NO. 13.12: Dietary Surveys**

The Panel recommends that, if the Project is approved and consumption advisories are required as a result of mercury levels in fish or seal, Nalcor conduct ongoing dietary surveys as an integral part of the mercury monitoring program, including fish, seal, caribou and other country food. Dietary surveys should be conducted concurrently with regular mercury testing in affected communities to determine the effectiveness of the consumption advisories and the overall impact on fish and country food consumption.

**Responsibility: Nalcor**

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Nalcor has committed to mercury monitoring in the upstream and downstream environment and the completion of a human health risk assessment.<sup>i</sup>

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<sup>i</sup> EIS Volume III, 4.7.5.6 Physical Environments, p. 4-49

EIS Volume III, 4.8.3, p. 4-54

EIS volume III, 4.9.3 Community Health, p.4-57

EIS volume III, 5.6.2.2 Operation and Maintenance, p. 5-36

EIS volume III, 8.4.2 the capacity of Renewable Resources that are Likely to be Significantly Affected, p. 8-10

IR#JRP.78

IR#JRP.82. pp.4-5

IR#JRP.156, p.11

EIS volume III, 4.7.5.6 Physical Environments, p.4-47

**RECOMMENDATION NO. 13.13: Research on Mercury in Country Food**

The Panel recommends that, if the Project is approved, the provincial Department of Labrador and Aboriginal Affairs, in consultation with Health Canada and Aboriginal groups, initiate a study of (a) the extent of country food contamination by mercury and other contaminants and (b) human consumption levels of country food, particularly in areas where people are also exposed to mercury in fish, to identify the potential risks to human health in Labrador.

**Responsibility: Department of Labrador and Aboriginal Affairs**

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Nalcor has initiated a Human Health Risk Assessment (HHRA) to assess the potential human health risk associated with mercury exposure. The overall approach of the HHRA is to use available baseline mercury data from previous studies and to collect additional baseline mercury data by conducting a food consumption survey and hair sampling in the communities of Mud Lake, North West River, Happy Valley-Goose Bay, Churchill Falls and Sheshatshiu.<sup>i</sup> Nalcor will continue to consult with appropriate government agencies and stakeholders throughout the implementation of this study.

Nalcor plans to monitor methylmercury levels in fish as the Project becomes operational. Findings from community health authorities and Nalcor-sponsored follow-up (e.g., mercury level monitoring) will contribute to ongoing evaluation and, as necessary, the modification of strategies designed to reduce any adverse effects the Project might have on Community Health, and the further promotion of strategies that have beneficial effects.<sup>ii</sup>

Proposed monitoring and follow-up programs for mercury concentrations in the local population are:

- establish baseline exposure of humans to mercury; and
- verify mercury levels in fish.

The Government of Newfoundland and Labrador or Health Canada may have an interest in further research beyond the HHRA, in which case Nalcor will provide available information and liaise with those agencies.

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<sup>i</sup> IR# JRP.78

<sup>ii</sup> IR# JRP.78, p.10

**RECOMMENDATION NO. 14.1: Emergency Preparation for the Possibility of a Dam Failure**

The Panel recommends that, if the Project is approved, Nalcor be required to:

- prepare and provide to affected communities updated maps that more clearly show areas that would be flooded following a dam failure;
- prepare, in consultation with the relevant communities and appropriate authorities, an Emergency Preparedness Plan, for response in the event of catastrophic dam failure, and emergency response procedures and community evacuation procedures related to a dam failure and subsequent flooding; the Plan should be reviewed every five years;
- work with each community that has been identified as being at risk of flooding in the event of a dam failure to develop evacuation plans, to be completed prior to filling of the reservoirs;
- work with emergency response providers and assist as appropriate in the event of an evacuation;
- implement a flood warning system for Mud Lake and Happy Valley-Goose Bay to be approved by the provincial Department of Environment and Conservation; and conduct seismographic monitoring in the Project area prior to construction.

**Responsibility: Nalcor**

The JRP views and recommendations regarding emergency preparation for the possibility of a dam failure are generally consistent with Nalcor views. Nalcor has stated that it is committed to providing: updating flood mapping, which would be developed as the Project enters the detailed phase;<sup>i</sup> conducting seismographic monitoring;<sup>ii</sup> and working with emergency response providers in the event of an evacuation<sup>iii</sup>.

Throughout the Environmental Assessment Process, and during the Hearings, Nalcor made commitments to work with communities to assist in the development of emergency response plans. However, it remains Nalcor's view, the view of regulators and those involved in emergency response planning that the plans must be developed and implemented by the communities themselves.<sup>iv</sup> Nalcor has already begun to engage communities in this process through our involvement in the Emergency and Capability Based Planning initiative, which is on-going in Labrador, and involves emergency responders and community representatives. To that end, Nalcor representatives attended meetings held on March 21<sup>st</sup>, and September 22<sup>nd</sup>, 2011; Nalcor will also be sending representation to a meeting planned for December 5<sup>th</sup> and 6<sup>th</sup>.

Nalcor will prepare an emergency response plan for the Gull Island and Muskrat Falls Hydroelectric generating facilities.<sup>v</sup> This response plan will include protocol for engaging downstream stakeholders. However, the Emergency Preparedness Plan, for response in the event of catastrophic dam failure, and emergency response procedures and community evacuation procedures related to a dam failure and subsequent flooding cannot be developed and prepared by Nalcor. The responsibility and authority for this undertaking must rest within the communities and the appropriate emergency response personnel, through groups such as the Capability Based Planning initiative. The recommendations of the Department of Environment and Conservation, Water

<sup>i</sup> CEAR 1312

<sup>ii</sup> IR# JRP.62c

<sup>iii</sup> IR# JRP.96

<sup>iv</sup> IR# JRP.96; IR# JRP.162; EIS Volume IA, 4.11

<sup>v</sup> IR# JRP.162



Resources Division support this view. As stated during the JRP Hearings, the Water Resources Division recommends that Nalcor provide the stakeholders with training and resources to implement the Emergency Preparedness Plan prior to filling the reservoirs. The Division stated during the hearings that within the Nalcor Emergency Preparedness Plan there will be a requirement to ensure that Nalcor contacts the local authorities in the event of an emergency.<sup>vi</sup> The Division went on to state that the local authorities have the responsibility for evacuation; as they would for a fire, airplane crash, or any other flooding event. This is standard practice throughout the Canadian hydroelectric industry. Regardless of the owner of the Emergency Preparedness Plan it will be reviewed every five years and Nalcor commits to participate in this review process.

Nalcor commits to implement further study of the merits of the system for a flood warning system and its implementation in similar applications. Once this review is complete, a final decision can be reached in consultation with the Department of Environment and Conservation.

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<sup>vi</sup> CEAR 1113, pg. 100

**RECOMMENDATION NO. 14.2: Compensation for Losses in the Event of a Dam Failure**

The Panel recommends that, if the Project is approved, the Government of Newfoundland and Labrador require Nalcor to assume liability on a 'no fault' basis for any loss of life and financial losses incurred because of the destruction of property and belongings and disruption of activities caused by flooding as a result of one or more dams failing on the lower Churchill River. Nalcor should provide guarantees in the form of insurance, bonds or other appropriate measures that individuals, businesses and institutions suffering damage would receive full compensation, the amount to be determined by a neutral third party, regardless of the cause of the dam failure.

**Responsibility: Government of Newfoundland and Labrador**

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As the JRP indicated, the risk of dam failure is extremely remote due to the many safeguards outlined in the Canadian Dam Association Dam Safety Guidelines (2007). Nalcor is also subject to Dam Safety Reviews every five years performed by independent engineering firms and enforced by the provincial government. The provincial government indicated during the hearings that the possibility of dam failure is very low.<sup>i</sup> Nalcor has committed to a number of mitigation measures to limit the possibility of effects due to an unlikely dam failure, outlined in the record.<sup>ii</sup> Additionally, Nalcor Energy maintains corporate liability and risk management tools consistent with the hydroelectric industry standards.

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<sup>i</sup> CEAR 835, p.229

<sup>ii</sup> EIS Volume IA, p. 4-81, 4-86, 4-89 and 3-29; IR# JRP.145; IR# JRP.162

**RECOMMENDATION NO. 14.3: Seismic Testing**

The Panel recommends that, if the Project is approved, Nalcor carry out seismic testing during reservoir filling and apply appropriate mitigation measures in the event of a seismic event related to reservoir filling.

**Responsibility: Nalcor**

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Nalcor has committed to study the potential for seismic events related to dam construction and reservoir filling and agreed that it will be the focus of intensive study in engineering and design. The JRP concurred with NE's view that our obligation to meet applicable codes and standards of the Canadian Dam Association and the oversight of Natural Resources Canada are sufficient to ensure the dam would not fail during a seismic event. Nalcor has committed to conduct seismographic monitoring in the Project area prior to and during construction, including during the impoundment of the reservoir.<sup>i</sup>

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<sup>i</sup> IR# JRP.62

**RECOMMENDATION NO. 15.1: Authorizing Regulation**

The Panel recommends that, if the Project is approved, the Government of Newfoundland and Labrador issue an authorizing regulation or equivalent mechanism that:

- lists and requires Nalcor to implement all its environmental management commitments in relation to the Project made during the course of the environmental assessment, plus the additional measures recommended by the Panel and accepted by the Government of Newfoundland and Labrador;
- lists and requires provincial departments to implement all their environmental management commitments in relation to the Project made during the course of the environmental assessment, plus the additional measures recommended by the Panel and accepted by the Government of Newfoundland and Labrador;
- includes a mechanism for updates as required to reflect any additions or changes, including adaptive management strategies that may be required and are not yet identified;
- ensures compliance with Environmental Protection Plans, Emergency Response Plans, Contingency Plans, Occupational Health and Safety Plans, and Environmental Effects Monitoring Plans including those that are implemented through another regulatory instrument and those that are unregulated;
- requires Nalcor to prepare and publish on the internet an annual report describing its environmental management activities and results, including mitigation, monitoring and adaptive management as appropriate, and related disbursements;
- establishes a monitoring and community liaison committee; and remains in effect for the duration of the construction period and a sufficient period of time thereafter to ensure there is no longer a risk of adverse effects as a result of the Project.

**Responsible Agency: Government of Newfoundland and Labrador**

There is already a regulatory mechanism in place to ensure that Nalcor's commitments made in the EIS are upheld. Additional information on monitoring and follow-up programs, including reporting mechanisms / frequency are documented in Nalcor's response to IR# JRP.112 and further described in Nalcor's response to IR# JRP.164.

Section 38 of CEAA outlines the authority of Responsible Authorities in designing a follow-up program and in ensuring its implementation, including making use of the results of follow-up programs for the implementation of adaptive management measures.

It is considered redundant to create a separate regulation to ensure compliance with Environmental Protection Plans, Emergency Response Plans, Contingency Plans, Occupational Health and Safety Plans, and Environmental Effects Monitoring Plans that are already regulated. Mechanisms already exist to ensure that unregulated commitments are monitored and reported to the appropriate regulatory agency.<sup>i</sup>

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<sup>i</sup> IR# JRP.112; IR# JRP.164

**RECOMMENDATION NO. 15.2: Federal-Provincial Joint Regulatory Plan**

The Panel recommends that, if the Project is approved, the federal and provincial governments prepare a joint regulatory plan for the Project which outlines their respective regulatory requirements and includes a coordinated approach to areas where there is overlapping or related jurisdiction, and commit to it by signing a Memorandum of Agreement. The regulatory plan should address the regulations, guidelines, standards and criteria to be applied to activities. Each government would appoint a coordinating department or agency to prepare the plan and to produce a joint annual report regarding Nalcor's compliance, any issues or problems that were identified and how they were resolved. This report would be made available to the public through the internet.

**Responsible Agency: Government of Newfoundland and Labrador; Government of Canada**

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Nalcor has no comment on this recommendation.

**RECOMMENDATION NO. 15.3: Long-term Funding for Environmental Management from Nalcor**

The Panel recommends that, if the Project is approved, and to the extent that funds are not committed from other sources, Nalcor identify and allocate in its detailed Project budget, financial support for environmental management for the duration of Project construction. The Panel further recommends that Nalcor make a general commitment with a ten-year forecast, to be updated every five years, until such time as there is no longer evidence of ongoing environmental effects resulting from the Project.

**Responsible Agency: Nalcor**

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Nalcor will budget funds to meet its obligations as required by its own budgeting and accounting processes. In terms of Fish Habitat Compensation, this is covered under the *Fisheries Act* Authorization.

**RECOMMENDATION NO. 15.4: Long-term Funding for Environmental Management from Government Departments**

The Panel recommends that, if the Project is approved, the governments of Newfoundland and Labrador and Canada make long-term commitments to support annual budget requests by the relevant departments with responsibilities for project-related environmental management including socio-economic mitigation commitments. The Panel further recommends that the governments make general commitments with a ten-year forecast, to be updated every five years, until such time as there is no longer evidence of ongoing environmental effects resulting from the Project.

**Responsible Agency: Government of NL; Government of Canada**

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This is an internal budgeting issue for the Government of Newfoundland and Labrador and the Government of Canada. Nalcor has no comment.

**RECOMMENDATION NO. 15.5: Lower Churchill Project Monitoring and Community Liaison Committee**

The Panel recommends that, if the Project is approved, prior to the start of construction, the provincial Department of Environment and Conservation appoint a Monitoring and Community Liaison Committee, using a community-based nomination process. Nalcor, through the Department, should provide the Committee with sufficient resources to allow for staff support, expenses and a modest honorarium for non-government participants, acquisition of independent expert advice, and adequate communication with community residents including occasional public forums. The mandate of the Committee would be set out in the Authorizing Regulation and the Federal-Provincial regulatory plan. The Committee would operate throughout the construction period and for the first ten years of the operating period, at which point the continuing need for the Committee should be reassessed by the Department in consultation with the Committee, the communities and Nalcor. The Committee would:

- provide community feedback and advice to the Department and to Nalcor on relevant issues including Project-specific mitigation, impact monitoring and adaptive management committed to by Nalcor and as recommended by the Panel;
- be empowered as required to establish subcommittees or working groups to address the key areas of biophysical monitoring and follow-up, enhancing employment and business benefits, and health and social issues;
- have representation from communities, community-based agencies and non-government organizations, Aboriginal organizations, relevant federal and provincial government departments and Nalcor (ex-officio); and
- liaise with the public to ensure a transparent approach to addressing public concerns and the communication of monitoring results.

**Responsibility: Department of Environment and Conservation**

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Nalcor acknowledges that such committees are an increasingly common feature of large resource developments. In Nalcor's view, the composition, terms of reference, mandate and other aspects of the committee should be established by the Department of Environment and Conservation in consultation with Nalcor. Nalcor would be prepared to provide reasonable in-kind and financial support to the operation of the proposed committee.



**RECOMMENDATION NO. 15.6: Project-specific Effects Monitoring Programs**

The Panel recommends that, if the Project is approved, all Project-specific effects monitoring programs, whether conducted by Nalcor, governments or in combination, include the following elements:

- identification of monitoring objectives and means of achieving verifiable results capable of guiding remedial action;
- formulation of clearly stated research questions capable of testing impact predictions;
- key measurable indicators linking Project activities to outcomes, and threshold or reference levels to identify Project effects;
- strategies and protocols for data collection and quality control;
- protocols for data compilation, storage, control and access; provision for data analysis and assessment; and reporting procedures and schedules.

**Responsibility: Department of Environment and Conservation**

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Nalcor has committed to conducting industry standard monitoring programs and will work with appropriate regulators to ensure the effectiveness of all monitoring and follow-up programs.<sup>i</sup>

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<sup>i</sup> IR# JRP.112

**RECOMMENDATION NO. 15.7: Adaptive Management**

The Panel recommends that, if the Project is approved, adaptive management for Project specific or cumulative effects, whether conducted by Nalcor, governments, or in combination, include the following components:

- commitment to a proactive approach to adaptive management;
- clearly defined impacts thresholds to clarify where and when adaptive responses would be necessary;
- implementation and contingency plans and resources to enable responsive action especially in areas where effect predictions are thought to be uncertain and where predictive errors may have serious consequences;
- transparent process for setting and adjusting monitoring and management priorities; and provision for regular review of adaptive management effectiveness, adjustment of related monitoring and responses to focus on significant continuing concerns.

**Responsibility: Nalcor; Government of NL; Government of Canada**

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Nalcor has committed to following the adaptive management process as defined under the *Canadian Environmental Assessment Act*.<sup>1</sup> Nalcor will work with appropriate regulators and stakeholders to ensure the success of all monitoring, follow-up and adaptive management initiatives.

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<sup>1</sup> IR# JRP.112

**RECOMMENDATION NO. 15.8: Complaints Resolution**

The Panel recommends that, if the Project is approved, before the start of construction, Nalcor develop a complaints resolution process, in consultation with the Monitoring and Community Liaison Committee, to address concerns relating to possible adverse Project effects on individuals, and to be implemented during construction and operations. The process could include the following:

- easy access for individuals to bring concerns or complaints to Nalcor via a toll-free phone number, website and other appropriate means;
- dedicated Nalcor staff support to receive, process and respond to complaints;
- a tracking process with response time targets;
- third-party adjudication in the event that complaints cannot be otherwise resolved to the satisfaction of both Nalcor and the complainant; and a system to report on complaints received and how they were resolved

**Responsibility: Nalcor**

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Nalcor agrees with the intent of a complaints resolution process and operation would be analogous to existing customer service features Nalcor presently maintain. With respect to the potential for the process to deal with legal or regulatory issues, recourse is available to regulators, in accordance with existing law and binding commitments of authorizations and permits obtained.

**RECOMMENDATION NO. 15.9: Environmental Review in the Event that Construction of the Second Generating Facility is Delayed**

The Panel recommends that, if the Project is approved and the construction of the second generating facility and reservoir does not start before the first is completed, the environmental release would expire and terms and conditions contained in the original release would be revisited. The extent of the review required for later release would be the decision of the relevant federal and provincial governments, depending on applicable laws and circumstances at the time.

**Responsibility: Nalcor**

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If there were to be a significant interval between construction periods, the respective provincial and federal Ministers already have the authority to amend the terms and conditions of the release under the existing regulatory framework, should there be a perceived reason to do so. This issue is a matter of law already governed by existing legislation.<sup>i</sup>

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<sup>i</sup> EIS Volume 1A, Section 4.3

IR# JRP.147

IR# JRP.165

**RECOMMENDATION NO. 15.10: Local Hiring for Environmental Management Work**

The Panel recommends that, if the Project is approved, where possible, Nalcor hire local people to work on environmental monitoring and mitigation projects to benefit from their local knowledge and to develop local skills and experience in the field of environmental management.

**Responsibility: Nalcor**

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Nalcor agrees with this recommendation and the benefits strategy will apply throughout the construction phase of the project.<sup>i</sup>

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<sup>i</sup> CEAR 806

**RECOMMENDATION NO. 15.11: Government Response to Panel Report**

The Panel recommends that the federal and provincial governments provide written responses to the Panel report and that these responses be made available to the general public through the internet.

**Responsibility: Government of NL; Government of Canada**

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Nalcor has no comment on this recommendation.

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**RECOMMENDATION NO. 15.12: Decommissioning**

The Panel recommends that Nalcor demonstrate, prior to Project approval and in a manner acceptable to both governments, how it will assume financial responsibility for the potential future decommissioning of the Project to ensure that decommissioning does not become a burden to future generations.

**Responsibility: Government of NL; Government of Canada**

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As the JRP recognizes, decommissioning is very unlikely to happen in the near or medium term. As stated by Nalcor the life span of the Project is in excess of 75 years and often refurbishment is the preferred option. The JRP notes that evidence of decommissioning experience elsewhere indicates that when it is required, the cost is very high. While Nalcor concurs that costs of decommissioning would be high it is, in Nalcor's view, an unlikely scenario, even in the long term. The JRP concurs that decommissioning in the near future is very unlikely and that it is uncertainty in whether decommissioning would be required, even in the long term. As stated in IR# JRP.150, no hydroelectric developments of this size have been decommissioned and many facilities have been operating in excess of 100 years.

The JRP concludes that Nalcor needs to take responsibility for the possibility that the Project would eventually need to be decommissioned and provides some mechanisms by which this can be achieved. The mechanisms noted include insurance, the posting of a bond or the establishment of a dedicated fund. Currently, neither of these alternatives is standard in the utility industry and has not been a requirement of previous developments of this nature. Imposing such a requirement would set a new precedent across the industry and would be cost prohibitive. Nalcor would concur with revisiting options available and best industry practices with Provincial and Federal authorities once Project debt is retired to determine appropriate and economically feasible mechanisms that could be implemented at that time. Given the long term nature of the Project and the changes that could evolve over the life span of the Project such agreement should not be a requirement prior to Project approval. By demonstrating that the Project is economically feasible, the anticipated revenue and the unlikelihood of decommissioning NE has demonstrated that future generations will not be burdened by the Project.

**RECOMMENDATION NO. 16.1: Regionally Integrated Cumulative Effects Assessment**

The Panel recommends that, if the Project is approved, the provincial Department of Environment and Conservation, in collaboration with the provincial Department of Labrador and Aboriginal Affairs and other relevant departments, identify regional mechanisms to assess and mitigate the cumulative effects of current and future development in Labrador.

**Responsibility: Department of Environment and Conservation**

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It is the understanding of Nalcor that cumulative effects will be studied during environmental assessment of other projects.



**RECOMMENDATION NO. 16.2: Establishment of Protected Areas**

The Panel recommends that, if the Project is approved, the provincial Department of Environment and Conservation commit resources to advance the Protected Areas Strategy process by working towards the following goals and reporting annually on progress:

- identify priority candidate areas for provincial protection in Labrador in order to bring the total protected area (federal and provincial) up to the national average (approximately 8.5 percent) before any additional major development is approved in Labrador;
- identify additional candidate areas in Labrador needed to bring the total protected area up to the level identified in the Protected Areas Strategy as desirable for adequate conservation purposes (10 to 15 percent);
- through this process, address preservation of representative areas of all ecozones, mitigation of habitat fragmentation, especially for migratory wildlife, and protection of selected rivers; and establish a schedule to ensure that priority candidate areas are protected.

**Responsibility: Department of Environment and Conservation**

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While the intent may have merit, the recommendation relates to provincial land use planning, not the Project.