

COMMISSION OF INQUIRY RESPECTING THE MUSKRAT FALLS PROJECT

Grand Riverkeeper, Labrador Inc.

Application

Nature of the Application

- [1] The Applicant, Grand Riverkeeper Labrador Inc., seeks to have Philip Raphals called as a witness pursuant to Rule 39 on the basis that:
- (i) Mr. Raphals has direct personal knowledge of the events and circumstances leading up to sanction and thereafter, and his evidence is necessary for a full and true appreciation of the subject matter of the Inquiry, specifically as it relates to information that was known or ought to have been known by Nalcor and the Government prior to sanction;
 - (ii) Mr. Raphals has specialized expertise and knowledge, which no party, nor any other witness can testify to, and he is uniquely positioned to provide further detail and context to the expert report submitted by Grant Thornton and to provide expert evidence as to industry practice at the material time; and
 - (iii) The Applicant would be prejudiced if Mr. Raphals were not called as a witness because it has relied on Mr. Raphals for his technical knowledge and experience throughout its involvement and participation in pre-sanction processes and would be unable to convey and articulate this information to the Commission without Mr. Raphals.
- [2] In addition or the alternative, the Applicant seeks a recommendation pursuant to Rule 15 for funding to retain Mr. Raphals to assist it in preparing for and participating in the Inquiry on the basis that:
- (i) As a volunteer operated not-for-profit organization, the Applicant does not have the means to retain an expert, nor any other avenue for funding to retain an expert to assist it in participating in the Inquiry;
 - (ii) It is anticipated that the parties, including the Applicant, will be required to review a significant amount of technical information, which the Applicant will be unable to adequately analyse without the assistance of an expert;
 - (iii) The Applicant requires expert assistance in order to effectively cross-examine technical and expert witnesses; and
 - (iv) The Applicant requires the services of Mr. Raphals for his technical knowledge and experience in order to meaningfully and effectively participate in the Inquiry.

Material Facts

A. Background of Mr. Raphals

- [3] Mr. Philip Raphals is a prominent energy policy expert with over two decades of experience advising provinces, administrative bodies and organizations, as indicated by his curriculum vitae attached hereto as Exhibit "1".
- [4] Mr. Raphals is the Executive Director of the Helios Centre, an independent, non-profit research organization dedicated to the analysis of energy regulatory or investment options and the design of strategies and policies for the sustainable use and development of energy resources. He has specialized knowledge in the areas of energy planning, hydropower and other renewable energy technologies, ratemaking and transmission policy.
- [5] The Applicant retained Mr. Raphals to assist it in preparing for and making submissions throughout the various processes leading up to sanction. The Applicant, supported by Mr. Raphals, was one of very few organizations that raised concerns and critiqued the justification of the proposed Muskrat Falls Project in the years prior to sanction.
- [6] The Applicant submits that (i) the testimony of Mr. Raphals is essential to ensuring that a complete record of the events prior to sanction are put before the Commission and (ii) it requires the assistance of Mr. Raphals in order to meaningfully participate in the Inquiry. Therefore, the Applicant seeks to have Mr. Raphals called as a witness and a recommendation for funding to retain Mr. Raphals to assist it in preparing for and participating in the Inquiry.

B. Background of the Applicant

- [7] The Applicant is a volunteer-run not-for-profit organization with the aim of preserving and protecting the water quality and the ecological integrity of the Grand (Churchill) River and its estuaries for present and future users and for posterity through actions of public awareness, monitoring, intervention and habitat restoration.
- [8] The Applicant has been raising concerns about the Muskrat Falls Project since before its inception, when the organization was known as Friends of the Grand River, a group of Labradorians determined to protect the Grand River ecosystem.
- [9] The Applicant is comprised of a volunteer board of directors and a membership that is loosely organized and open to any interested person. Members are not required to have any particular background or affiliation aside from agreeing to the aims and mission statement of the organization. There is no cost for membership.

- [10] Unlike many not-for-profit organizations, the Applicant does not have any paid staff, such as an Executive Director or a Project Coordinator who could prepare for and facilitate participation in the Inquiry. Therefore, the burden of participation falls on volunteers with little technical expertise and requires them to commit enormous amounts of their personal time and energy for the benefit of the Grand River and the people of Labrador.
- [11] While the Applicant does have a bank account, it has no outside sources of funding. The Applicant has previously received federal funding to participate in certain aspects of the environmental assessment and other processes prior to sanction relating to the Muskrat Falls Project, but has no consistent or ongoing funding of any kind. The Waterkeeper Alliance does not provide funding for its members.
- [12] The Applicant is not aware of any other grants that would provide funding to facilitate its participation in the Inquiry, nor to compensate those who are dedicating significant time and energy to do so.
- [13] Throughout the consultative processes that took place prior to and after sanction, the Applicant retained, relied on and deferred to energy policy expert, Mr. Raphals.

C. Involvement of Mr. Raphals in past proceedings regarding Muskrat Falls

- [14] On behalf of the Applicant, Mr. Raphals has played an integral role in the consultative processes and debates prior to sanction and thereafter, as one of the only experts to critically examine assumptions, analyses and conclusions presented by Nalcor and the Government. He has direct personal knowledge of the information provided by and to Nalcor throughout these processes.
- [15] Mr. Raphals is uniquely placed to provide evidence as to the information that was known or ought to have been known by Nalcor in respect of a number of issues to be addressed by the Commission. In particular, he has information and expertise relating to the following issues set out in the Interpretation Decision paragraphs 28-34:
- (i) the overall integrity of the process leading to sanction;
 - (ii) whether the analysis done by Nalcor and the Government was reasonable according to best industry practice; and
 - (iii) what Nalcor knew, or was reasonably expected to know, at the time it proposed the Project for sanction.

i. Joint Review Panel

- [16] The Applicant retained Mr. Raphals to assist and provide expert evidence for its intervention in the Environmental Assessment carried out jointly by the Canadian Environmental Assessment Agency and the Newfoundland and Labrador Department of Environment and Conservation, referred to as the Joint Review Panel (the "JRP").
- [17] The Applicant presented several expert reports to the Panel, including one on the energy and economic justification and alternatives by Mr. Raphals.
- [18] On February 28, 2011, Mr. Raphals submitted a report to the JRP entitled "Comments on the Justification of the Proposed Lower Churchill Project".
- [19] In March, April and May of 2011, Mr. Raphals gave written and oral testimony which underscored the gaps in the economic justification put forward by proponents, specifically the inadequacy of financial and other information demonstrating the purpose, need and alternatives.
- [20] In 2012, as part of the Comprehensive Study on the Labrador Island Transmission Link, Mr. Raphals assisted the Applicant in preparing written submissions which questioned the adequacy of the comprehensive study, in particular with respect to the Project's justification. As part of this process, the Applicant also undertook a community consultation tour along the Labrador Coast and the part of the Island to be affected by the transmission line.

ii. Federal Court Judicial Review

- [21] In December 2011, following the conclusion of the JRP Report and sanction, the Applicant together with the Sierra Club of Canada and the NunatuKavut Community Council applied to the Federal Court for a judicial review of the Report of the Joint Review Panel on the Lower Churchill Hydroelectric Generation Project. Mr. Raphals submitted an affidavit that summarized the justification debates held before the JRP, as well as other matters, attached hereto as Exhibit "2". His assistance and participation was essential to enable the parties to pursue this judicial review.

iii. Public Utilities Board:

- [22] In April 2012, Mr. Raphals provided expert testimony on behalf of the Applicant to the Public Utilities Board's Muskrat Falls Reference, regarding the inadequacy of the "Isolated Island Option" as a comparator for determining whether or not the Muskrat Falls Project constituted the least-cost option and provided an economic analysis of the Muskrat Falls Power Purchase Agreement that addressed the issue of the sharing of costs between shareholder (taxpayer) and ratepayer.

iv. Grant Thornton Report

- [23] The Applicant has noted gaps in the information and findings contained in the sanctioning phase report provided by Grant Thornton. Mr. Raphals has relevant knowledge and expertise and is able to address these gaps and provide further detail and context and, where appropriate, complete or correct the findings.

v. Expertise

- [24] Mr. Raphals has provided expert testimony in regulatory proceedings regarding long-term utility planning in several provinces. He is qualified to provide testimony as to the industry best practice at the material time.
- [25] Mr. Raphals can provide expert evidence and concrete examples as to the accepted practice as it relates to load forecasting, lowest-cost option analyses, risk analyses and various other aspects of the pre-sanction process based on both his extensive experience and his depth of knowledge directly relating to Muskrat Falls Project.

D. Prejudice to Grand Riverkeeper, Labrador Inc.

- [26] Failing to call Mr. Raphals as a witness would result in a significant gap in the information and evidence presented to the Commission and to the public. Experts and specialist from Nalcor and the Government will be called and will have an opportunity to explain and justify their positions; however, Mr. Raphals will not be able to provide his evidence as to how, when and why Nalcor's claims were refuted at the time.
- [27] The Applicant does not have the technical knowledge and expertise to effectively convey to the Commission the full breadth and depth of the critiques, objections and analyses presented on its' behalf throughout the pre-sanction processes for the Project. The evidence of Mr. Raphals is relevant and necessary and without it there will be a significant gap in the information presented both to the Commission and to the public.

E. Rule 15 Application for funding for the Applicant to retain Mr. Raphals

- [28] In addition or in the alternative to the application to have Mr. Raphals called as a witness, Grand Riverkeeper Labrador Inc. applies to the Commission for a recommendation for funding to permit it to retain Mr. Raphals to assist in preparation and participation in the Inquiry. The Applicant pleads and relies upon its application for standing and funding dated March 28, 2018.

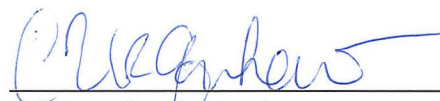
- [29] Nalcor and several other parties to the Inquiry are private or crown corporations with considerable in-house expertise and resources, in addition to the financial means to retain outside technical advisers and experts. The Applicant is a volunteer-run not-for-profit without in-house expertise and with no means to obtain funding to retain an expert.
- [30] The Applicant requires Mr. Raphals' services for the purpose of analyzing the information brought forward by Nalcor and other parties in order to meaningfully participate in the Inquiry.
- [31] Mr. Raphals has been involved in prior proceedings regarding the Project as the Applicant's expert and his input is integral to its ability to effectively cross-examine witnesses and to fully articulate and present its position to the Commission.
- [32] The Applicant has defended the human and ecological health of the Grand River and the Happy Valley Goose Bay area for over two decades. The people of this region deserve full and robust representation throughout the Inquiry. Absent assistance from Mr. Raphals, the ability of the Applicant to convey to the Commission the concerns, actions and impacts for Labradorians will be truncated.

Relief Sought

- [33] Therefore, the Applicant, Grand Riverkeeper, Labrador Inc., seeks the following:
- (i) Pursuant to Rule 39, Mr. Philip Raphals called as a witness, together with adequate remuneration for his time;
 - (ii) Pursuant to Rule 15, a recommendation for funding to retain Mr. Philip Raphals to assist the Applicant and counsel in preparing for and participating in the Inquiry; and
 - (iii) Any further and other relief as the Commissioner may determine is appropriate

All of which is respectfully submitted on August 24, 2018

SMYTH WOODLAND DEL RIZZO BARRETT



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Attention: Caitlin Urquhart



“Energy research for a sustainable future”

Philip Raphals

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PROFESSIONAL EXPERIENCE

1996- **HELIOS Centre, Executive Director (since 2004)**

An independent, non-profit research organization dedicated to the analysis of energy regulatory or investment options and the design of strategies and policies for the sustainable use and development of energy resources. Responsible for management and development of the Helios Centre, direction of its publication Enjeux-ÉNERGIE (2004-2007), and consulting activities.

Selected projects:

- **Régie de l'énergie:** Expert testimony on behalf of the Regroupement national des conseils régionaux de l'environnement du Québec (RNCREQ), l'Union de consommateurs, the Fédération des commissions scolaires du Québec, and other groups (including the Groupe de la charge locale), in hearings concerning:
 - Hydro-Québec's transmission tariff (R-3401-98, R-3493-04, R-3605-06; R-3549 phase 2, R-3640-07 and R-3669-08 phase 1; R-3669-08 phase 2 (harmonization with Order 890); R-3738-10);
 - the framework agreement between HQ-Production and HQ-Distribution (R-3622-06),

- σ the need for a balancing contract for wind energy (R-3550-04 and R-3648-07),
- σ Hydro-Québec's security of supply (concerning its resource plans R-3470-01 and R-3550-04, its interruptible tariffs in R-3518, and its Suroît project in R-3526-04),
- σ Hydro-Québec's energy efficiency plan and avoided costs (R-3473, R-3519 and R-3708-09),
- σ sustainable development criteria (R-3525-04), and
- σ acquisition of power from small hydro developers (R-3410).
- σ **Newfoundland and Labrador Public Utilities Board:**
 - σ Expert testimony on behalf of Labrador Interconnected Group, NL Hydro, 2017 General Rate Application (2017-)
 - σ Expert testimony on behalf of Innu Nation, NL Hydro, Amended General Rate Application 2013 (2014-2015)
 - σ Expert testimony on behalf of Grand Riverkeeper, Muskrat Falls Inquiry (2012)
- σ **Manitoba Public Utilities Board:**
 - σ Expert testimony on behalf of Assembly of Manitoba Chiefs, Manitoba Hydro General Rate Application 2017/18 and 2018/19 (2017 -)
- σ **British Columbia Utilities Commission:**
 - σ Submissions on behalf of the University of British Columbia Program on Water Governance, Site C Inquiry (2017)
- σ **University of British Columbia — Program on Water Governance:**
 - σ Reassessing the Need for the Site C Hydroelectric Project (2017)
- * **NEB Modernization Expert Panel:**
 - * Critical review of the NEB's role in electricity regulation and energy information on behalf of the Front commun pour la transition énergétique (2017)
- * **Peace Valley Landholders' Association:** Expert affidavit in injunction proceeding (2016)
- * **Treaty 8 Tribal Association:**
 - * Expert affidavits in support of judicial review and injunction applications (2014 - 2015)
 - * Expert testimony in the Environmental Assessment of the Site C Hydroelectric Project (2013 - 2014)

- * **Grand Riverkeeper Labrador** : Expert testimony on the justification for the proposed Lower Churchill Project (2011); Testimony before the Public Utilities Board of Newfoundland and Labrador regarding the Muskrat Falls Reference (2012); Affidavit In support of Federal Court File No. T-2060-11 (judicial review of Joint Panel Report (2012); Comments on the justification of the proposed Labrador-Island Transmission Link (2012)
- * **Technocentre éolien** – Étude sur l'énergie éolienne et les exportations d'électricité (2014)
- * **Low Power Rates Alliance**: Expert testimony before the Nova Scotia Utility and Review Board concerning the compliance filing of NSPI (2013)
- * **CanWEA (Canadian Wind Energy Association)**:
 - * Expert testimony before the Nova Scotia Utility and Review Board concerning the proposed Maritime Link and related agreements.
 - * Study on rate impacts of wind energy in Quebec (*L'impact de l'énergie éolienne sur les tarifs d'Hydro-Québec Distribution*) (2013)
- * **Canmet ÉNERGIE**: Review of regulatory policies relevant to Smart Grid development in Canada's provinces and territories (2012)
- * **Natural Resources Defence Council** : Power supply issues concerning the Champlain Hudson Power Express (2010)
- * **SPG Hydro inc.** : Market study on in-stream hydropower (*Étude de marché sur la filière de l'hydrolienne fluviale*) (2008)
- * **Service d'actions entrepreneuriales Manicouagan** : Étude sur les coûts de revient de la nouvelle filière de l'hydraulique fluviale. (2008)
- * **Communauté innue d'Ekuanitshit** : Conseils sur les enjeux énergétiques et économiques du Complexe La Romaine (2008)
- * **Groupe Pacific**: Electric supply options for a new residential community on Montreal Island. (2008)
- * **Hydro-Québec / ACDI / Électricité d'Haïti**: Études sur le potentiel et la mise en œuvre des énergies renouvelables en Haïti
 - Survol des technologies d'énergie renouvelable et technologies d'appoint (2007)
 - Options pour l'intégration des énergies renouvelables dans le réseau de Jacmel (2007)
- * **Centre local de développement Manicouagan**: Étude sur les coûts de l'Entente entre le gouvernement du Québec et Alcan (2007)

- * **Association québécoise des consommateurs industriels d'électricité:** Étude sur l'évolution des prix disponibles sur les marchés d'exportation d'Hydro-Québec Production (2007)
- * **Latin American Energy Organization (OLADE):** Competition in Energy Markets: An Analysis of the Relevance of North American Experiences to the Latin American and Caribbean Region. Project leader and principal consultant (with Peter Bradford). Project includes an in-depth review of the impact on restructuring on electricity and natural gas consumers in the U.S. and Canada, with an emphasis on regulatory policy concerning transmission, guidance and oversight of case studies of electricity restructuring experience in Brazil, Chile, Peru and Trinidad and Tobago, and the development of policy guidelines to regulate energy markets in the public interest in Latin America and the Caribbean. (2003 - 07)
- * **Law Offices of Scott Hempling (Washington, D.C. law firm specializing in energy regulatory matters):** Senior policy advisor. (2005-06)
- * **Hydro-Québec, Direction Réseaux Autonomes:** Renewable energy potential in off-grid communities (2005-06)
- * **National Grid USA: Economic Development and Environmental Impacts of Narragansett Electric's Energy Efficiency Programs:** Analysis of avoided cost component (for the Goodman Group) (2006)
- * **Cree Nations of Nemaska, Waskaganish and Chisasibi:** Comments on the Justification of the Eastmain -1A/Rupert Diversion Project (2006)
- * **Cree Nation of Nemaska:** Advice concerning wind energy development and community energy planning (2005-06)
- * **Canadian Wind Energy Association:** Submission to the Ontario Power Authority's Supply Mix Consultation (with Hélimax Énergie inc.) (2005)
- * **National Roundtable on the Economy and the Environment:** Background paper on the role of hydropower in a carbon-constrained energy future for Canada (2005)
- * **Federal Review Commission, Eastmain 1A/Rupert Hydroelectric Project:** Report on the conformity of the Eastmain 1A/Rupert Environmental Impact Study, with respect to project justification (2005)
- * **Institut d'énergie et de l'environnement de la Francophonie (IEPF):** Editorial supervision and co-author, *Mettre en Place Une Autorité Nationale Désignée pour le MDP: Pourquoi et Comment?*, presentation at COP-11 in Montreal; Profiles of the Clean Development Mechanism potential of the developing countries in the Francophonie (with Helios staff). Presentation at COP-10 in Buenos Aires. (2004)

- * **Mushkegowuk Council (Ontario):** Critical review of power supply options (including transmission upgrades) for De Beers' Victor diamond mine (CEAA environmental assessment process). (2004)
- * **Pemex – Refinación:** Co-facilitator with Jay Ogilvy and Napier Collyns of Global Business Network of a strategic planning scenario workshop for the company's management. (2004)
- * **Nuclear Waste Management Organization:** Expert participant in inter-disciplinary scenarios team for long-term management of high-level reactor waste in Canada. (2003)
- * **Energy Foundation:** Proposed eligibility criteria for hydropower in the New York State Renewables Portfolio Standard. (2003)
- * **Low Impact Hydropower Institute:** Principal consultant for pilot project to develop an international green standard for small-scale hydropower, funded by North American Fund for Environmental Cooperation. (2002-03)
- * **Commission for Environmental Cooperation:** Expert reviewer for *Environmental Challenges and Opportunities of the Evolving Continental Electricity Market*. (2002)
- * **Pimicimak Cree Nation:** Research on hydropower mitigation costs and operations reviews. (2002)
- * **Hydro-Québec-Recouvrement/ARC/CACQ/FACEF :** Review of low-income customer assistance programs in U.S. (2001)
- * **International Rivers Network:** Commissioned book-length study: *Restructured Rivers: Hydropower in the Era of Competitive Markets*. (2001)
- * **Low Impact Stakeholders Alliance (Ontario):** Options paper on environmental rating of electricity; consultations on certification of hydroelectric facilities for green power market. (2000-01)
- * **Innu Nation (Labrador):** Overview of Quebec and U.S. energy policy issues. (2000)
- * **Grand Council of the Crees (of Quebec) :** Orientations for a Cree Energy Policy (2009)

Drafting project justification section of *Draft Directives for the Preparation of the Impact Statement for the Eastmain-1A and Rupert Diversion Project* (for COMEV, the tripartite Evaluating Committee under the JBNQA). (2003)

Expert testimony before U.S. Court of Appeal (D.C. Circuit) on role of exports in Hydro-Québec planning; technical analysis for FERC consultation on Regional Transmission Organizations and for the World Commission on Dams. (1999)

Assistance in preparation of technical affidavits submitted to the Federal Energy Regulatory Commission concerning the application by Hydro-Québec U.S. Inc. for energy marketer status. (1997)

- * **HéliMax Inc.** : Report on the Implications of the Kyoto Protocol for Renewable Energy Projects in Developing Countries (1999)
- * **World Bank**: Critical review of French translation of *Environmental Assessment Sourcebook*, chapter on economic analysis of projects and policies. (1999)
- * **Option consommateurs** : Study on traditional and incentive ratemaking approaches in electricity regulation (1998)
Study on electricity market restructuring options and rate impacts. (1997)
- * **Standing Committee on the Economy and Labour, National Assembly of Quebec**:
Analysis of Hydro-Québec's Strategic Plan 2000-2004. (2000)
Analysis of Hydro-Québec's Strategic Plan in relation to the Committee's June 1997 recommendations; drafting of questions. (1998)
Expert assistance in oversight hearings concerning Hydro-Québec, especially with respect to market restructuring and energy efficiency, including drafting introductory texts, seminars with committee members, drafting report. (1997)
- * **Rivers Canada** : Preliminary study on the implications of the restructuring of electricity markets in North America for the preservation of Canada's rivers. (1997)
- * **Quebec Forestries Industries Association**: Workshop on electricity market restructuring and competition, and their impacts on Quebec electricity rates, energy efficiency and biomass generation. (1997)
- * **Averyt and Associates (for Green Mountain Power)** : Report on Native issues in the context of Quebec energy policy. (1996)
- * **Ad hoc working group of American and Canadian environmental groups** : Design of legislative mechanisms to reduce the environmental impacts of electricity restructuring. (1996)

1995- Independent energy analyst

Environnement Jeunesse (1996-97)

Representative at the *Commission of inquiry into Hydro-Québec's purchase policy for private producers*.

Université de Montréal (1995)

Coordination of a lecture series on *Energy and Resources at the Dawn of the 21st Century*. Lectures by David Freeman (then CEO of New York Power Authority), Allen Kupcis (CEO of Ontario Hydro) and Victoria Yegorova (Donetsk Research Institute, Ukraine).

Government of Québec: Natural Resources Department (1995)

Study on approach used for the regulation of energy in British Columbia and on the interest of this model for Quebec, published for the Quebec Public Debate on Energy.

Government of Canada: Environment Department (1995)

Quebec chapter of a study on the treatment of externalities (social costing methodologies) in Canada, under subcontract from Passmore Associates.

Grand Council of the Crees (of Québec) (1995-)

Expert assistance on costs and benefits of different generating technologies, alternative solutions, and methodologies for taking externalities into account in competitive energy markets.

1992-95 Deputy Scientific Coordinator

Great Whale Public Review Support Office

- σ Member of the support staff for the committees and commissions responsible for the assessment of the Great Whale project.
- σ Responsible for analyses concerning project justification.
- σ Drafting of preparatory documents and preliminary versions of reports; selection and oversight of consultants.
- σ Co-author, with James Litchfield and Roy Hemmingway, of a study on integrated resource planning and its application to the project.
- σ Editor of study on mitigation measures at the La Grande hydroelectric complex.
- σ Assisted in editing and publishing of 9 other studies on issues related to the project (mercury, dam safety, traditional ecological knowledge, etc.)
- σ Involved in designing, planning and carrying out all aspects of the public review process.

1987-92 Freelance science journalist

- σ Articles on energy, science and medicine in *Science*, *The New Scientist*, *The Medical Post* and other specialized publications.

ÉDUCATION

- 1976 M. Music (performance), Boston University
- 1974 B.A., *cum laude*, in philosophy, Yale University. Minor in biological sciences.

LANGUAGES

- σ **English, French and Spanish** (written and spoken fluently)
- σ **German and Italian** (limited comprehension)

CONFERENCE PRESENTATIONS

Integrated Resource Planning and the Site C Project: Implications for Newfoundland and Labrador, Muskrat Falls Public Symposium, Labrador Institute, Happy Valley – Goose Bay, Labrador, Thursday, February 22, 2018.

Present Value Analysis of the Site C Hydroelectric Project. Presentation to British Columbia Utilities Commission, Site C Inquiry, Technical Session, October 14, 2017.

Rencontre expert sur les surplus d'électricité. Commission sur les enjeux énergétiques du Québec. Montréal, le 21 octobre 2013.

Greenhouse gas emissions and hydropower. 13th Annual Waterkeeper Alliance Conference, Northwestern University, Evanston, Illinois, June 24, 2011.

Invited testimony, Senate Standing Committee on Energy, the Environment and Natural Resources. February 2011.

La filière hydrolenne : Une introduction. AQPER Colloque — Québec: Carrefour des énergies renouvelables octobre 2009.

L'avenir énergétique au Québec et ailleurs : structures institutionnelles et les nouvelles technologies d'énergie verte. Réseau des ingénieurs du Québec, Congrès annuel des ingénieurs, 25 novembre 2008.

Tarification sur la base des coûts, ou des coûts d'opportunité ? Réplique au Groupe de travail sur la tarification des services publics (Groupe Montmarquette), Forum québécois sur l'électricité, 14 mai 2008.

La filière de l'hydraulienne fluviale : un premier regard sur les coûts, Ocean Renewable Energy Group, Spring Symposium, Canada's Ocean Energy Future: New Partnerships and Wider Opportunities, Québec, 21 avril 2008 (à venir).

Les coûts de l'Entente Alcan: un deuxième regard, Conférence sur le développement durable dans l'industrie de l'aluminium (Céddi-AL), Baie-Comeau, Québec, September 20, 2007.

The Restructuring of North American Energy Markets, Seminario regional de OLADE sobre el futuro de los mercados energéticos en Latinoamérica y el Caribe, Buenos Aires, March 8, 2007.

Des monopoles aux marchés concurrentiels : Implications environnementales de la restructuration des marchés, 3e conférence internationale sur la mise à niveau environnementale : Entreprise et économie d'eau et d'énergie, CITET, Tunis, le 8 décembre 2006.

Technologies émergentes de production d'électricité, AQPER Colloque sur l'énergie éolienne ... et autres énergies vertes 30 octobre 2006.

politiques européennes sur les énergies renouvelables, l', 9 juin 2006.

L'application conjointe : un outil méconnu mais prometteur, Les énergies traditionnelles, les énergies nouvelles, les énergies de demain », November 4, 2005.

La sécurité énergétique et les sources alternatives de production d'énergie : oui mais à quel prix ? », (Montreal, April 18, 2005).

« Le MDP dans la Francophonie: Fiches d'information sur le potentiel et les opportunités dans les pays de la Francophonie », présentation aux représentants de la Francophonie en marge de 10^e Conférence des parties de la Convention sur le climat (Buenos Aires, December 2004).

"Toward an International Green Standard for Small-Scale Hydropower, ", World Renewable Energy Conference, Denver, Colorado (September 2, 2004).

"The Role of Hydropower in Green Power Markets," Ontario Green Power Trade Show, (Toronto, Oct. 2002)

"Creating Value by Working with NGOs," HydroVision (Portland, Oregon, August 2002)

"Quebec Energy Policy," Environmental Law McGill Forum on James Bay and Sustainable Development (Montreal, March 2002)

"Approaches to Green Power Certification," Ontario Green Power Trade Show, (Toronto, Nov. 2001)

Guest Lecturer, Hydropower and Sustainable Energy Policy, Yale School of Forestry and Environmental Sciences, FES 850b (Energy Policy and Environmental Protection, 2001-02)

North American Commission for Environmental Cooperation, Symposium on Understanding the Linkages between Trade and the Environment (discussant). (Washington, D.C., October 2000)

Harvard Electricity Policy Group, Special Session: Retail and Wholesale Transmission Markets: Can They Be Unified? Defining the Issues and the Ramifications (Invited participant) (Washington, D.C., March 19, 1999)

Ontario Low Impact Stakeholders' Alliance, Public Workshop, *Environmental Ranking of Hydropower Facilities in Canada*. (Toronto, May 2000)

Canadian Association of Members of Public Utility Tribunals, annual meeting. Lecture on the implications of electricity deregulation for the environment. (1997, *Whistler, B.C.*)

National Forum on Markets, Regulation and the Future for Canadian Energy Utilities. Talk on IRP in a competitive market. (1995, *Whistler, B.C.*)

Quebec Public Debate on Energy : presentations on the application of integrated resource planning in the Quebec context and on resource portfolio analysis. (1995, *Montreal*)

COMMITTEES, BOARDS AND AWARDS

- 2015 Finalist, R.J. Templin Award (CanWEA)
- 2010- Choeur de chambre Tactus, Board of Directors (Chair)
- 1999- Low Impact Hydropower Institute, Renewable Markets Advisory Panel (Chair 2003-)
- 1997- Helios Centre, Board of Directors (Vice President and Secretary)
- 2009-10 Ecologo Advisory Committee, Renewable Low-Impact Electricity
- 2008 Expert Review Panel, National Centres for Excellence, Centres of Excellence for Commercialization and Research (CECR).
- 2007-08 Comité d'Experts francophones, Stratégies nationales de développement durable des pays africaines, Délégation au développement durable de la France.
- 2005 Conseil de la science et de la technologie du Québec, Groupe de travail sur les défis en énergie.
- 2004-05 Quebec Climate Change Action Centre, Advisory Committee
- 2003-04 National Roundtable for Energy and the Environment, Ecological Fiscal Reform and Energy Program, Advisory Committee on Energy Efficiency

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OTHER ACTIVITIES

Professional cellist

Choral singing

FEDERAL COURT

BETWEEN:

GRAND RIVERKEEPER, LABRADOR INC.,
SIERRA CLUB OF CANADA, and
NUNATUKAVUT COMMUNITY COUNCIL INC.

APPLICANTS

AND:

ATTORNEY GENERAL OF CANADA,
MINISTER OF FISHERIES AND OCEANS,
MINISTER OF TRANSPORT,
MINISTER OF NATURAL RESOURCES, and
NALCOR ENERGY

RESPONDENTS

AFFIDAVIT OF PHILIP RAPHALS

I, **PHILIP RAPHALS**, Energy Analyst, of 100-326 Saint Joseph Boulevard East, in the City of Montréal, in the Province of Québec, **AFFIRM THAT:**

1. I am the Executive Director and the co-founder of the Helios Centre, an independent non-profit energy policy research group based in Montréal, Québec.
2. I was engaged as an expert by Grand Riverkeeper, Labrador Inc. (“Grand Riverkeeper”) in January 2008. A copy of my *curriculum vitae* is attached to this my Affidavit as **Exhibit A**.
3. I was retained to assist Grand Riverkeeper with its preparation for and participation in the environmental assessment conducted by the Joint Review Panel (“the Panel”) of the proposed Lower Churchill Generation Project. The Panel conducted its assessment jointly under the Canadian Environmental Assessment Act (“CEAA”) and provincial legislation. The Panel’s mandate is confirmed and further articulated in the Joint Panel Agreement and Terms of Reference, which is appended as Appendix 2 of the Panel’s Report.

4. In my Affidavit, I provide evidence on three topics under three separate headings. First, I provide evidence of some key developments that provide the context for understanding the approach ultimately taken by the Panel, in its Report, to the factors of **need, rationale and alternatives**. I provide this background, contextual evidence to help the Court understand how it was that the Panel came to defer the factors of need, rationale and alternatives to other actors or processes extrinsic to the statutory environmental assessment under the CEAA.
5. Second, I provide evidence about **two extrinsic processes**, one that is ongoing and one that has concluded. These extrinsic processes have narrow mandates to look at specific questions related to – but not exhaustive of – the factors of need, rationale and alternatives. The ongoing process is a review by the provincial Public Utilities Board (“PUB”) in Newfoundland and Labrador. The concluded process, which led to a report by Navigant Consultants in September 2011, which was initiated by Nalcor Energy (“the Proponent”), excluded any public involvement. Navigant Consultants was retained by the Proponent to prepare this report.
6. To be clear, I only provide evidence about these extrinsic processes so as to respond to any argument that these extrinsic processes can somehow take the place of the Panel’s assessing and reaching conclusions on need, rationale and alternatives. I would disagree strongly with such an argument. As I describe below, factually speaking, these two processes do not have the same mandate, independence, public participation and/or funding support as the Panel under CEAA. Furthermore, these processes rely on evidence and documents which, with few exceptions, has not been put before the Panel.
7. Finally, I provide evidence about **transmission projects that are closely-related** to the Lower Churchill Generation Project, and indeed that form part of the larger “Lower Churchill Project”, but which were not assessed by the Panel as part of any cumulative effects assessment.

A. Factual Background to the Panel's Approach to Need/Rationale and to Alternatives

8. I confirm here, at the outset of this section of my Affidavit, that all of the evidence in this section regarding the background to the Panel's decision to defer assessment of need, rationale and alternatives to other entities is part of the record before the Panel. In particular, Exhibits B, C, D, E-1, E-2, F-1, F-2, G, H and I, described and appended in this section of my Affidavit, are all on the record.
9. Section 4 of the Panel's Report addresses "Project Need and Alternatives". Section 4.1 addresses "Need, Purpose and Rationale", while section 4.2 addresses "Alternatives to the Project."
10. Section 4.1 on the Report on Need, Purpose and Alternatives concludes at pages 24-25 with the following findings and recommendation:

Whether the Project is considered as a whole or as separate generating facilities, the Panel finds that there are two significant outstanding questions. The first is whether the Project is the best alternative for meeting domestic demand. This is addressed in Section 4.2, Alternatives to the Project. The second has to do with the availability of transmission access to deliver a significant portion of the Project's energy to export markets, whether markets would be available, which markets, when, and at what price could the power be sold. Nalcor's proposal for Muskrat Falls includes export capability of part of the output via the planned Maritime Link. However, no certain transmission capability has been identified for the much larger energy output of Gull Island.

The Panel concludes that, in light of the uncertainties associated with transmission for export markets from Gull Island, Nalcor has not demonstrated the justification of the Project as a whole in energy and economic terms.

The Panel further concludes that there are outstanding questions for each of Muskrat Falls and Gull Island regarding their ability to deliver the projected long-term financial benefits to the Province, even if other sanctioning requirements were met.

RECOMMENDATION 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. (bolding in the original, underlining added)

11. Section 4.2 of the Report (Alternatives to the Project) concludes at page 34 with the following findings:

Nevertheless, there are many outstanding issues and these remain despite the considerable attention given to this subject through relevant information requests and at the hearing, including the Panel's March 21st letter to Nalcor, Nalcor's response dated April 1st, and the special hearing session on April 13th to address both. In summary, these include: the significance of several different domestic demand projections; widely different views regarding the potential contribution of energy conservation and demand management to reduce overall energy demand; criticism of current efforts in this province compared to other jurisdictions regarding conservation and demand management; potential contributions of alternate on-Island energy sources; the significance, in energy cost comparisons to 2067, of available Churchill Falls power in 2041 and recall power currently available; Nalcor's cost estimates and assumptions with respect to its no Project thermal option; the economics of offshore gas as a potential less costly option than burning oil at Holyrood; cash flow projection assumptions for Muskrat Falls and implications for Provincial ratepayers and regulatory systems.

It is the Panel's view that all of this should be addressed by commissioning an independent analysis of alternatives. Based on what participants said, such an analysis would provide needed credibility and would be beneficial to both Nalcor and the Government of Newfoundland and Labrador. Further, without the independent analysis, matters regarding the Muskrat Falls income stream, implications for ratepayers, and what electricity rates might otherwise be, cannot be determined.

An appropriate question for the analysis to address is "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?" An independent analysis of this question would provide alternatives that could then be compared to Muskrat Falls and Nalcor's primarily thermal option which was based on complete upgrading and replacement of Holyrood.

The 'best way' to meet domestic demand is not just the least cost. Environmental considerations should be taken into account. For example, without the Project, could some of the emissions from Holyrood be partially or completely displaced by on-Island renewable energy sources?

The Panel concludes that Nalcor’s analysis that showed Muskrat Falls to be the best and least cost way to meet domestic demand requirements is inadequate and an independent analysis of economic, energy and broad-based environmental considerations of alternatives is required. (bolding in the original, underlining added)

12. Section 4.2 of the Report, at pages 34-35, makes the following recommendation:

RECOMMENDATION 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. (bolding in original, underlining added)

13. Without the benefit of a completed assessment of need and alternatives, the Panel did not provide a conclusion or a recommendation as to whether the proposed Lower Churchill Generation Project is justified and in the public interest, or not. At section 17.9 of its Report, rather than making a final recommendation, the Panel presented the following “concluding thoughts on the final project decision”:

“If the financial review and alternatives assessments recommended by the Panel were to show that there are alternative ways of meeting the electricity demands of the Island over the medium term in a manner that is economically viable and environmentally and socially responsible, **the Project should likely not be permitted to proceed** for purposes of meeting Island demand. This is critical for the Muskrat Falls facility, because meeting Island demand has been put forward as its main justification.

If the Gull Island facility were to be developed first, or a joint sanction decision were to be made, this would be a different situation as the Gull Island facility would produce more power at a lower unit cost and therefore would offer much greater potential for revenue generation from the export of power. If market access for Gull Island were to be resolved, the cost of bringing Gull Island power to market would have to be carefully assessed by government decision makers. With this information and the projected price of power in accessible markets, the potential of the Project to provide lower cost power to Newfoundland and Labrador and generate revenues for the Province could then be assessed (see Recommendation 4.1).” (bolding and underlining added)

14. I agree with the conclusion that, on the limited evidence before the Panel, the Project should “likely” not be permitted to proceed. However, I believe that, had the Panel been able to complete the assessments of financial need and alternatives that it concluded were necessary, it would have been able to reach a firm and unambiguous conclusion. As I describe in the rest of this section of my Affidavit, the Panel’s inability to reach anything more than this “contingent” conclusion and recommendation on whether the Project is justified and should proceed resulted from the Panel’s failure to ensure that the Proponent produced sufficiently complete information on need and alternatives for the public hearings in March and April 2011.
15. On February 28, 2011, on behalf of Grand Riverkeeper, I submitted a written brief to the Panel entitled “Comments on the Justification of the Proposed Lower Churchill Project.” I continue to

hold the opinions, concerns and conclusions expressed in my brief, regarding the Proponent's inappropriate approach to and inadequate information for demonstrating justification generally, and to demonstrating purpose, need and alternatives more specifically. A copy of my February 28, 2011 written brief is attached to this my Affidavit as **Exhibit B**.

16. On March 7, 2011, I testified before the Panel in its public hearings in Happy Valley-Goose Bay. I testified as an expert witness on the issue of justification, in the topic-specific hearing on need, purpose and alternatives. As part of my oral testimony, I presented the written brief at Exhibit B. In this oral presentation, I raised concerns with the inadequate information and data provided by the Proponent on topics related to the Project's justification, including on the issues of need, purpose and alternatives.
17. During my presentation to the Panel, I also relied on a Powerpoint presentation. At pages 9-10, that Powerpoint presentation addressed the issue of alternatives to the proposed Project in somewhat greater detail than did my written brief. A copy of the Powerpoint presentation that I presented to the Panel on March 7, 2011 is attached to this my Affidavit as **Exhibit C**.
18. On March 7, 2011, representatives of the Proponent also testified in the topic-specific hearings on need, purpose and alternatives, and in the course of their presentation they also relied on a Powerpoint presentation. A copy of the Proponent's Powerpoint presentation on need, purpose and alternatives is attached to this my Affidavit as **Exhibit D**.
19. On March 14, 2011, I wrote to the Panel concerning an undertaking I had made at the March 8 hearing, and to make suggestions as to additional information that the Panel might request from the Proponent with respect to the issues raised in these hearings. A copy of my letter of March 14, 2011 is attached to this my Affidavit as **Exhibit E-1**.
20. One week later, the Panel wrote the Proponent to "request additional financial and other information to allow the Panel to better understand the economic justification of the Project and to compare electricity generation options to meet the Island demand with and without power from Labrador." Much of the information requested by the Panel was information that, in my

written materials and oral testimony, I had indicated was necessary but absent from the record. In addition, the Panel concluded its letter by inviting the Proponent to comment on any of the questions raised at the end of my letter of March 14, 2011 (Exhibit E-1). The Panel requested that the Proponent provide the information requested by the end of March 2011, in order to permit its review and discussion at a general hearing session in April. A copy of this letter from the Panel, dated March 21, 2011, is attached to this my Affidavit as **Exhibit E-2**.

21. On April 1, 2011, the Proponent responded to the Panel's Information Request by providing a 37-page document ("April 1, 2011 Written Response"). A copy of the Proponent's April 1, 2011 Written Response is attached to my Affidavit as **Exhibit F-1**.
22. In early April 2011, the Panel added an additional hearing session to address this document (Exhibit F-1), which it scheduled for April 13, 2011. At this hearing, the Proponent's witnesses presented and elaborated on their April 1, 2011 Written Response.
23. Having reviewed the Proponent's April 1, 2011 Written Response and its oral presentation at the April 13, 2011 hearing, it was my opinion that the Proponent's information was largely non-responsive to the Panel's March 21, 2011 Information Request and was inadequate to support an assessment of need/rationale and alternatives. I believed that the Panel should be informed of the weaknesses and inadequacies of the April 1, 2011 Written Response and of the additional information presented orally. I also believed that the Panel should be made aware of additional information that supplemented or contradicted the information submitted by the Proponent, such as on the existence of alternatives to the Lower Churchill Generation Project.
24. While I wished to make a presentation to the Panel, taking into account the new information provided in Exhibit F-1, the Panel did not provide for this in its schedule. I was however permitted to ask questions of the Proponent's witnesses, to make comments and to submit additional documents until 4 pm of the same day. The hearing ended at 1:20 pm. That afternoon, Grand Riverkeeper submitted my comments on the Proponent's new information that purported to respond to the Panel's March 21, 2011 Information Request. A copy of my April 13, 2011 submission is attached to this my Affidavit as **Exhibit F-2**.

25. At pages 1-3 of Exhibit F-2, I summarized the Panel's March 21, 2011 Information Requests, described the Proponent's April 1, 2011 Written Response, and commented on its inadequacy. I continue to hold the same opinions, concerns and conclusions as I provided in Exhibit F-2. However, as I had only a few hours in which to finalize Exhibit F-2 after the Proponent's oral presentation on April 13, 2011, some of my analysis presented therein is necessarily preliminary.

26. The introductory paragraphs of Exhibit F-2 read as follows:

As I emphasized in my Initial Comments (February 28, 2011), timely access to complete information is a prerequisite for any environmental assessment process. In those Comments, I identified serious failings in this regard with respect to the information provided by the Proponent, in particular with respect to the scenario where only the Muskrat Falls project might be built.

Fortunately, the Panel recognized this failing. In its letter of March 21, 2011, it requested significant new information from the Proponent, who responded on April 1. Unfortunately, the Proponent's response failed to provide much of the information requested by the Panel. In this first section, I summarize the Panel's questions, describe the Proponent's written responses and comment on their adequacy.

27. At pages 10-11 of Exhibit F-2, I addressed my concerns with how the Proponent had ignored wind energy altogether in its analysis of alternatives. Continuing on, at pages 11-14, I presented a very preliminary analysis suggesting that a large wind project on the Avalon Peninsula could display many of the benefits of the Muskrat Falls project, at a lower cost. If I had had more time, I would have been able to present a much more thorough analysis.

28. On April 14, 2011, I made some closing remarks to the Panel on behalf of Grand Riverkeeper. My remarks addressed whether there exists adequate justification for the proposed Lower Churchill Generation Project, and the information gaps limiting the answer to that question. A copy of the transcript of my closing remarks is attached to this my Affidavit as **Exhibit G**.

29. Among the issues I addressed in my remarks was my concern that the Proponent's assertion that there are no viable alternatives to the proposed project, in particular with respect to Conservation and Demand Management (CDM) and wind power (Exhibit G, page 12-19), was not credible.

30. I also addressed my concern that the evidentiary record was missing:

- any thorough study of the options for Holyrood, given that this issue was at the heart of the Proponent's position on justification (Exhibit G, p.24),
- any analysis of an alternative scenario based on traditional cost-of-service pricing for the Muskrat Falls power (Exhibit G, p. 29), and
- any information about transmission to from Labrador to the Island (Exhibit G, p. 30).

31. I also sought to explain that the lack of justification-related information showed that the Project's clearly demonstrated burdens could not be "outweighed" by its undemonstrated benefits:

The project has substantial economic costs, environmental and social externalities, and these environmental and social externalities should be incurred only if either the project meets a need that cannot be met at lower economic, environment and social costs or if it produces benefits that are so great as to outweigh these externalities, including the equity issues where the people who receive the benefits are different from those who bear the costs.

From what I've seen, neither of these is the case. There is no reliable evidence that the needs to be met by the project, that is to say, serving island electric needs and reducing or eliminating the use of Holyrood, cannot be met at lower economic and environmental costs by alternate solutions involving wind efficiency and probably a peaking plant or a transmission line, or in the worst case, the occasional use of Holyrood.

The financial benefits are strictly the result of using the monopoly situation to extract funds from ratepayers in excess of the actual cost of the project, and I think economically that's not a benefit, it's a really awash [sic], and for these reasons, in my view, the project should not be authorized. (Transcript, pages 33-34)

32. Just to be clear, and to ensure that the evidence before this Court is correct, I did not say "awash" but rather I said "a wash".

33. On April 15, 2011, an e-mail was sent on behalf of the Panel advising that the public hearing had ended that day and that “[t]herefore the record has closed and no additional information will be considered by the Panel.” A copy of this e-mail is attached to this my Affidavit as **Exhibit H**.
34. The Panel’s position disallowing any additional information was consistent with the Public Hearing Procedures which the Panel had earlier adopted. Paragraph 1.7.6 of the Panel’s Public Hearing Procedures provides that “[a]t the end of the public hearings, the Panel will close the record of the review process and no additional new information will be considered.” A copy of the Panel’s Public Hearing Procedures is attached to this my Affidavit as **Exhibit I**.
35. Thus the Panel adopted a process that precluded me from submitting more fulsome comments responding to the Proponent’s new information presented on April 13, 2011. Had the Panel not so clearly foreclosed the use of its powers to accept additional information after the end of the public hearings, I would have been able to submit a thorough response to the new information. At Appendix 2 of the Report, the Joint Panel Agreement and Terms at Reference grants the Panel all the powers in sections 64 and 65 of the Environmental Protection Act (“EPA”) and applicable regulations.
36. If given more time, I would have submitted further analysis and evidence on need and alternatives in order to assist the Panel in making its own assessment and conclusions on need and alternatives, rather than deferring the assessment of these factors to others.
37. In addition, the Panel’s decision to defer the issues of need and alternatives to other entities undermined the Panel’s ability to comply with its own Justification Framework. After consulting with participants including the Proponent on draft hearing guidelines in 2010, the Panel finalized guidelines entitled *Framework for Determining Whether Significant Adverse Environmental Effects are Justified and Whether the Project Should be Approved* (“Justification Framework”). The Panel’s Justification Framework states that at “the heart of the decision-making framework is the concept that ... the Project should result in net environmental, social and economic benefits.” The Panel’s Justification Framework is located at Appendix 8 of the Panel’s Report.

38. Despite creating this explicit Justification Framework, the Panel did not reach a conclusion or recommendation on whether the Lower Churchill Generation Project and its significant adverse environmental effects are justified. As made clear from the Report's "concluding thoughts" excerpted above at paragraph 13 of my Affidavit, the Panel could not conclude or recommend whether the Project was justified or should be approved due to the absence of information allowing an assessment of need and alternatives.

39. Based on my years of experience participating in environmental and regulatory reviews of proposed energy projects, it is my opinion that any appropriate, effective environmental assessment requires the production of relevant information *before* that information is scheduled to be tested, whether in hearings or otherwise. In my experience in environmental assessments of proposed energy projects, I have never before seen a Panel permit a Proponent to so blatantly "run out the clock".

B. Assessments "extrinsic" to the Panel – the Public Utilities Board review and the Navigant Report

1. The Public Utilities Board review

40. In anticipation that the Proponent may raise the existence of the PUB Review of Muskrat Falls as a reason not to require the Panel to complete its assessment under CEAA, below I briefly describe what I know of the PUB process and what I know of the PUB's experience to date in attempting to perform its mandate, based largely on my review of the PUB website.

41. Before the Panel had completed its Report, the Province of Newfoundland and Labrador announced on June 17, 2011 that it had mandated the provincial Public Utilities Board ("PUB") to conduct a review of the Muskrat Falls component of the Lower Churchill Generation Project and the Labrador-Island Link transmission line ("PUB Review of Muskrat Falls"). I located the Province's June 17, 2011 press release and backgrounder at <http://www.releases.gov.nl.ca/releases/2011/nr/0617n04.htm>. A copy of this June 17, 2011 press release and backgrounder is attached to this my Affidavit as **Exhibit J**.

42. Exhibit J also contains within it the “Terms of Reference and Reference Question”. The Reference Question that the Province referred to the PUB is that “[t]he Board shall review and report to Government on whether the Projects represent the least-cost option for the supply of power to Island Interconnected Customers over the period of 2011-2067, as compared to the Isolated Island Option”. This Isolated Island Option is not defined in Exhibit J. However, it is defined in a Schedule B of the full Terms of Reference and Reference Question, found on the PUB website at <http://www.pub.nf.ca/applications/MuskratFalls2011/files/corresp/TermsOfReference.pdf>. A copy of this document is attached to this my Affidavit as **Exhibit K**.
43. Thus the stated Reference Question for the PUB Review of Muskrat Falls is different from and narrower than the questions and factors which the Panel concluded were necessary to assess alternatives under CEAA (as excerpted in my Affidavit above at paragraphs 11 and 12.) The PUB Review of Muskrat Falls looks at only one alternative scenario, the so-called Isolated Island Scenario. Most notably, the mandate of the PUB Review of Muskrat Falls clearly does not include comparison with other economically viable and more environmentally sustainable alternatives, such as Conservation and Demand Management (“CDM”) and wind power, beyond the modest levels retained by the Proponent in its Isolated Island Scenario.
44. Because of the narrow nature of the mandate given to the PUB by the Province of Newfoundland and Labrador, it is unlikely that the PUB’s ultimate report, if and when it is released, will contain sufficient information to respond to the questions and concerns raised by the Panel regarding alternatives.
45. In addition, even if the PUB’s future report does contain some information responsive to the Panel’s recommended alternatives assessment, there is currently no process for putting the PUB’s report back before the Panel. From my experience in environmental assessment and regulatory review of proposed energy projects, it makes no sense to “parse out” from the Panel’s overall assessment such a fundamental factor as alternatives. Alternatives is a key factor in any

justification analysis of proposed energy projects. Normally, alternatives would be weighed as part of the overall mix of “benefits and burdens” caused by a proposed energy project.

46. From my review of the PUB website, it is apparent that not all of the information considered by the PUB is available to the public. Some exhibits have been redacted before being made public. Furthermore, some of the Proponent’s responses to requests for information have not been made public, even in redacted form. This contrasts with the Joint Panel Review’s process where, to the best of my knowledge, all of the information submitted to the Panel was available to all participants and to the public, through the CEA Registry.
47. From my review of the PUB website and from conversations with Grand Riverkeeper, I have been able to find no indication, to date, that any participant funding will be made available to allow concerned parties to participate fully and effectively in the PUB process. This contrasts with the Joint Review Panel’s process which featured a Participant Funding Program.
48. On January 27, 2012, I printed from the PUB website a list of the publically available exhibits in the PUB Review of Muskrat Falls, as well as a list of the exhibits submitted in the PUB Review of Muskrat Falls which have been abridged and/or redacted to protect confidential information. I located these lists on the PUB website at <http://www.pub.nf.ca/applications/MuskratFalls2011/nalcordocs.htm> and at <http://www.pub.nf.ca/applications/MuskratFalls2011/abridge.htm>. To the best of my knowledge, based on my participation in the Panel’s assessment and my review of the CEA Registry website listing all documents submitted to the Panel during its assessment, only a few of the hundreds of documents on this list were ever provided by the Proponent to the Panel in support of the Proponent’s analysis comparing its preferred Muskrat Falls scenario with its alternative Isolated Island scenario. A copy of this list is attached to this my Affidavit as **Exhibit L**.
49. Based on these facts, not only am I concerned about the artificially narrow mandate given to the PUB, in contrast to that of the Joint Review Panel, but I am concerned that the PUB procedural rights are less than those to which Grand Riverkeeper and other participants were entitled in the

Panel's public hearings. Unlike the Panel, some documents considered by the PUB are kept confidential and it does not appear that there is a participant funding program.

50. I am also concerned that the Proponent has tendered evidence before the PUB that it did not make available to the Panel. I believe that the evidence and documentation provided by the Proponent to the PUB, and the PUB's ultimate report, would contribute to the Panel being able to conclude its assessment of need and alternatives.
51. In addition, as I describe below, the PUB Review of Muskrat Falls has been deprived by the Province of the time that the PUB says it requires to conduct public consultations.
52. On September 22, 2011, the PUB wrote to the Province to advise that it would require an extension of its reporting deadline, fixed in Exhibit K at December 30, 2011. I located this letter on the PUB website at <http://www.pub.nf.ca/applications/MuskratFalls2011/files/corresp/PUB-Letter-Minister-Sept22-11.pdf>. In the letter, the PUB points out that the initial timeframe was ambitious, and that it was already clear that it would not be able to complete the review by year end. It did not at that time request a formal extension, stating that it was unable to provide a realistic alternate date until it had a better idea when Nalcor would provide the information that had been requested. A copy of the PUB's letter of September 22, 2011 is attached to this my Affidavit as **Exhibit M**.
53. In a letter sent on December 12, 2011, the Province responded that it was "imperative that we receive the report by March 31, 2012". I located this letter on the PUB website at <http://www.pub.nf.ca/applications/MuskratFalls2011/files/corresp/Minister-Letter-Dec12-11.pdf>. Rather than give the PUB the time it said it needed, the Province only granted an extension to March 31, 2012. A copy of the Province's letter of December 12, 2011 is attached to this my Affidavit as **Exhibit N**.
54. On December 16, 2011, the PUB again wrote to the Province and made a formal request to extend its reporting deadline to June 30, 2012. I located a copy of this letter on the PUB website

at <http://www.pub.nf.ca/applications/MuskratFalls2011/files/corresp/PUB-Letter-Minister-Dec16-11.pdf>. The PUB sets out a more detailed tentative schedule, which contemplates the filing of Manitoba Hydro International's report by January 27, a Notice of Public Consultation by January 30, 2012, and Public Consultations from April 2-13, 2012. A copy of the PUB's letter of December 16, 2011 is attached to this my Affidavit as **Exhibit O**.

55. Today, on January 31, 2012, I checked the PUB website. There was no indication that Manitoba Hydro International has filed its report, and no Notice of Public Consultation has been posted, as had previously been anticipated by the PUB on December 16, 2011.

56. The PUB's letter of December 16, 2011, at Exhibit O, states in part that:

The reason this extension is necessary is Nalcor's failure to provide the required information in a timely fashion. This review began in June but as of late November Nalcor was still filing significant new information. Between November 10 and November 24, 2011 Nalcor filed its submission as required by the Terms of Reference, a detailed study in relation to reliability, responses to 115 requests for information and 12 additional exhibits.

Given Government's desire to have this review completed in March we have reconsidered the work that remains to be done to see if there are opportunities to make up for the time lost as a result of the late filings by Nalcor. Unfortunately, I must advise that it is not possible for this review to be completed any earlier than the end of June 2012, The full and fair participation of the Consumer Advocate as well as the public hearing required by section 5 of the *Electrical Power Control Act, 1994*, SNL 1994, c. E-5.1 will dictate the schedule until late spring and it is only then that the Board can begin to write its report. (emphasis added)

57. On December 23, 2011, the Province wrote a letter denying the PUB's request. The Province's letter stated that "given that the Terms of Reference are confined to a review of whether Nalcor's proposal represents the least-cost option for the supply of power to island connected customers. Government queries whether all the processes contemplated" by the PUB are necessary. I located a copy of this letter on the PUB website at <http://www.pub.nf.ca/applications/MuskratFalls2011/files/corresp/Minister-Letter-Dec23-11.pdf>. A copy of this letter of December 23, 2011 is attached to this my Affidavit as **Exhibit P**.

58. On January 6, 2012, the PUB wrote a reply letter. The PUB advised that while it would “work towards” the March 30 [sic], 2012 deadline, it has had to revise its planned activities to abridge the process. In particular, the PUB advises that public hearings would now be limited to St. John’s, Newfoundland, and that they may be time-limited. I located this letter on the PUB website at <http://www.pub.nf.ca/applications/MuskratFalls2011/files/corresp/PUB-Letter-Minister-Jan6-12.pdf>. A copy of the PUB’s letter of January 6, 2012 is attached to this my Affidavit as **Exhibit Q**.

2. The Navigant Report

59. In addition to the PUB Review of Muskrat Falls, another “independent” assessment that may be relied on to excuse the Panel’s failure to assess need or alternatives is the Navigant report.

60. On September 15, 2011, the Proponent made public a report by Navigant Consultants. The report reviewed the Proponent’s process and choice in selecting the Muskrat Falls project with the Labrador-Island Link as its preferred option for energy supply to Newfoundland. A copy of the Proponent’s September 15, 2011 Press Release entitled *Nalcor Energy releases independent review of Muskrat Falls development* is attached to this my Affidavit as **Exhibit R**. A copy of the report by Navigant Consultants entitled *Independent Supply Decision Review* is attached to this my Affidavit as **Exhibit S**.

61. This report is identified in Exhibit R, at page 1, as part of the Proponent’s “quality assurance” with respect to Nalcor’s recent decision to pass the project through its “Decision Gate #2”.

62. As indicated in Exhibit S, at page 2, the Proponent retained Navigant to “review the reasonableness of: 1) the long-term island supply options considered by Nalcor; 2) Nalcor’s assumptions associated with island supply options; and 3) the process followed to screen and evaluate the supply options. Navigant was then to provide an opinion on: 1) whether the Interconnected Island alternative represents the least-cost option that also fulfills the additional

criteria requirements of security of supply and reliability, environmental responsibility, and risk and uncertainty; and 2) the accuracy of rate projections.”

63. While Nalcor and Navigant describe this effort as an “independent review,” it is not independent in the same sense as a Panel review is independent. It was conducted a consultant selected by Nalcor and was based on “assumptions, inputs and analysis undertaken by Nalcor” (Exhibit S, page 2).
64. The mandate for the Navigant review does not respond to the Panel’s findings and recommendations at Section 4.2 of its Report, replicated at paragraphs 11-12 of my Affidavit. This mandate, which as noted in paragraph 61 above was limited to reviewing the reasonableness of the long-term island supply options considered by Nalcor, as well as Nalcor’s assumptions associated with island supply options and the process it followed to screen and evaluate these options, is much narrower than the alternatives assessment which the Panel concluded was necessary.
65. In carrying out this mandate, the Navigant report does not respond to most of the questions on alternatives that the Panel identified but did not answer (as I have set out above in paragraph 12 of my Affidavit).
66. Furthermore, it does not incorporate environmental or social externalities and considerations into the analysis (other than greenhouse gas pricing, in a sensitivity analysis, Exhibit S at page 59-60). Specific limitations of the Navigant report include 1) its reliance on a 2004 Nalcor study which found that additional wind power might lead to spilling to eliminate scenarios with higher levels of wind penetration, without evaluating the overall economic implications of such scenarios (pages 23-27); 2) its reliance on an outdated study to limit conservation and demand management (“CDM”), despite the fact that avoided costs have increased greatly (pages 34-37); and 3) its inappropriate exclusion of certain combinations in its sensitivity analyses, such as the combination of greater CDM and additional wind power (pages 62-63).

67. There was no opportunity for me, or for Grand Riverkeeper, other participants or the Panel itself, to identify, consider, challenge or test flawed assumptions in the Navigant report. No process allowed for that. Unlike the Panel's environmental assessment, the Navigant report was created by the Proponent's consultants through an internal process closed to outside participation or comment.
68. No draft of the Navigant report was ever provided to the Panel. The stated inputs for Navigant's review included "all necessary financial and engineering models, reports, and discussions with management and personnel" (Exhibit S, page 15). To the best of my knowledge, no financial or engineering models were shared with or provided to the Panel or its participants.
69. Since the Navigant report was released, university economists have questioned the need for the proposed Lower Churchill Generation Project. For example, the C.D. Howe Institute published a study by Memorial University of Newfoundland economics professor James Feehan concluding that it would be premature to authorize the Muskrat Falls facility without reforms to the Province's electricity pricing regime. A copy of Prof. Feehan's paper entitled *Newfoundland's Electricity Options: Making the Right Choice Requires an Efficient Pricing Regime* is attached to this my Affidavit as **Exhibit T**.
70. In the event that the Panel were reconstituted and directed or requested to assess, provide rationales and make recommendations on the need/rationale for the Project or on alternatives to the Project, Grand Riverkeeper has asked me and I have agreed to provide expert analysis to the Panel, through written and oral testimony. I would also review and, where appropriate, critique the Proponent's information and analysis.

C. The Proponent's closely-related projects were not subject to cumulative effects assessment

71. In addition to its proposed Lower Churchill Generation Project, the Proponent is also proposing what it sometimes refers to as the Lower Churchill Transmission Project (or alternatively, the Labrador-Island Transmission Link Project). The proposed Labrador-Island Transmission Link would link the power generated from the Generation Project in Labrador to the Island of

Newfoundland. Its transmission lines are proposed to traverse Southern Labrador, cross the ocean by subsea cable, and continue through Newfoundland until they connect with the grid.

72. However, the Lower Churchill Transmission Project was not part of the environmental assessment by the Panel. Notably, the Panel did not assess any cumulative environmental effects of the proposed Generation Project in combination with the proposed Transmission Project. Section 16 of the Panel's Report, regarding cumulative effects, is completely silent on any closely-related transmission projects like the Labrador-Island Transmission Link.
73. Thus, the Proponent, Nalcor Energy, is also a proponent of closely-related transmission projects, including the Labrador-Island Transmission Link Project. I have reviewed the portion of the Proponent's website addressing the "Lower Churchill Project." The "home page" for the Lower Churchill Project is <http://www.nalcorenergy.com/lower-churchill-project.asp>. From there, one can link either to a webpage on the Lower Churchill Generation Project, found at <http://nalcorenergy.com/generation-project.asp>, or a webpage on the Lower Churchill Transmission Project, found at <http://nalcorenergy.com/transmission-project.asp>. A copy of the Proponent's "home page" for the Lower Churchill Project, and copies of its webpages for the Generation and Transmission Projects, are together attached to this my Affidavit as **Exhibit U**.
74. As Exhibit U states, the Lower Churchill Project "consists of two sub-projects: Generation and Transmission". The Lower Churchill Generation Project and the Lower Churchill Transmission Project (which the site also refers to as the Labrador-Island Transmission Link Project) are two components of one larger development project known as the Lower Churchill Project.
75. That the Generation Project and transmission projects are closely related is also reflected in the Proponent's Annual Report for 2010. Page 36 of Nalcor's Annual 2010 Report gives a visual representation mapping the Generation Project with all the related transmission projects. A copy of excerpts of Nalcor's Annual 2010 Report is attached to my Affidavit as **Exhibit V**.

76. During the same time that the proposed Lower Churchill Generation Project was going through its assessment, two federal departments responsible for its assessment were also aware of and responsible for the proposed Labrador-Island Transmission Link Project. On November 26, 2009, the original “Notice of Commencement” for a separate screening-level assessment of the proposed Labrador-Island Transmission Link Project was published on the CEA Registry. I located it online at <http://ceaa.gc.ca/050/details-eng.cfm?evaluation=51746&ForceNOC=Y>. Fisheries and Oceans Canada, Transport Canada and Environment Canada are listed as responsible authorities. A copy of the original November 26, 2009 Notice of Commencement for the Labrador-Island Transmission Link Project is attached to this my Affidavit as **Exhibit W**.
77. Exhibit W had to be amended on April 28, 2010, in response to the Supreme Court of Canada’s decision in *MiningWatch v. Canada (Minister of Fisheries and Oceans et al)*. From that date, while the proposed Labrador-Island Transmission Link Project continued to be assessed separately from the related Generation Project, it is now subject to a comprehensive study assessment and not just a screening assessment. I located the amended Notice of Commencement for the Labrador-Island Transmission Link Project published on the CEA Registry at <http://ceaa.gc.ca/050/details-eng.cfm?evaluation=54751&ForceNOC=Y>. A copy of the amended April 28, 2010 Notice of Commencement is attached to this my Affidavit as **Exhibit X**.
78. Natural Resources Canada also acknowledges that the Lower Churchill Generation Project is not a “stand-alone” project. A backgrounder published by Natural Resources Canada on its website, entitled *Lower Churchill Clean Energy Projects*, characterizes the Generation Project as part of the “lower Churchill River projects”. The backgrounder states that “[i]n November 2010, Nalcor Energy, Newfoundland and Labrador’s Crown-owned energy company, and Emera Incorporated of Nova Scotia announced plans to develop the lower Churchill River projects, which consist of a new hydroelectric generating station at Muskrat Falls and three transmission lines.” The three transmission lines stated to form part of the lower Churchill River projects are the Labrador Transmission Interconnection Project, the Labrador-Island Transmission Link Project, and the Maritime Subsea Link Project. This backgrounder is published at <http://www.nrcan.gc.ca/media-room/news-release/2011/77a/1813> and a copy of it is attached to my Affidavit as **Exhibit Y**.

79. Finally, the Province of Newfoundland and Labrador also acknowledges, in information published on its website, that the Muskrat Falls dam and the Labrador-Island Link projects are related. For example, the Province's announcement on June 17, 2011, at Exhibit J, indicates that the PUB will review the Muskrat Falls dam and the Labrador-Island Link transmission line together and assess them against the "Isolated Island" development option.

80. In addition to the need to assess the proposed Labrador-Island Transmission Link and other related transmission projects in a cumulative environmental effects assessment, the alleged economic benefits of and need for the proposed Lower Churchill Generation Project cannot, in my view, be meaningfully or fairly assessed without including the economic cost of power transmission. By excluding the proposed transmission projects from the assessment of the generation project, the economic costs of the generation project can appear to be much less than what they are reasonably anticipated to be. This concern has been echoed by the media in Newfoundland, such as in an article published in the Telegram on January 19, 2012 entitled "Questions Linger around Muskrat". I found an on-line copy of this article on the Telegram's website, at <http://www.thetelegram.com/News/Local/2012-01-19/article-2868171/Questions-linger-around-Musktrat/1>. A copy of this January 19, 2012 Telegram article is attached to this my Affidavit as **Exhibit Z**.

81. I provide this Affidavit in support of Grand Riverkeeper's application for judicial review and for no other or improper purpose.

SOLEMNLY AFFIRMED BEFORE)
ME at the City of Montréal, in the)
Province of Québec, on this 31st)
day of January, 2012)

Philip Raphals