Dr. Michael Binder, President

Canadian Nuclear Safety Commission)

280, rue Slater

Ottawa, Ontario (K1P 5S9

9 August 2011

Re: Request for information regarding CANDU technology and the CNSC decision promoting Gentilly-2 refurbishment

Dear Dr. Michael Binder,

We would like first of all to congratulate you for your induction to the *Telecommunications Hall of Fame* announced on 14 July 2011. The list of numerous important contributions that you have made in the broad field of telecommunications is impressive.

We find particularly noteworthy the fact that your induction into the *Telecommunications Hall of Fame* was under the *Servants of the Public* category. In a different field, we, as representatives of the public, request that you and CNSC staff provide us with additional information concerning CANDU technology and the June 2011 CNSC decision to grant a five-year extension to Hydro-Québec's licence. The fact that this licence explicitly includes the permission to proceed with the refurbishment of the Gentilly-2 CANDU nuclear reactor means that the valley of the Saint Lawrence River, from Montreal to Rimouski, will be exposed to the risk of a severe nuclear accident for the next 25 years.

The series of severe nuclear accidents at Fukushima has clearly shown the scale of the devastation brought about by such accidents. At the present time 35 of the 54 nuclear reactors in Japan are still shut down as a result of the Fukushima nuclear crisis initiated by an earthquake on 11 March 2011. Moreover, the prime minister of Japan, Naoto Kan, has called for a progressive phase-out of nuclear power. In Europe, Germany has also shut down several nuclear reactors and has decided to completely phase out nuclear power by 2022.

In this open letter we want you, CNSC staff, and other public servants, to take note of our strongly held position that Canada would be well-advised to immediately start a phase-out of nuclear power and to invest more vigorously into renewable energy sources. As representatives of the public we request that you and CNSC staff provide us with additional

information on CANDU technology so that the various authorities in charge of nuclear reactors in Canada will make better-informed decisions regarding nuclear power, and will avoid exposing the public to unreasonable risk. Our request here below will be made concrete and very clear through the addition of highlighted numbered questions.

Canadian Nuclear Safety and Control Act of 1997.

As a legal basis for our request to you and to CNSC staff for additional information, we wish to remind you and the public of the exact wording of the Canadian *Nuclear Safety and Control Act of 1997*, which defined the mission of the CNSC. For the purpose of our request, Article 9 of the Act is the most relevant and it is worded thus:

''9. *The objects of the Commission are*

(a) to regulate the development, production and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and prescribed information in order to

(i) prevent unreasonable risk, to the environment and to the health and safety of persons, associated with that development, production, possession or use,
(ii) prevent unreasonable risk to national security associated with that development, production, possession or use, and
(iii) achieve conformity with measures of control and international obligations to which Canada has agreed; and

(b) to disseminate objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects, on the environment and on the health and safety of persons, of the development, production, possession and use referred to in paragraph (a).''

For the purpose of gaining additional information from you and from CNSC staff, in paragraph (a) of the 1997 Act we wish to focus attention on the expression *''prevent unreasonable risk''*, and in paragraph (b) on the firm stipulation for the CNSC's mission:

''to disseminate objective scientific, technical and regulatory information to the public''.

''To prevent unreasonable risk''

On 29 June 2011 the *Canadian Nuclear Safety Commission* (CNSC), which you preside, announced that it was granting Hydro-Québec a 5-year licence renewal that explicitly allows them to go ahead with their Gentilly-2 refurbishment project. What we find most unusual, and most disturbing, about this CNSC decision, is that it was arrived at without the CNSC having in hand the *Safety Analysis Report* that Hydro-Québec was supposed to have submitted by 31 December 2010. The CNSC June 2011 decision explicitly allows Hydro-Québec to submit

their *Safety Analysis Report* by December 31st 2011, that is *six months after* obtaining the go-ahead signal for refurbishment.

Not having this report, which is mandatory under its own regulations, the CNSC in its June document has appealed to Article 7 of the *Nuclear Safety and Control Act of 1997*, which states the following:

‘’***7.*** *The Commission may, in accordance with the regulations, exempt any activity, person, class of person or quantity of a nuclear substance, temporarily or permanently, from the application of this Act or the regulations or any provision thereof.”*

It would seem to us that recourse to Article 7 by the CNSC would normally require exceptional circumstances, such as we are now observing in Fukushima. In the absence of such exceptional circumstances, we submit to you the following questions:

Question # 1: What are the exceptional circumstances in Canada that justify the CNSC’s having recourse to Article 7 to exempt Hydro-Québec from submitting in time its *Safety Analysis Report*?

Question # 2: Given that refurbishment would impose on the public the risk of a nuclear accident over a period potentially as long as 30 years, isn’t the CNSC acting diametrically against the spirit of the *Nuclear Safety and Control Act of 1997* by granting to Hydro-Québec the permission to go ahead without having in hand the *Safety Analysis Report*?

Article 7 of the Act of 1997 may allow the CNSC to exempt a party in special circumstances, but it does not stipulate that the CNSC is allowed to act *against* the spirit of the *Nuclear Safety and Control Act of 1997*.

Question # 3: Given that the CNSC’s abundant archived documentation shows that CNSC staff has been working closely with Hydro-Québec on refurbishment plans, why doesn’t the CNSC divulge to the public the problems that have prevented Hydro-Québec from delivering in time its *Safety Analysis Report*? According to CNSC documents, this safety report was in fact due in December 2008 but it had been delayed to December 2010 following a request by Hydro-Québec.

What information is withheld from CNSC staff’s scrutiny, and from the Canadian public, by allowing Hydro-Québec to delay the submission of its *Safety Analysis Report* until December 2011?

Question # 4: Is there not *an unknown and possibly unreasonable risk* imposed on the public by the CNSC's granting permission for refurbishment without having received and thoroughly analyzed Hydro-Québec's *Safety Analysis Report*?

Additional point: In the CNSC document accompanying the June 2011 decision entitled ''*Record of Proceedings, Including Reasons for the Decision*'' we noted in section 8 the following statement:

''*The Commission strongly expects Hydro-Québec to begin refurbishment activities as soon as possible if this option is pursued."*

In view of this statement we ask the following question:

Question # 5: Isn't there an unreasonable risk imposed on the public by encouraging Hydro-Québec to proceed with refurbishment *as soon as possible* without knowing the design modifications that Hydro-Québec will bring into the refurbishment and that will presumably be described in the *Safety Analysis Report* ?

The most elementary prudence calls for subjecting design modifications to rigorous testing, as a minimum with the help of computer simulation software. By invoking Article 7 of the *Nuclear Safety and Control Act* of 1997 isn't the CNSC encouraging Hydro-Québec to cut corners in matters of nuclear safety?

Rejection of Ontario Power Generation's *Safety Analysis Safety Factors Report* by the CNSC on 7 April 2008

In early 2008 *Ontario Power Generation* (OPG, somewhat similar to Hydro-Québec) was considering the possibility of refurbishing a few years later the four CANDU nuclear reactors at its Pickering B nuclear power plant near Toronto. OPG had submitted to the CNSC its *Safety Analysis Safety Factors Report,* which is part of the *Integrated Safety Review (ISR)* required by the CNSC *prior to* granting permission to refurbish. On 7 April 2008 CNSC's T.E. Schaubel wrote a letter to OPG's vice-president Patrick McNeil informing him that their *Safety Analysis Safety Factors Report* was rejected.

Most important to the question of CANDU safety was a 45-page annex to T.E. Schaubel's April 2008 letter which explained the numerous technical safety issues that affect all CANDU reactors and that had been inadequately dealt with in OPG's safety report (see CNSC document E-DOCS # 3232348 / 2.01). Three important safety issues were the following:

-1- the CANDU's *positive coolant void reactivity coefficient* which increases the probability of a partial core meltdown in the event of a large loss of coolant accident (LOCA) due to a sudden break in the high pressure tubes;

-2- the gradual *build-up of damage to the uranium fuel* in the high pressure tubes with attendant impairment of the cooling geometry;

-3- *uncertainties in the physics models and nuclear reactor simulation software in case of accidents involving broken and/or melted down tubes*.

One year later, in August 2009, the CNSC completed an exhaustive 268-page report entitled: *''Application of the CNSC Risk-informed Decision Making Process to Category 3 CANDU Safety Issues"* (this report is identified at the CNSC as E-Doc # 3413831). The first paragraph of the Executive Summary describes the present CANDU situation in a nutshell:

''Regulatory and industry experience with operating CANDU reactors has led to the identification of several generic Safety Issues. Despite continuing efforts directed at ensuring and enhancing safety of operating plants, these Safety Issues remain at various stages of resolution."

This situation leads us to ask the following questions:

Question # 6: Why is it that the numerous safety issues that plague CANDU reactors were reason enough for the CNSC to reject OPG's safety report in April 2008, whereas essentially the same safety issues were simply ignored by the CNSC by having recourse to Article 7 in their June 2011 decision regarding Gentilly-2 refurbishment?

OPG's decision in February 2010 not to refurbish Pickering B

In February 2011 *Ontario Power Generation* announced that they had decided not to refurbish their four reactors at Pickering B. In its announcement OPG said that they judged refurbishment to be uneconomic. In view of the aforementioned rejection of a safety report in April 2008, it would be plausible to assume that the unresolved safety issues with CANDU technology also played a role in the OPG decision. In view of the collaborative work of OPG with CNSC staff, we request from the CNSC an answer to the following question:

Question # 7: In CNSC's opinion what were the safety issues that OPG nuclear engineers had the most difficulties with, regarding Pickering B refurbishment, and what evidence does the CNSC have that Hydro-Québec will be able to resolve these safety issues in refurbishing Gentilly-2?

Paragraph (b): *''to disseminate objective scientific, technical and regulatory information to the public''*.

Paragraph (b) of the *Nuclear Safety and Control Act of 1997* stipulates very clearly that the CNSC must inform the public in an *objective scientific* way. A letter on that topic was addressed on 6 December 2010 to CNSC president Dr. Michael Binder and to Director General Dr. Greg Rzentkowski. This letter, which was cosigned by 36 persons, urged the CNSC to fully respect the *Nuclear Safety and Control Act of 1997* by informing the Canadian public. This letter, which has yet to be replied to by Dr. Binder and Dr. Rzentkowski, pointed out that the Canadian public has not been adequately informed on the several safety issues plaguing CANDU nuclear reactors. As an example, the title of the CNSC Annual Report 2009-2010 states in upper case letters: ''FACT: NUCLEAR IN CANADA IS SAFE''. This report had almost nothing in it to alert Canadians to the safety issues facing CANDU technology. The overly optimistic title of the report is not a scientifically objective fact, but merely the opinion of a small minority of Canadians.

The title of the French version of the CNSC annual report is even more striking. It is ''FAIT: LE NUCLÉAIRE AU CANADA EST SANS DANGER''. To state that nuclear power is ''without danger'' does not reflect the scientific approach whose primary basis is experimental data. More than 100 000 persons in Europe and Asia have already died and/or will die as a result of premature cancers caused by radioactive elements released into the northern hemisphere by the 1986 Chernobyl catastrophe.

Realistic studies have shown that a severe accident in any nuclear reactor can lead to large releases of radioactive elements in the environment and severely impair the health of thousands of people. Following the Fukushima nuclear catastrophe, the CNSC has wisely set up a special committee headed by Dr. Greg Rzentkowski in order to draw lessons from Fukushima. In that committee's mission statement (see the CNSC web site) the CNSC has officially recognized that a severe accident could take place in a CANDU nuclear reactor leading to releases of radioactive elements into the environment. The possibility of a severe accident had also been described in hundreds of pages of technical CNSC documentation that are generally read by only a small number of Canadians. The broad Canadian public has yet to be informed of the large risks presented by CANDU technology.

The well-researched article by author Elaine Dewar in the *Canadian National Geographic* in May/June 2005 was an excellent first attempt at informing the broad Canadian public of the problems with CANDU technology. Elaine Dewar had interviewed former *Ontario Hydro* president Allan Kupcis, who held a doctorate in materials science from the University of Toronto and Oxford. In 1994, concerned with the safety issues and the frequent shutdowns of CANDU reactors, Allan Kupcis had hired American nuclear engineer Carl Andognini and his team to carry out an independent review of nuclear power in Ontario.

Elaine Dewar wrote the following about Allan Kupcis and what Andognini's American team had written in their 1997 report:

''His nightmare had been that the safety margins had all but disappeared. But the team found all Ontario's reactors to be minimally acceptable – the lowest rating before mandatory shutdown."

In 1997, following Andognini's recommendation, Ontario shut down 7 of its 13 reactors then in operation. Since that time, two reactors at the Pickering A nuclear power plant near Toronto have been permanently shut down and two have been refurbished for a second time. Their performance has been relatively poor. The CNSC documentation includes statements to the effect that poor performance may be associated with a lower safety level.

Moving ahead in time, the Canadian public was informed by an article in the *Globe and Mail* on 29 June 2009 about the safety issues connected with the CANDU's *positive coolant void reactivity coefficient* mentioned earlier. Journalist Martin Mittelstaedt had interviewed Dr. Greg Rzentkowski, Director General at the CNSC, and had learned from him the practical consequences of this basic design weakness of CANDU reactors. Quoting Mittelstaedt:

''Mr. Rzentkowski said the commission would consider ordering the stations to run at less than full power if safety margins shrink to unacceptable levels, with the Pickering and Darlington reactors in Ontario the first to be considered for such output cuts."

In this connection, we note that the Bruce A reactors in Kincardine, Ontario, have been ordered by the CNSC to run at 93% of their nominal power because of this safety issue. Martin Mittelstaedt's article explained that aging of reactor components continually reduces the safety margins, something that is well documented by the CNSC in several reports.

This brief historic review leads us to ask you and CNSC staff the following question:

Question # 8: Given that you possess considerable knowledge concerning the many safety issues plaguing CANDU reactors, what prevents you from disclosing them fully to the public? Nuclear secrecy only increases distrust.

The CANDU division of Atomic Energy Canada Limited (AECL) has now been sold to SNC-Lavalin, so that you should be free to fully respect paragraph (b) of the *Nuclear Safety and Control Act* of 1997. Why doesn't the CNSC fully accomplish its mission of *disseminating objective scientific information* on all nuclear matters?

Earthquake threats to nuclear reactors

One of the earthquake references that was consulted for this section is an article written by M. Lamontagne, S. Halchuk, J.F. Cassidy and G.C. Rogers in the journal *Seismological Research letters, Volume 79, Number 2, pp. 211-223, March/April 2008*. Dr. Maurice Lamontagne, who works for *Natural Resources Canada*, had been invited by the CNSC to present a report at Day 2 of the Gentilly-2 public hearing on 13 April 2011 in Bécancour. We have also benefitted from information available on the web site of the federal *Geological Survey of Canada*.

Everybody is familiar with the broad extent of nuclear secrecy, which was born with atomic bomb development during World War II and during the following cold war. The most important current secrecy item is possibly the level of nuclear pre-tsunami damage that was caused by the magnitude 9 Tohoku earthquake that hit Japan, and Fukushima in particular, on 11 March 2011. Recent reports of pre-tsunami damage (see the 2 July 2011 article by Adelstein and McNeill at web site http://www.theatlanticwire.com/global/2011/07/meltdown-what-really-happened-fukushima/39541/) reveal that the powerful 9-Richter scale earthquake broke pipes in Fukushima and probably contributed to initiating the core meltdowns well before the tsunami flooded the emergency Diesel generators some 40 minutes after the quake.

Such a revelation is a sharp warning sign for Canada. The eastern part of Canada has been subjected to significant earthquakes over the last four centuries of recorded history. In this respect, the most vulnerable reactors appear to be Point Lepreau in New Brunswick and Gentilly-2 in Québec.

Passamaquoddy Bay, 35 kilometers from Point Lepreau, was shaken by a 5.9-Richter scale earthquake in 1904. In 1929 a 7.2-Richter scale earthquake off the coast of **Newfoundland** gave rise to a tsunami that drowned 27 people. In 1982 a 5.8-Richter scale earthquake hit **Miramichi Highlands** in New Brunswick, causing hairline cracks in buildings up to 100 km away. A ‘’hairline crack’’ may not seem like much, until one recalls that in August 1983 a high-pressure zirconium-niobium alloy tube spontaneously ruptured over a 2-meter length in the Pickering-2 CANDU reactor near Toronto. It has been amply documented by the CNSC that neutron bombardment and corrosion phenomena gradually weaken and embrittle high pressure tubes in CANDU reactors, which is the main reason for retubing and refurbishing these reactors after 15-30 years.

In nuclear reactors, because of the very high water pressure (100 atmospheres, the pressure at one-kilometer depth in the ocean) an earthquake-added hairline crack in a pressure tube could be all that is required to cause it to burst. CNSC staff has often

expressed concern over the growth of microscopic fractures in high pressure tubes. Earthquake-added cracks and stress could lead to the sudden rupture of pressure tubes.

Regarding Gentilly-2 the record of significant earthquakes is as follows. In 1925 a 6.2-Richter scale earthquake originated in the **Charlevoix-Kamouraska** region and damaged buildings in Québec City and in Trois-Rivières, which faces the Gentilly-2 nuclear power plant across the Saint-Lawrence river. In 1935 a 6.1-Richter scale earthquake occurred in **Temiscaming** in south-western Québec. In 1988 a 5.9-Richter scale earthquake originated in the **Saguenay** region and caused damage to unreinforced masonry as far as Montreal-East.

Invited by the CNSC, Dr. Maurice Lamontagne gave an interesting tutorial at the CNSC Day 2 hearing in Bécancour on 13 April 2011. He did not however make any direct prediction of earthquake magnitude and probability for Gentilly-2 in Bécancour, nor did he mention what type of damage could be expected. However, other earthquake experts have asserted that earthquakes are fundamentally unpredictable, the reason being that the precise geometry of the earth's crust is not well known, nor the pattern of forces at work.

At the April hearing of the CNSC in Bécancour, Mr. François Rinfret, who at the CNSC is responsible for the safety of Gentilly-2 power plant said the following:

''Cependant, il serait correct dans le but de rassurer la population de mentionner que la centrale résisterait à un séisme d'environ magnitude 7 à une distance épicentre de 44 kilomètres et 15 kilomètres sous la surface par exemple.''

Resistance to a 7-Richter scale earthquake for Gentilly-2 might be considered *''reassuring"* to some parts of the public, in spite of the fact that the historical record of 6.2-Richter scale does not preclude a 7-Richter scale earthquake. What is not reassuring, however, is the level of damage that can be caused by an earthquake, even if moderate, to high-pressure tubes that have been weakened by neutron bombardment and corrosion phenomena. On 22 February 2011 a 6.3-Richter scale earthquake took place in New Zealand not far from the town of Christchurch, killing 181 persons and causing considerable physical damage.

These considerations lead us to ask you and CNSC staff:

Question # 9: What data are available to the CNSC on the resistance of eroded high pressure tubes in nuclear reactors? What is the probability that a 6-Richter scale earthquake could cause such tubes to rupture?

What were the reasons for the failure of Gentilly-1?

The nuclear field has been characterized by numerous failures at the level of physical hardware and at the level of theoretical understanding. The latter is embedded in two intellectual building blocks: reactor physics models and computer simulation software. These two building blocks play a dominant role in nuclear reactor design and operation. Until year 2000 it had been a long-held assumption that these two building blocks had been fairly adequate. Evidence to the contrary could have been seen in the fact that the combination of these two building blocks had failed in the design and operation of the Gentilly-1 nuclear reactor in Bécancour over the period 1971-1979. Over this period the reactor had functioned only 180 days and had proved to be dangerously unstable.

In its review of the 50-year history of nuclear power in Canada (see http://www.cna.ca/curriculum/cna_can_nuc_hist/nuclear_canada-eng.asp?bc=Nuclear%20Power%20in%20Canada&pid=Nuclear%20Power%20in%20Canada) the *Canadian Nuclear Association* wrote the following brief note about Gentilly-1:

‘’*In 1971, the 250 MW Gentilly-1, a prototype reactor, came into operation near Trois-Rivières on the south shore of the St. Lawrence River. Built and owned by AECL and operated by Hydro-Québec staff, the reactor had design and operational problems and was not economical. It was taken out of service in 1979.* ‘’

In addition to questioning the wisdom of building a prototype reactor near populated areas, one will note that during the same period all of the following nuclear power plants were in the design and/or construction phase: Gentilly-2, Point Lepreau, Pickering B, Bruce A and Bruce B, the last three comprising four CANDU reactors each. Gentilly-1 suffered from a dangerous weakness in its design which we mentioned earlier, namely its *positive coolant void reactivity coefficient*. All CANDU reactors are affected by this dangerous design weakness.

In view of the worrisome weakness of the modeling physics and nuclear reactor simulation software used by the nuclear sector in the sixties and seventies, one may legitimately question whether the design and operation of these CANDU reactors have been adequately optimized with respect to safety. The CNSC has recognized that reactor physics models and computer simulation software prior to year 2000 had serious weaknesses (see in particular CNSC document E-DOCS # 3232348 / 2.01, Schaubel’s 7 April 2008 letter).

In view of this worrisome state of affairs, we ask you and CNSC staff the following question:

Question # 10: Using the more modern CANDU physics models and simulation software, has CNSC staff analyzed the reasons for the failure of Gentilly-1 and applied the lessons learned to the modifications that should now be incorporated into CANDU refurbishments in order to meet the best international safety standards? What are the lessons that have been learned from the failure of Gentilly-1?

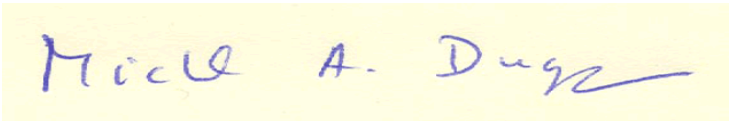
Conclusion.

We are expecting answers from you and from CNSC staff by October first 2011, hopefully before *Premier ministre Jean Charest* and his administration decide to go ahead or not – having in hand all relevant information – with the Gentilly-2 refurbishment project.

Dr Greg Rzentkowski, Director General at the CNSC, had suggested in early July a meeting with us in order to discuss important issues regarding nuclear power. We are open to meeting with you and CNSC staff to discuss the safety issues mentioned in this letter.

We thank you for your attention and extend to you and to CNSC staff our best regards.

Sincerely,



Michel Duguay, PhD in nuclear Physics, Professor in the Département de génie électrique et génie informatique, Université Laval.

Spokesperson for *Mouvement Sortons le Québec du Nucléaire* (MSQN)

Bur : (418) 656-3557 - Portable : (418) 802-2740

Cosignatories (71) : Adair Leticia (Council of Canadians, Saint John chapter), Bélisle André (AQLPA), Bois Sébastien (CMDN), Bombardier Yvan (La Famille), Bonneau Eugenie C. (Les AmiEs de la terre du Québec), Breton Daniel (MCN21), Chatillon Jean (Artiste – Bécancour), Coburn Stéphanie (Conservation Council N-B), Cyr Jean-Claude (Ste-Thècle), Dagenais Jacques (Montréal), Doucet Marie-France (Epsilon La Pocatière), Duchesne Robert (MSQN), Duguay Mary (Montréal), Dumas Alain (Économiste, Coalition verte Trois-Rivières), Dworkind Michael (PSSM), Ennis Dan (The Wolastoqewiyik trad. Council of Tobic), Fafard Marc (SISUR), Ferland Éric (Groupe écosphère), Flatt Sharon (Nuclear-free

New Brunswick), Foisy Pierre (Québec Solidaire-Mauricie), Fugère Michel (MVM), Gagnon Rose-Anne (Québec), Gauthier Yves (Euréko), Gauthier Jean-François(CMDN), Gauthier Raymond (Iles/Madeleine), Gingras Isabelle, Md (Sept-Îles), Giroul Philippe (MSQN), Gretchen Fitzgerald (Sierra Club Atlantic N-B.), Harley Mary Lou (Green Party of Nova Scotia), Jasmin Pierre (APLP), Jetté Marcel (Trav.Vict.Nucléaire), Julien Pierre-André (UQTR), Karon Alain (Organisme Jeunéthiquement Modifié, Lachapelle François A. (Retraité H-Q), Lack Larry (Sierra Club Atlantic N-B.), Laliberté Brigitte (enseignante), Lamothe Hélène (CMDN), Lambert Pierre (MSQN), Lanouette Diane (Champlain), Lapierre François (APEHL), Lapointe Ugo (QMM), Larose Gérald (UQAM), L'Homme Denis (Ex-sous-ministre/Énergie - MRNF Qc), Leblanc Jacinthe (R.Q.G.E,), Lemieux Julie (Écrivaine), Levasseur Jacques MD (APPEL), MacDougall Jack (Green Party of New Brunswick), Mayrand Karel (Fondation SUZUKI), Mélançon Carmen (Ligue des Citoyens du Secteur Beaurivage Shawinigan), Nolan Willy (IICPH), Notebaert Éric,MD (PSSM+ACMD), Nourry Diane(Bécancour), Piché Claudette (Ste-Thècle), Primeau Daniel-Jean (APLP), Proulx Jean-Yves (AREQ-Maurice), Rés.Environ.Nouveau-Brunswick, Robichaud Dawn (New-Brunswick), Romey (New-Brunswick) , Rouse Chris (Conservation Council Bay of Fundy), Roy Julie (USherbrooke), Ruest Gaëtan (RMQ-FÉSA), Saint-Pierre Carolane (cinéaste), Saladzius Alain (Fondation Rivières), Sauvé Lucie (CRC-Éd.Rel.Env UQAM), Stone Iwaassa Raymond (Conseil Traditionnel Mohawk), Louise Vandelac (ISE-UQAM), Veilleux Jean-François (Étud. UQTR), Pierre Veronneau (AQLPA / VERTECH), Ward Lee Ann (Sierra Club Atlantic N-B.), Waridel Laure (Éco-sociologue)

Copie conforme à :

Monsieur Stephen Harper, Premier Ministre du Canada ,

Monsieur Joe Oliver, Ministre des Ressources naturelles du Canada,

Monsieur Peter Kent ,Ministre de l'environnement du Canada,

Madame Leona Aglukkaq, Ministre de la Santé du Canada,

Monsieur Vic Toews, Ministre de la sécurité publique du Canada,

Monsieur Peter Penashue, Ministre des affaires intergouvernementales du Canada,

Monsieur Christian Paradis, Ministre de l'industrie du Canada,

Madame Nycole Turmel , Nouveau Parti démocratique,

Monsieur Bob Ray, Parti libéral du Canada,

Monsieur Louis Plamondon, Bloc Québécois,

Madame Élisabeth May, Parti Vert du Canada,

Monsieur Jean Charest, Premier ministre du Québec,

Madame Nathalie Normandeau, Ministre des Ressources naturelles du Québec,

Monsieur Pierre Arcand, Ministre de l'environnement du Québec,

Monsieur Yves Bolduc, Ministre de la Santé du Québec,

Monsieur Pierre Moreau, Ministre des affaires intergouvernementale du Québec ,

Monsieur Robert Dutiil, Ministre de la sécurité publique du Québec,

Monsieur Clément Gignac, Ministre du développement économique, l'innovation et l'exportation,

Madame Pauline Marois , Parti Québécois,

Monsieur Amir Khadir, Québec Solidaire,

Monsieur Gérad Deltell, Action démocratique du Québec,

Monsieur Claude Sabourin, Parti Vert du Québec,

Monsieur Jean-Martin Aussant, Indépendant,

Monsieur Bernard Généreux, Président de la Fédération québécoise des municipalités,

Monsieur Éric Forest, Président de l'Union des Municipalités du Québec,

Personnel et commissaires de la CCSN : Michael Binder. Jacques Lavoie, Ramzi Jammal, Terry Jamieson, Gordon White, Greg Rzentkowski, Peter Elder, André Régimbald, Barclay Howden, Patsy Thompson, Raoul Awad, Kathleen Heppell-Masys, Gerry Frappier, Mark Dallaire, Jason Cameron, Sunni Locatelli, Michel Cavallin, Natalie Harrington, Stéphane Cyr, Hugh Robertson, Marc Leblanc, Ronald J. Barriault, Jocelyne Beaudet, Alan R. Graham, André Harvey, J. Moyra J. McDill, Ken Pereira, Dan D. Tolgyesi,

Hydro-Québec : Michael L. Turcotte, Thierry Vandal, Louise Pelletier.