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Coalition for **Responsible Energy Development** In New Brunswick

JOINT SUBMISSION BY THE COALITION FOR RESPONSIBLE ENERGY DEVELOPMENT IN NEW BRUNSWICK AND THE CANADIAN ENVIRONMENTAL LAW ASSOCIATION TO THE CANADIAN NUCLEAR SAFETY COMMISSION REGARDING THE RENEWAL OF THE POINT LEPREAU NUCLEAR GENERATING STATION POWER REACTOR OPERATING LICENCE

Hearing Reference: 2022-H-02

Prepared by:
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March 28, 2022

March 28, 2022

Senior Tribunal Officer, Secretariat
Canadian Nuclear Safety Commission
280 Slater Street, P.O. Box 1046, Station B
Ottawa, Ontario K1P 5S9

Sent by email interventions@cnsc-ccsn.gc.ca

Dear Sir or Madam:

Re: Joint Submission of the Coalition for Responsible Energy Development in New Brunswick and the Canadian Environmental Law Association to the Canadian Nuclear Safety Commission Regarding the Renewal of the Point Lepreau Nuclear Generating Station Power Reactor Operating Licence (Ref. 2022-H-02)

The Coalition for Responsible Energy Development in New Brunswick ("CRED-NB") and the Canadian Environmental Law Association ("CELA") have enclosed their comments on NB Power's Application to renew the Point Lepreau Nuclear Generating Station Power Reactor Operating Licence. Please find below our joint submission for your review.

By this letter, and pursuant to the CNSC's *Rules of Procedure*, CRED-NB and CELA request status to participate as an intervenor in the public hearing and an opportunity to make a 30-minute oral presentation at the May 2022 hearing.

Sincerely,

COALITION FOR RESPONSIBLE ENERGY DEVELOPMENT IN NEW BRUNSWICK
CANADIAN ENVIRONMENTAL LAW ASSOCIATION

Gail Wylie
Representative, CRED-NB

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Executive Director and Legal Counsel, CELA

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I. INTRODUCTION

The Coalition for Responsible Energy Development in New Brunswick ("CRED-NB") together with the Canadian Environmental Law Association ("CELA") submit this intervention in response to the Canadian Nuclear Safety Commission's ("CNSC") Revised Notice of Public Hearing dated October 13, 2021 requesting comments on the application by New Brunswick Power Corporation ("NB Power") to renew its licence for the Point Lepreau Nuclear Generating Station (hereinafter "Point Lepreau") for a period of 25 years. A public hearing with respect to this matter is scheduled for May 11-12, 2022.

CRED-NB and CELA's (hereinafter "the intervenors") intervention considers the CNSC's jurisdiction pursuant to the *Nuclear Safety and Control Act* ("NSCA"), which requires that in making a licensing decision, the CNSC ensure the adequate protection of the environment and human health. In meeting this objective, per section 24(4) of the *NSCA*, the intervenors' findings and concerns are itemized below. Our recommendations, including suggested licence conditions and licence condition revisions, are summarized in **Appendix A**.

II. INTEREST AND EXPERTISE OF THE INTERVENORS

A. Coalition for Responsible Energy Development in New Brunswick

CRED-NB is comprised of 10 citizen groups who form CRED-NB's core coalition, and are supported by an additional 10 groups and businesses, and more than 100 individuals from across New Brunswick who have signed a public statement in support of CRED-NB's core objectives. **Appendix B** includes a list of all CRED-NB members and champions, which is also publicly available on their website.[1]

CRED-NB advocates for responsible, renewable, nuclear-free energy development in New Brunswick that will address the climate crisis. CRED-NB represents citizens groups and individuals living across New Brunswick who will all be directly affected by the proposed licence renewal for Point Lepreau and who have concerns about the health, safety and environmental impacts of such a renewal.

B. Canadian Environmental Law Association

CELA is a non-profit, public interest law organization. CELA is funded by Legal Aid Ontario as a speciality legal clinic to provide equitable access to justice to those otherwise unable to afford representation for environmental injustices. For nearly 50 years, CELA has used legal tools to

[1] Online: https://crednb.ca/about

advance the public interest, through advocacy and law reform, in order to increase environmental protection and safeguard communities across Canada.

CELA has been involved in number of nuclear facility licensing and regulatory matters before the CNSC including federal environmental assessments. CELA also maintains an extensive library of public legal education materials related to Canada's nuclear sector on its website.[2]

C. Dr. M. V. Ramana

Expert review of Part V of this submission was provided by M. V. Ramana, Professor and Simons Chair in Disarmament, Global and Human Security at the School of Public Policy and Global Affairs ("SPPGA"), University of British Columbia. M. V. Ramana has extensive knowledge and expertise in various risks associated with nuclear reactors and accompanying adverse environmental effects. He has published numerous papers and reports on these topics in many outlets. [3]

III. BACKGROUND/FACTS

A. Project

The Point Lepreau Nuclear Generating Station ("Point Lepreau") is owned and operated by New Brunswick Power Corporation ("NB Power"). The station is located on the Lepreau Peninsula in New Brunswick ("NB"), 40 km southwest of Saint John, NB. The province of Nova Scotia is 63 kms south of the facility across the Bay of Fundy; the province of Prince Edward Island is 252 kms northeast of the facility; the province of Quebec is 313 kms northwest of the facility; and the state of Maine, USA, is 44 kms southwest of the facility.[4]

Point Lepreau consists of a single CANDU-6 pressurized heavy water reactor which has a total installed capacity of 705 megawatts electrical (MWe)[5] and thermal capacity of 2180 (MW_t).[6] Point Lepreau underwent a refurbishment in 2008 to increase its operating life to at least 2032 and was returned to service in 2012.[7]

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[2] Canadian Environmental Law Association, online: www.cela.ca
[3] Online: https://sppga.ubc.ca/profile/m-v-ramana/
[4] New Brunswick Emergency Measures Organization, "Point Lepreau Nuclear Off-Site Emergency Plan" (June 2021) at s 2.3.1 [**Emergency Plan**].
[5] CNSC Staff, CMD 22-H2 at p 4 [**CNSC Staff CMD**].
[6] IAEA, "Power Reactor Information System – Point Lepreau: Operational" (2022), online: https://pris.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=37
[7] New Brunswick Power, "Point Lepreau Nuclear Generating Station Environmental Risk Assessment: Human Health and Ecological Risk Assessment Update," (May 2021) at pp 2-4 [**ERA**].

In addition to the reactor, the Point Lepreau site and scope of the current licence includes the Solid Radioactive Waste Management Facility ("SRWMF").[8] The SRWMF is used for the storage of solid radioactive waste, including nuclear spent fuel, produced at the Point Lepreau site.[9]

In June 2021, NB Power submitted an application for the renewal of the Point Lepreau Power Reactor Operating Licence ("licence") for 25-years (from July 1, 2022 to June 30, 2047).[10] The current 5-year licence for Point Lepreau expires on June 30, 2022.

In December 2021, CNSC Staff submitted their Commission Member Document ("CMD") to the CNSC, recommending that the licence be renewed for a period of twenty years, from July 1, 2022 to June 30, 2042.[11]

B. Scope of Review

The intervenors received participant funding to review NB Power's licence renewal application and related documentation, including NB Power and CNSC Commission Member Documents ("CMDs"), with a focus on the environment and human health, public awareness and dissemination of information, emergency planning, and relevant international guidance, in order to make recommendations aimed at improving licence and licence condition handbook ("LCH") parameters specific to environmental protection, public awareness and human health. Our recommendations to the CNSC, including suggested licence conditions and licence condition revisions, are summarized at **Appendix A.**

CRED-NB and CELA's findings and recommendations, below, aim to advance the object of the CNSC[12] and are directly relevant to the CNCS's licensing powers under section 24(4) of the *NSCA*

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[8] CNSC Staff CMD at p 4.
[9] *Ibid*.
[10] New Brunswick Power, "Point Lepreau Nuclear Generating Station: Application to Renew the PLNGS Power Reactor Operating Licence" (June 2021) [**Licence Application**].
[11] CNSC Staff CMD at p 2.
[12] The objects of the CNSC are set out in Section 9 of the NSCA as follows:

(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).

to ensure the applicant will "make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed."[13]

C. Disclaimer

This submission by CRED-NB and CELA is not an endorsement of the CNSC's hearing process, its independence as a regulator, or its outcomes. To the contrary, the intervenors submit there is a need for legislative review of the *NSCA* in order to increase the CNSC's regulatory independence.[14]

IV. PRELIMINARY MATTERS & PROCEDURAL CONCERNS

A. Pre-hearing procedures should be adopted

The intervenors submit that the CNSC ought to adopt pre-hearing procedures to aid in characterizing the licence request and relevant issues. We are not aware of any process which sought to define the issues before the CNSC at this licensing hearing. Thus, we submit our comments provided within this intervention are directly relevant to the proceeding and within the scope of the CNSC Staff's and Commissioners' review. To clarify the scope of this hearing, the intervenors **recommend** the CNSC conduct a pre-meeting conference or discussion, which seeks input on issues to be discussed.

Preliminary meetings are a widely used practice in anticipation of tribunal proceedings.[15] Not only would the CNSC, as a quasi-judicial tribunal, benefit from a pre-meeting conference, whereby the scope of the proceeding could be narrowed or expanded, upon input from the regulator, proponent, and intervenors, it would provide demonstrably clearer guidance to intervenors regarding the acceptability of their submissions.

Issue identification is critically important, not only to ensure the efficient and best use of intervening parties' time, but to ensure matters of critical importance are not deemed out of scope and thus dismissed. While issue identification can require a significant amount of time, a clearer

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[13] NSCA at s 24(4).

[14] The *Convention on Nuclear Safety* requires that all Contracting Parties (including Canada) take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy; *See also* Blaise K., McClenaghan T., Lindgren R. (2019) Nuclear Law, Oversight and Regulation: Seeking Public Dialogue and Democratic Transparency in Canada. In: Black-Branch J., Fleck D. (eds) Nuclear Non-Proliferation in International Law - Volume IV. T.M.C. Asser Press, The Hague. https://doi.org/10.1007/978-94-6265-267-5_12; CELA letter to Prime Minister Trudeau re: CNSC oversight (2021), online: https://cela.ca/wp-content/uploads/2022/01/CNSC_Oversight_22NOV21.pdf.

[15] Jerry DeMarco and Paul Muldoon, *Environmental Boards and Tribunals – A Practical Guide*, 2 ed (LexisNexis: 2016) at p 78.

sense of the issues and providing the public an opportunity to comment advances procedural fairness. Therefore, as there has not been a public scoping of issues, whereby the CNSC staff, licensees and intervenors can weigh in on the issues which should frame the report, we submit CRED-NB and CELA's comments provided herein are not out of scope.

Recommendation No. 1: The CNCS should provide a pre-hearing opportunity where CNSC Staff, licensees and intervenors alike can weigh in on the issues which should frame the licensing hearing and accompanying documents. Given the trend to longer licences, soliciting public comment on the scope of issues which they believe are critical, would provide a starting point for early public engagement.

B. Transparency and disclosure of documents must be a priority in all licensing hearings

i. Environmental justice and public disclosure

On January 10, 2022, the intervenors requested some of the key documents referenced in CNSC Staff's and NB Power's CMDs including:

- NB Power's Thermal Plume Assessment (received Jan 24, 2022)
- NB Power's Hazard Screen (received March 12, 2022)
- NB Power's Evacuation Time Estimate Study (received Jan 26, 2022)
- NB Power's Preliminary Decommissioning Plan and Decommissioning Cost Estimate (received January 24, 2022)

While CRED-NB and CELA appreciate the efforts of CNSC Staff to promptly respond to information requests and questions received leading up to this hearing, unfortunately, we submit that proactive disclosure of data is preferred to piecemeal, individual responses. In other words, the documents relied upon in NB Power's and CNSC Staff's CMDs ought to be publicly available by default and not available by request only.

In many prior submissions to the CNSC, CELA has requested the CNSC direct the public release of studies and assessments relied upon by proponents in their licence application.[16] We again bring this concern to the attention of the CNSC and **request** that that all studies referenced in the licence

[16] *See for instance*: Durham Nuclear Awareness Submission to CNSC for the Application to Renew OPG's licence for the Darlington Nuclear Generating Station (CMD 15-H8.29) at 6; Durham Nuclear Awareness and CELA Submission to CNSC for the Site Preparation Licence for OPG's Darlington Site, online: https://cela.ca/wp-content/uploads/2021/05/CELA-and-DNA-Submission-to-CNSC_OPG-Site-Licence-Renewal_Ref-2021-H-04.pdf at 4-5; Citizens Against Radioactive Neighbourhoods Submission to CNSC for the Application to Renew BWXT's licence for its Peterborough and Toronto Facilities, online: https://cela.ca/wp-content/uploads/2020/03/Submission-from-CELA-on-behalf-of-CARN-BWXT-Licence-Renewal-Ref.-2020-H-01.pdf at 9-10.

applications, and CMDs by CNSC Staff including the proposed licence and Licence Conditions Handbook be available for public dissemination when these documents are publicly released.

Meaningful public participation is not possible without an informed public; therefore, easy access to relevant studies, data, records, etc., is critical. Meaningful participation in decision-making is also critical to advancing environmental justice as it ensures that no population suffers disproportionate adverse environmental or human health effects. A core principle of environmental justice is the public's right to information, or "right to know", which stands for a basic human entitlement to information when there may be direct impacts to health and bodily integrity.[17]

Recommendation No. 2: Documents relied upon in NB Power's and CNSC Staff's CMDs ought to be publicly available by default and not available upon request only.

ii. Failure to uphold commitments to release hazard assessment

As noted above, the intervenors requested a number of key documents and studies referenced in the CMDs and they were provided, either from NB Power or CNSC Interventions. However, our ability to rely on these documents, particularly the Hazard Screen provided by NB Power, was severely compromised because we were prohibited from referencing its contents due to copyright, which prohibits our use or disclosure of the document. The copyright notice states:

> This document and the information contained in it are the property of Candu Energy Inc. and have been provided subject to the terms and conditions of an agreement with Candu. No use, disclosure or reproduction of this document or the information contained herein is permitted, except in accordance with the applicable agreement or with the prior written consent of Candu. Candu reserves all intellectual property rights in the document and the information contained herein, including copyright. NB Power also has contractual obligations with its suppliers in order to protect the intellectual property.

Even if the copyright notice did not prevent the intervenors from commenting on the hazard assessment, at least 75% of the hazard assessment is redacted. **The intervenors ask the CNSC to accept the redacted version of the hazard assessment as a sealed document, so that the Commission members are better able to understand the ineffectiveness of so-called public disclosure, and the impact of redactions, which compromises an intervenors' ability to provide the CNSC with meaningful input and review.**

Due to an inability to comment on the hazard assessment, caused by copyright and the redactions, the intervenors can only rely on the scant paragraphs about the assessment discussed in CNSC Staff's CMD, where staff "confirmed" NB Power has a hazard analysis program and noted that

[17] Richard M Brown, 1982 "Canadian Occupational Health and Safety Legislation" (1982) 20:1 Osgoode Hall LJ.

the hazard screening was updated in 2016 and meets regulatory requirements.[18] This is of concern to the intervenors given the significance of the hazard assessment, as set out in REGDOC 2.4.1 *Deterministic Safety Analysis*, which provides an indication of the role of a hazard analysis within a reactor facility's design,[19]:

> A hazards analysis (such as fire hazard assessment or seismic margin assessment) will demonstrate the ability of the design to effectively respond to credible common-cause events. This analysis is meant to confirm that the NPP design incorporates sufficient diversity and physical separation to cope with credible common-cause events. It also confirms that credited structures, systems and components (SSCs) are qualified to survive and function during credible common-cause events, as applicable.[20]

The intervenors are also very concerned that progress made at the prior licensing hearing in 2017 to ensure the hazard assessment was public, has now been rolled back and gone unnoticed by the CNSC in its oversight. The intervenors submit that the CNSC committed to the public release of NB Power's hazard assessment at the prior relicensing hearing.[21] In 2017, intervenor Chris Rouse had asked for the hazard assessments specific to seismic risk be made publicly available, noting this was a carried-over action item from the prior 2011 Point Lepreau hearing. As Mr. Rouse stated:

> The second request is regarding the seismic hazard assessments to be made public. The President himself has asked several times for these to be made public and put on NB Power's website. There was even an action item from the 2011 hearings in which they were requested to do that. These documents are not on NB Power's website, despite the President's request to do so.[22]

The intervenor continued that while they had been granted participant funding to hire a seismologist expert, because the documents were not made publicly available for his review, and on the basis of "insufficient information" they did not have the requisite information basis "to enable meaningful review."[23]

Addressing the lack of public availability of the assessment, then CNCS President Binder stated:

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[18] CNSC Staff CMD at p 50.
[19] RegDoc 2.4.1, *Deterministic Safety Analysis* at s 1.5.
[20] *Ibid* at s 3.
[21] NB Power, CMD 22-H2.1 at p 57 [**NB Power CMD**]; CNSC Staff CMD at p 44; Proposed Licence Conditions Handbook at p 60.
[22] Canadian Nuclear Safety Commission, "Transcript of Commission Hearing of May 10, 2017", online: https://www.nuclearsafety.gc.ca/eng/the-commission/pdf/Transcript-CommissionHearing-2017-05-10.pdf at p 256.
[23] *Ibid* at p 257.

> I'm just not buying it -- you don't have to disclose this software in the methodology but I'm sure you can release the results so, unless there is absolute things I don't understand, I don't see how a study of earth is confidential. Ever.[24]

Mr. Mullin of NB Power then responded:

> NB Power has followed the guidance in Reg doc 2.4.2 in producing a PSA summary that we placed on the NB Power website. We made that publicly available. In that PSA summary, we also included summaries of all of the external hazard assessments that we performed, the Seismic Hazard Assessment, the Tsunami Hazard Assessment, and the High Wind Hazard Assessment. The NB Power approach has been that the PSA summary was written in a way for a typical member of the public. If there are special interest groups or anyone else who would like further detailed information, we would release those hazard assessments and we have [emphasis added].[25]

The intervenors submit this exchange, captured in the transcripts, highlights a troubling trend in public disclosure and the need for better oversight, such that action items from previous licensing hearings are tracked, and compliance ensured. This failure to uphold commitments diminishes CRED-NB's trust in the CNSC and the actions of the licensee operating in our community.

When members of the public do not have the same level access to references within the CMDs (which inform the CNSC's decision-making under section 24(4) of the *NSCA*) procedural inequities are created. In turn, trust in the CNSC is diminished because as a regulatory body, it is basing its review and determination of the licensee's actions to protect human health and environment on documents which are not available in the public record.

This approach is contrary to the guidance of the International Atomic Energy Association ("IAEA"), who notes in their document, *Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities*, "emphasis must be placed on trust by the community of the organizations and institutions involved in the process. Reliability, responsibility and fairness are attributes that foster trust in those participants in decision making processes."[26]

Recommendation No. 3: At a minimum, the CNSC should require all licensing documents be publicly disclosed to advance the public's right to know. This is critical, not only in advancing the right to know, but the public's trust in the regulator and the actions of the licensee.

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[24] *Ibid* at p 283.
[25] *Ibid* at p 283.
[26] International Atomic Energy Agency, "Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities" (2011), online: https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1520_web.pdf at p 6 [**IAEA Guidance on Stakeholder Involvement**].

Recommendation No. 4: The CNSC should immediately initiate a comprehensive review of action items made in previous licensing hearings, to ensure past commitments are upheld and tracked for compliance.

iii. Public dissemination of information is a purpose of the CNSC

The lack of full, documentary disclosure remains a systemic barrier to meaningful participation before the CNSC and is contrary to one of its core statutory objectives, which is to "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."[27] Per REGDOC 3.6 *Glossary of Terms,* a 'licensed activity' is "[a]n activity described in any of paragraphs 26(a) to (f) of the Act the licence authorizes the licensee to carry on." Section 26(e) of the *NSCA*, which relates to a licence to operate a nuclear facility, is applicable in this instance. Therefore, the *NSCA* clearly contemplates that licensing information, such as the documents the intervenors requested above, are among the "activities" which ought to be publicly disseminated, pursuant to the objects of the Act.

The *NSCA* also requires the CNSC to disseminate "objective" information".[28] Objective is defined as "expressing or dealing with facts or conditions as perceived without distortion by personal feelings, prejudices, or interpretations."[29] The intervenors submit that the CNSC has not fulfilled this obligation; when studies referenced in NB Power's and CNSC Staff's CMDs are not disclosed in full, the public can only rely upon CNSC staff's assessment of the study, its findings and conclusions. Furthermore, without the right to cross-examination as part of the hearing process, there is no ability for members of the public to question the authors, the methods, the scope, and findings. This means there is no ability for the public to view the full licensing record nor ability for experts, who may be retained by public interest intervenors, to provide peer review of the studies and subsequently make recommendations to the CNSC.

Recommendation No. 5: References contained in CNSC Staff's and the licensee's CMDs ought to be publicly available so that subject matter experts can provide peer review of the documents. This is necessary for the CNSC is to uphold its obligations to disseminate "objective" information.

Recommendation No. 6: The right to cross-examination must be adopted as part of the hearing process so that members of the public have the ability to pose questions regarding, for instance, a study's methods, scope and findings.

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[27] NSCA at s 9(b).
[28] *Ibid.*
[29] Merriam-Webster dictionary, online: https://www.merriam-webster.com/dictionary/objective.

C. The renewal of nuclear operating licences ought to be subject to impact assessment

The intervenors submit that the renewal of nuclear operating licences should be subject to the *Impact Assessment Act* ("IAA") since they generally raise environmental, health and socio-economic issues, as well as broader sustainability considerations, which are best addressed within the IA process. This recommendation is based on our experience to date in federal IAs (formerly known as environmental assessments) and CNSC licencing proceedings in relation to various proposals to site, build, refurbish, extend the life of, dispose of waste from, or decommission nuclear energy facilities.[30]

The intervenors do not support the continued exclusion of significant nuclear projects from the *IAA*[31] which was proclaimed into force on August 28, 2019, and supersedes the *Canadian Environmental Assessment Act, 2012*. As Canada's federal environmental assessment statute, it outlines which federal undertakings require an impact assessment (formerly, environmental assessment). The *Physical Activities Regulations*[32], also known as the Project List, identifies the types of activities considered designated projects subject to the *IAA*. Projects not included in the Regulations - such as refurbishment/life extension of nuclear power plants, decommissioning of nuclear facilities, and the renewal of nuclear operating licences - are excluded from the robust and participatory requirements of an impact assessment under the *IAA*.

We note the following shortcomings to the CNSC's process which would have been remedied had an impact assessment ("IA") been undertaken:

First, the *IAA* establishes a rigorous, multi-step process for assessing the environmental, health, social and economic effects of designated projects in order to prevent adverse effects and foster sustainability. Without an IA, there is no legislative requirement that a nuclear facility's ongoing contribution to, promotion of, or harm to sustainability to be examined.[33] While nuclear facilities are subject to an environmental risk assessment ("ERA") under the CNSC's licence renewal

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[30] *See for example*: CELA's submission in response to OPG's application for a licence amendment to authorize activities related to the production and possession of molybdenum-99 (Mo-99) at the Darlington Nuclear Generating Station (2021), online: https://cela.ca/wp-content/uploads/2021/09/OPG-Darlington-Mo-99-Licence-Amendment.pdf; CELA, CCRCA, NWW, and Northwatch Joint Submission in response to CNL's proposed decommissioning licence amendment for the Douglas Point Waste Facility (2020), online: https://cela.ca/wp-content/uploads/2020/10/Submission-from-CELA-Douglas-Point-Ref-2020-H-04.pdf; CELA's submission in response to CNL's draft Environmental Impact Statement for the proposed near surface disposal facility at Chalk River (2017), online: https://cela.ca/wp-content/uploads/2019/07/1112CNLDraftEIS-NearSurface.pdf.

[31] CNSC Staff CMD at p 6.

[32] *Physical Activities Regulations*, SOR/2019-285.

[33] Kerrie Blaise and Shawn-Patrick Stensil, "Small Modular Reactors in Canada: Eroding Public Oversight and Canada's Transition to Sustainable Development" in Jonathan L Black-Branch and Dieter Fleck (eds), *Nuclear Non-Proliferation in International Law – Volume V – Legal Challenges for Nuclear Security and Deterrence* (2020, Asser Press: The Hague) 209 at p 220 [**Blaise and Stensil, 2020**].

process, the depth and rigour of this review is not equivalent to an IA process. Further, the CNSC's regulatory mandate does not include more broadly scoped environmental planning issues.[34]

Second, without an IA, there is no forum to address alternatives to the proposed licensing renewal. Considering 'alternatives to the project' and 'alternative means of carrying out the project' are required considerations under the *IAA* which are not before the CNSC in the narrow licensing process provided for in the *NSCA*.[35]

Third, the *IAA* requires meaningful public participation throughout the assessment process and establishes a participant funding program to enable members of the public to engage in the IA process. Absent an IA, the public's opportunity to weigh-in on the need for the project, its purpose, and potential alternatives is severely limited.

Recommendation No. 7: The renewal of nuclear operating licences should be fully subject to the federal *Impact Assessment Act* so that considerations of the need and purpose of the project, as well as alternatives, could be fully assessed against a range of factors including accidents and malfunctions, cumulative effects, sustainability, identity factors and Indigenous knowledge and culture.

V. DETAILED COMMENTS AND RECOMMENDATIONS

CRED-NB and CELA submit a 25-year licence is patently unreasonable in the circumstance and should be denied for the following reasons, each detailed below:

A. NB Power's request for a 25-year licence is contrary to the public interest;
B. NB Power's licence application fails to consider the impact of new developments, including a potential Small Modular Reactor and reprocessing facility;
C. NB Power's licence application relies on outdated and incomplete environmental data;
D. NB Power's request for a 25-year licence extends beyond the operating life of the facility;
E. NB Power's licence application fails to expressly consider climate change; and
F. NB Power's consideration of off-site emergency planning and preparedness at Point Lepreau is insufficient to protect human health and the environment.

A. NB Power's request for a 25-year licence is contrary to the public interest

The intervenors are highly concerned by NB Power's request for a 25-year licence and submit it is contrary to the public interest mandate of the CNSC for a number of interrelated reasons, including that it shields licensee activities from the public oversight and participation mechanism

[34] IAA, s 22; Blaise and Stensil, 2020 at p 221.
[35] IAA, s 22(1)

provided in section 40(1) of the *NSCA*; it would mean relying on more discretionary forms of public engagement like CNSC meetings which are not subject to the licensing framework of the *NSCA*; and it would be contrary to international guidance and precedents.

i. Public oversight and participation

The intervenors oppose NB Power's request for a 25-year licence as it removes the opportunity for a public hearing under section 40(1) of the *NSCA* for the duration of a full generation.[36] This approach is contrary to the public interest mandate of the CNSC, as a 25-year licence would effectively shield NB Power's operations at Point Lepreau from a public hearing until 2047. As the intervenors have previously submitted to the CNSC, we do not support the CNSC's transition to longer licences, as they significantly reduce public scrutiny of licensee operations, access to information, and effectively eliminate meaningful public participation.[37] Indeed, as we argue below, there are good reasons, including issues with equipment due to ongoing operations and aging, the potential impacts of climate change and the changing nature of cyber threats, to evaluate projects and their impacts even more frequently in the future.

First, the IAEA publication, *Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities*, notes that "public participation in decisions can promote a greater degree of understanding of the issues and can help to develop appreciation of the actual risks and benefits of nuclear energy"[38] As such, shorter-term licences provide more frequent opportunities to publicly reassess a licence in accordance with licensing purposes, including compliance with regulatory requirements, CNSC RegDocs and international guidance.[39]

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[36] **40 (1)** Subject to subsection (2), the Commission shall provide an opportunity to be heard in accordance with the prescribed rules of procedure to
(a) the applicant, before refusing to issue a licence under section 24;
(a.1) the applicant, before refusing to authorize its transfer under section 24;
(b) the licensee, before renewing, suspending, amending, revoking or replacing a licence, or refusing to renew, suspend, amend, revoke or replace a licence, under section 25;
(c) any person named in or subject to the order, before confirming, amending, revoking or replacing an order of an inspector under subsection 35(3);
(d) any person named in or subject to the order, before confirming, amending, revoking or replacing an order of a designated officer under subsection 37(6);
(e) the applicant, before confirming a decision not to issue a licence or authorize its transfer — and the licensee, before confirming a decision not to renew, amend, revoke or replace a licence or authorize its transfer — under paragraph 43(4)(a);
(f) the licensee, before confirming, varying or cancelling a term or condition of a licence under paragraph 43(4)(b);
(g) the licensee, before taking any measure under any of paragraphs 43(4)(c) to (f);
(h) any person named in or subject to the order, before taking any measure under any of paragraphs 43(4)(g) to (j); and
(i) any person named in or subject to the order, before making any other order under this Act.

[37] *See for example*: Submission from CELA on behalf of Citizens Against Radioactive Neighbourhoods in response to BWXT's 10-year licence renewal for its Peterborough and Toronto facilities (2020), online: https://cela.ca/wp-content/uploads/2020/03/Submission-from-CELA-on-behalf-of-CARN-BWXT-Licence-Renewal-Ref.-2020-H-01.pdf

[38] IAEA Guidance on Stakeholder Involvement at p 7.

[39] *See* S. Blake (2017) Administrative Law in Canada (6th Ed): Toronto: Lexis Nexis Canada, p 138 **[Admin Law in Canada]**.

Second, because of their complex and hazardous nature, nuclear power plants and related facilities pose substantial risks to human health, safety and the environment. Our understanding of these dangers is continuously evolving; a dozen years ago, few would have expected three nuclear reactors at a single site melt down one after the other, as happened at Fukushima Daiichi in 2011. Formal licensing processes allow for the compulsory re-evaluation of the risks stemming from nuclear plants. Applications for licence renewal should, therefore, not just attract the highest level of procedural protections, but also build in rights for public intervention, including notice, awareness of the impacts, and regular opportunities to respond, interrogate industry claims, and offer independent expert advice. The intervenors submit that a 25-year licence would significantly reduce the level of procedural protections and rights for the public to participate in a public hearing process per section 40(1) of the *NSCA.*

Specifically, a 25-year licence term would minimize public scrutiny of licensee operations and access to information because of the duration of time between hearings and the accompanying lack of meaningful ways for the public to engage with the Commission and licensee. Shorter licences and more frequent hearings, which are responsive to the operations being undertaken by licensees, would better serve the public interest.

Third, by limiting meaningful public participation and access to information for a full generation, a 25-year licence term would also diminish public trust in the CNSC and the licencee. IAEA guidance on stakeholder involvement provides that "[e]stablishing trust can be enhanced when an inclusive approach to stakeholder involvement is adopted […] to help ensure that all those who wish to take part in the process have an opportunity to express their views and have access to information on how public comments and questions have been considered and addressed."[40] In short, public confidence in the use of nuclear material and technology can be enhanced by an authorization process that reflects a high degree of openness and transparency on the part of the authorities.[41] This is lost if there is only one chance every generation for the public to meaningfully engage in dialogue with the CNSC and the licencee about their concerns.

Fourth, a 25-year licence would limit the opportunity for the public and community groups to raise issues of timely and urgent importance. One of the stated aims of CRED-NB is to promote the earliest possible transition of the NB electricity grid to truly clean, truly affordable, reliable renewable power. As the established cost of nuclear power is already higher than that of renewable power and continues to increase while the cost of producing renewable power is lower and continues to decrease, this transition is clearly desirable. New technologies for energy storage plus smart grid technologies for drawing on different renewable sources and stored energy, as needed, have ensured that renewable power can be a fully reliable energy source. In light of this reality, it

[40] IAEA Guidance on Stakeholder Involvement at p 6.
[41] Carlton Stoiber, Alec Baer, Norbert Pelzer & Wolfram Tonhauser (eds), *Handbook on Nuclear Law* (2003, IAEA: Austria) at p 36; see also IAEA Guidance on Stakeholder Involvement at p 6.

would not be appropriate to grant a 25-year licence. A short licence period would also allow the public to weigh in more frequently on the advisability and timing for shutting down and decommissioning the Lepreau station. An early shutdown carries the attendant benefit of ending the production of radioactive waste which is expensive to store and which has no proven-safe method of disposal.

Recommendation No. 8: Licence renewals should be subject to shorter licensing terms as it provides the opportunity for public hearings under section 40(1) of the *NSCA*, and enhances the openness and transparency of the CNSC, and its oversight of nuclear uses and technologies. These opportunities are critical to building the public's trust in the regulator and would be lost if there is only one chance every generation for the public to participate in a hearing and engage in dialogue with the CNSC and the licencee about their concerns.

ii. Regulatory framework and oversight

The intervenors submit that the CNSC Staff's recommendation that the Commission renew the Point Lepreau PROL for a period of 20 years from July 1, 2022, to June 30, 2042, is contrary to the public interest because CNSC Staff erred in finding discretionary forms of public engagement, such as regulatory oversight meetings, are sufficient stand-ins for public hearings under the *NSCA*. CRED-NB and CELA do not accept CNSC staff's position that a 20-year licensing term is justified based on improvements to the regulatory framework and oversight practices of the CNSC.

First, the intervenors do not agree that the annual Regulatory Oversight Report for Nuclear Power Generating Sites is an appropriate alternative to more regular, site-specific licensing hearings. During Part I of the public hearing held on January 26, 2022 to consider NB Power's licence renewal request, CNSC staff stated "[w]ith respect to the engagement of the public, we put the ROR as one of the fundamental pillars for the long-term licence, for the engagement of the public and the Indigenous peoples."[42] The intervenors submit that a public hearing before the CNSC provides greater procedural rights and protections than other CNSC forums, such as the annual Regulatory Oversight Reports ("ROR") and meetings. Furthermore, while licence renewal hearings are subject to provisions 24(4) of the *NSCA* and the CNSC's Rules of Procedure, which provide some degree of procedural rights for the public, these statutory requirements do not apply to RORs.

It has been CELA's experience that the intent of RORs is not to change or amend licences or licence conditions, but rather to receive updates on licensee activity. Further, the public is excluded from oral interventions which provide an opportunity for interrogations and dialogue with the

[42] Canadian Nuclear Safety Commission, "Transcript of January 26, 2022 Public Hearing", online: https://nuclearsafety.gc.ca/eng/the-commission/pdf/Transcript-Hearing-Jan26,2022-e.pdf at p 80.

proponent and Commission members. As such, the ROR is ill suited to resolving the concerns being made by the intervenors in the context of this licence renewal.

Second, the intervenors do not accept CNSC staff's position that the Safety and Control Area ("SCA") framework ensures comprehensive and consistent oversight of licensed activities. The CNSC evaluates how well licensees meet regulatory requirements and expectations based on a set of fourteen distinct SCAs. The intervenors submit there are several gaps in the SCA framework which often result in less than comprehensive oversight of licenced activities and limit CNSC staff's assessment of those activities. Indeed, CRED-NB and CELA are concerned that the CNSC often has a legal obligation to consider issues that may be broader than those encompassed in the 14 SCAs. For example, the Waste Management SCA only "covers internal waste-related programs that form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility."[43] Therefore, issues of off-site waste storage or disposal are not covered under the SCA framework, even though the CNSC may be required to consider them in order to meet its licensing duty regarding protection of the environment and human health as set out in section 24(4)(b) of the *NSCA*.

Third, the intervenors do not accept CNSC staff's position that regulatory control measures—such as status reports, event initial reports, periodic safety reviews and environmental risk assessments—justify the use of longer licencing terms. For example, CNSC Staff note that NB Power is required to conduct a Probabilistic Safety Analysis, Environmental Risk Assessment, and Preliminary Decommissioning Plan every 5 years, and a Periodic Safety Review every 10 years. Contrary to CNSC Staff's suggestion, the 5-to-10-year frequency of these submissions provide yet another reason to not exceed this timeframe for licensing, so that the public can have the opportunity to review and comment on the most recent iterations of these licensing basis documents.

As a result of the above noted deficiencies, the intervenors submit that the CNSC should disregard CNSC Staff's recommendation for a 20-year licensing term.

Recommendation No. 9: Regulatory Oversight Reports and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings, nor used as a stand-in for public hearings.

Recommendation No. 10: The CNSC should disregard CNSC staff's recommendation for a 20-year licencing term.

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[43] Canadian Nuclear Safety Commission, "Safety and control areas" (2021), online: https://nuclearsafety.gc.ca/eng/resources/publications/reports/powerindustry/safety-and-control-areas.cfm

iii. International precedents

The intervenors submit that it would be contrary to the public interest to accept CNSC staff's recommendation for a 20-year licencing term based on international precedents. In making their recommendation, CNSC staff note they have "considered international precedence and benchmarking regarding longer term licences that range from 10 years to lifetime licences."[44] However, in their brief analysis of international licence periods, CNSC staff have not provided sufficient information about what factors are considered by nuclear regulators in other jurisdictions during the licence application and renewal process.[45]

Indeed, the intervenors submit that nuclear licencing procedures in other jurisdictions are quite prescriptive compared to Canada's highly subjective approach. For example, the U.S. Nuclear Regulatory Commission ("NRC") sets very detailed regulatory requirements that a nuclear facility and operator must meet to be licensed. The license renewal process requires that both a technical review of safety issues and an environmental review be performed for each application, and NRC regulations - 10 CFR Part 51 and 10 CFR Part 54 - contain very detailed requirements for each of these reviews, outlining their scope, content and technical basis.[46]

In contrast, the CNSCs licencing scheme is so overly reliant on guidance principles and non-binding language that it is very difficult for an observer to tell what is sufficient under the Act and regulations. The few mandatory/prescriptive provisions in the *NSCA* and accompanying regulations generally only require the license applicant to address several topics or areas of concern but offer nearly no concrete provisions for how they should be addressed or what would constitute sufficient planning and analysis under them.[47] Further, while RegDocs give license applicants and the general public some insight into what the CNSC would like to see in an application, the use of non-binding language (e.g. "should" or "may" instead of "shall" or "must") in these documents makes it difficult to discern the threshold of information the CNSC would consider to be sufficient to address a listed area of concern.[48]

As such, CNSC Staff's recommendation for a 20-year licence based on international precedent cannot be relied upon by the CNSC as a basis for granting the licence.

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[44] CNSC Staff CMD at p 13.
[45] *Ibid* at pp 13-14.
[46] United States Nuclaer Regulatory Commission, Part 51, online: https://www.nrc.gov/reading-rm/doc-collections/cfr/part051/index.html; Part 54, online: https://www.nrc.gov/reading-rm/doc-collections/cfr/part054/index.html
[47] *See for example*: NSCA at s 24(4); *General Nuclear Safety and Control Regulations*, SOR/2000-202 at ss 3(1), 5.
[48] *See for example*: RegDoc 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*; RegDoc 1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*; CNSC RegDoc 2.10.1, *Nuclear Emergency Preparedness and Response*; RegDoc 2.4.1, *Deterministic Safety Analysis*; CNSC RegDoc 1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant, Version 1.1*; RegDoc 1.2.2, *Licence Application Guide: Class 1B Processing Facilities*; RegDoc 2.3.3., *Periodic Safety Reviews*.

Recommendation No. 11: Without a more thorough review of legislation and licencing procedures in other jurisdictions, international precedence and benchmarking do not justify longer term licences in Canada.

B. NB Power's licence application fails to consider the impact of new developments, including potential Small Modular Reactors and a reprocessing facility

The intervenors submit NB Power's request for a 25-year licence fails to account for proposed developments at the site which would have significant impacts on the existing plant's licensing and planning basis because the projects proposed to be constructed have the potential to cause serious damage to the health and safety of persons and the environment As detailed in this section, the intervenors submit a shorter licence is more favourable to ensure that the licensing basis is responsive to site changes.

As drafted, the licence application before the CNSC only provides a partial picture of NB Power's plans for the Point Lepreau site over the next 25 years. For instance, with regard to the deployment of Small Modular Reactors ("SMRs") at the Point Lepreau site, NB Power states "[i]t is still relatively early in the development phase and no decision has been made to proceed at this time." This is matched by CNSC Staff accepting the argument that "[t]he key difference between the current licence and the proposed licence is the licensing term" and "[t]here are no major activities being conducted throughout the 20-year proposed term."[49]

In contrast, NB Power has communicated in public forums that:

- NB Power is currently working with two private sector partners, Advanced Reactor Concepts (ARC) Clean Energy Canada and Moltex Energy, to advance Generation IV Plus Grid sized SMR technology for use at the Point Lepreau site;[50]
- NB Power envisions both SMR technologies starting commercial operations at the Point Lepreau site by approximately 2030;[51]
- The ARC-100 SMR and a Moltex SSR-W SMR and accompanying fuel conversion facility are proposed to be constructed and operating at the Point Lepreau Generating Station site within the same timeframe;[52]

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[49] *Ibid* at p 18.
[50] New Brunswick Power, "Overview" (2020), online: https://smractionplan.ca/content/new-brunswick-nb-power-0
[51] New Brunswick Power, "NB Power please with progress on small modular reactor work" (2019), online: https://www.nbpower.com/en/about-us/news-media-centre/news/2019/nb-power-pleased-with-progress-on-small-modular-reactor-work/
[52] New Brunswick Power, "Overview" (2020), online: https://smractionplan.ca/content/new-brunswick-nb-power-0

- In March 2021, NB Power received a federal grant of $4,999,568 from the Atlantic Canada Opportunity Agency ("ACOA") to help NB Power prepare the site at its Point Lepreau location for SMR deployment and demonstration.[53]

Similarly, ARC and Moltex have communicated in public forums that:

- A 25-year licence would be welcomed by Moltex because their SMR "runs on recycled, spent fuel, so the longer the Point Lepreau reactor is running, the more spent fuel they amass – that's what we use in our reactor."[54]
- The licensing process for ARC's technology at the site will be a separate process – and is scheduled to begin in 2023.[55]

All of these activities are thus planned for well within the 25-year timeframe of the requested licence. Further, as noted above, NB Power has already received federal funding to prepare the site at Point Lepreau for SMR deployment, even before they have applied for or been granted a licence to prepare site. While CRED-NB and CELA understand that NB Power cannot proceed with the construction of an SMR at the Point Lepreau site without a licence to construct, and by extension, none of the above noted activities can be undertaken within the licence being requested, the intervenors submit that it is incongruous for NB Power to request a licence for 25 years at the same time as they are actively exploring the possibility of deploying SMR technology during that timeframe.

Moving ahead with 25-year licence without recognizing NB Power's plans for SMRs removes the ability of citizens to understand projects which may have significant implications for their local communities. It would also run contrary to REGDOC 2.9.1 *Environmental Protection: Environmental Principles, Assessments and Protection Measures* which requires the applicant or licensee to identify "facility characteristics and activities that may interact with the environment during the relevant phase of the facility or activity's lifecycle."[56]

The intervenors submit NB Power's intentions underscore the need to consider an SMR in tandem with existing operations at Point Lepreau. These projects cannot be reviewed independently because the proposed undertaking would be fundamentally different from the existing licence;

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[53] Innovation, Science and Economic Development Canada, "Support for small modular reactor research and technology development in New Brunswick to help produce non-emitting energy and reduce storage of nuclear waste" (2021), online: https://www.canada.ca/en/innovation-science-economic-development/news/2021/03/government-of-canada-invests-in-research-and-technology-to-create-jobs-and-produce-non-emitting-energy.html

[54] Sam MacDonald, "Opponents Claim Nuclear Licence Request Will 'Silence' An Entire Generation" (2022), online: https://huddle.today/2022/03/25/opponents-claim-nuclear-license-request-will-silence-an-entire-generation/

[55] *Ibid* [emphasis added].

[56] RegDoc 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* at s 4.1.1.

would not be encompassed by the existing plant parameter envelope; and would not account for cumulative effects of the combined technologies. To do so would compromise the CNSC's ability to make an informed determination in the public interest. Therefore, the intervenors **recommend** that it be made a condition of licensing that upon application for a licence to construct or prepare site at Point Lepreau, the current licence be reopened for consideration and subject to another licence renewal hearing.

Further, the intervenors have concerns about the possibility of Point Lepreau being sold to another private or public corporation during the proposed licensing term. In light of NB Power's existing debt challenges, the financial effects of COVID-19, and costly reliability issues with the Point Lepreau station (e.g. buying and generating replacement electricity during the 40-day outage in January/February 2021 cost NB Power approximately $65 million)[57], the possibility of Point Lepreau being sold to another private or public corporation has increased. As such, the intervenors **recommend** that in the event of a change in ownership or transference of the licence during the licensing term, a public hearing be held pursuant to section 40(5)(b) of the *NSCA*.

Recommendation No. 12: The CNSC should direct CNSC Staff and NB Power to revise all licensing documents to avoid implying 'no change' will occur at the Point Lepreau site during the proposed licensing term.

Recommendation No. 13: As a condition of licensing, upon receipt of an application to construct or site an SMR at Point Lepreau, a public hearing for NB Power's operating licence shall occur pursuant to section 40(5)(b)[58] of the *NSCA*, and both licences at the Point Lepreau site considered in tandem, so that a site-wide and comprehensive review of cumulative effects, emergency planning, and impacts from accidents and malfunctions can be carried out.

Recommendation No. 14: In the event of a change in ownership or transference of the licence during the licensing term, a public hearing should be held pursuant to section 40(5)(b) of the *NSCA*.

C. NB Power's licence application relies on outdated and incomplete environmental data

i. Environmental Risk Assessment

[57] S*ee*: Robert Jones, "Natural and man-made troubles push NB Power finances further off course" (2021), online: https://www.cbc.ca/news/canada/new-brunswick/nb-power-electricity-loss-1.6104398

[58] **40(5)** The Commission shall, subject to any by-laws made under section 15 and any regulations made under section 44, hold a public hearing with respect to
(a) the proposed exercise by the Commission, or by a panel established under section 22, of the power under subsection 24(2) to issue, renew, suspend, amend, revoke or replace a licence; and
(b) any other matter within its jurisdiction under this Act, if the Commission is satisfied that it would be in the public interest to do so.

The intervenors submit that CNSC cannot uphold the purpose of the *NSCA*, which requires the limitation of risks to the health and safety of persons and the environment as a result of nuclear energy operations, if the current Environmental Risk Assessment ("ERA") submitted by NB Power is relied upon.

First, the data used in the ERA predominantly relies on the period from 2015-2018 and excludes current baseline date.[59] The intervenors submit data current to 2020, and if possible, data current to 2021, ought to have been used given the request for a 25-year licence. Integral to the process of assessing impacts is ensuring the most relevant data is used assess risk and then inform environmental and human health protection measures.

Further, according to the CNSC's REGDOC 2.9.1, "the ERA is subject to regular updates (at least every five years, and whenever a significant change occurs in either the facility or activity that could alter the nature (type or magnitude) of the interaction with the environment within the ERA predictions)."[60] The intervenors submit that the requirement in REGDOC 2.9.1 cannot be claimed to be met in this instance. As ERAs are meant to be updated on a 5-year schedule, an ERA drafted with data that is already 3 to 6-years-old can hardly be considered an "updated" ERA. Only the most up-to-date data can provide a clear and comprehensive picture of environmental risks at Point Lepreau—particularly as climate impacts become more frequent and pronounced.

Unfortunately, the CNSC staff CMD provides no reason as to why the ERA does not, at least, include data from 2019 and 2020. Indeed, it is difficult to understand how the outdated ERA data can be reconciled with the requirement in REGDOC 2.9.1. to update the ERA at least every five years.

Second, the framing of "environment" adopted in the ERA is too narrow to demonstrate that NB Power will make adequate provision for the protection of the environment and the health and safety of persons per section 24(4) of the *NSCA.* The intervenors submit that the ERA ought to have considered impacts to physical, biological, and human (including social, health and cultural) environments. Indeed, REGDOC 2.9.1 includes protecting the health of persons and identifying "facility or activity interactions with the environment and the public" among its purposes.[61]

As drafted, there is no consideration of the human environment, and the ERA is limited to biological considerations of radiological doses and exposure pathways. To fully understand impacts to the human environment, the ERA ought to have considered matters including:

- Changes in health and emergency services

[59] ERA at pp 1-2.
[60] RegDoc 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* at s 1.2.
[61] *Ibid* at s 1.1.

- Changes in demographics
- Changes in community services/demands
- Changes to economic and business development
- Changes to traditional ways of life and subsistence livelihoods

This would also be consistent with REGDOC 2.9.1 and CNSC Regulatory Guide G-129 Revision 1, *Keeping Radiation Exposures and Doses "As Low as Reasonably Achievable (ALARA)"*, which both require the applicant to keep "all releases to the environment as low as reasonably achievable (ALARA), social and economic factors being taken into account".[62]

Third, the ERA altogether fails to predict or evaluate potential changes to the environment and likely effects in the subsequent 25-year licensing period. This is contrary to REGDOC 2.9.1, which provides:

> The applicant or licensee shall identify facility characteristics and activities that may interact with the environment during the relevant phase of the facility or activity's lifecycle (for example, site preparation, construction, operation and decommissioning).[63]

For all the environmental parameters assessed in the ERA, the intervenors submit NB Power ought to be required to identify potential changes and impacts over the 25-year licensing period sought (such as potential SMR development and climate change impacts). Predicting and evaluating changes to the environment is critical if the CNSC is to ensure measures are in place to offset or mitigate environmental harms.

Fourth, the ERA is much too brief and cursory in its analysis of environmental impacts for the public to have a meaningful ability to understand the impacts of the 25-year licence and for the CNSC to receive feedback to understand local interests, concerns, and values. For instance, the review of atmospheric releases fails to consider light, including ambient light and sky glow; its considerations of vegetation are non-descriptive, and fail to comment, list, or differentiate among plant and fungus species and those of importance to Indigenous communities; and ecosystem or watershed-wide impacts are not considered. The intervenor submits this information should be required pursuant to the *General Nuclear Safety and Control Regulations*, which provide:

> **3 (1.1)** The Commission or a designated officer authorized under paragraph 37(2)(c) of the Act, may require any other information that is necessary to enable the Commission or the designated officer to determine whether the applicant

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[62] *Ibid* at s 2.1; Canadian Nuclear Safety Commission, *Regulatory Guide G-129 Revision 1, Keeping Radiation Exposures and Doses "As Low as Reasonably Achievable (ALARA)"* (2004), online: http://nuclearsafety.gc.ca/pubs_catalogue/uploads/g129rev1_e.pdf at s 7.3.3.3 [emphasis added].

[63] RegDoc 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* at s 4.1.1 [emphasis added].

> […]
>
> **(b)** will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.[64]

Fifth, the intervenor asks that real time emissions monitoring be made a condition of renewal. Currently, the Point Lepreau facility has one ventilation stack and one discharge point for the Condenser Cooling Water into the Bay of Fundy which are routinely monitored for air and liquid releases.[65] Disclosing emissions data in real time would:

- Simplify the intervenor's review of NB Power's emissions data, which is currently published in quarterly monitoring updates;
- Inform the intervenor of new installations or proposed upgrades;
- Alert the intervenor and other members of the public to emissions where action levels are exceeded or not within usual limits.

Recommendation No. 15: NB Power should be required to forecast environmental impacts for years 1 – 25 of the proposed licence period.

Recommendation No. 16: NB Power should be required to consider impacts to physical, biological, and human (including social, health and cultural) environments.

Recommendation No. 17: Given the unprecedented request for a 25-year licence, the ERA should be updated with data from 2019 and 2020, and, if possible, with data from 2021, before the Commission makes any decision regarding the requested licence renewal.

Recommendation No. 18: NB Power should be required to predict or evaluate potential changes to the environment and likely effects in the subsequent 25-year licensing period.

Recommendation No. 19: The CNSC should make it a condition of licencing that all emissions monitoring data be publicly reported in real time.

ii. International precedent

The intervenors submit there is recent international precedent which underscores the need for up-to-date environmental data and supports our position that shorter licence terms are preferred. The Nuclear Regulatory Commission in the U.S. recently reversed the renewal licence for reactors at

[64] *General Nuclear Safety and Control Regulations*, SOR/2000-202 at s 3(1.1)(b).
[65] CNSC Staff CMD at p 78.

Units 3 and 4 of the Turkey Point site which granted a 20 year extension beyond their initial renewal terms, set to expire in 2032 and 2033.[66]

In reconsidering their decision on the 20 year licence extensions, the NRC found the environmental review of the licence renewal application was incomplete.[67] The NRC found its prior licencing decisions relied too heavily on documents from an early timeframe (circa 2013) and this conflicted with their environmental protection statute, which required them to discuss the environmental impacts of the proposed activity (i.e., an additional 20 years of operation beyond the current expiration date of the licences).[68]
Among the omissions highlighted by intervenors in this case were the potential impacts posed by the worsening climate crisis and sea level rise. For instance, the intervenors pointed out that the applicant's Environmental Impact Statement and Environmental Report relied on modeled historical data that was "no longer a reasonable guide to the future for water management" instead of a climate model that predicted a significant decline in water availability during the timeframe of the proposed activity.[69]

This recent example from the U.S is very applicable in the current circumstance with NB Power, as environmental data which predates the current proposed 25-year licence request is not comprehensive nor robust enough to support the licence term requested—particularly in light of climate change impacts. As further discussed in Part E below, NB Power should not be permitted to rely on data which at best, dates to 2018, and fails to consider potential environmental impacts over the next 25 years.

D. NB Power's request for a 25-year licence extends beyond the operating life of the facility

The intervenors submit a request for a 25-year licence is incongruous with the current operating life of the Point Lepreau reactor and, contrary to statements made by CNSC Staff, does not align with end-of-life decisions of the nuclear generating station. As a result, a closer review of NB Power's preliminary decommissioning plan is necessitated.

First, as noted earlier, the Point Lepreau generating station underwent a life extension project from 2008-2012 and refurbished other components of the station to increase its operating life to at least

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[66] United States of America Nuclear Regulatory Commission, "Florida Power & Light Co Final Order" (2022), online: https://beyondnuclear.org/wp-content/uploads/2022/02/2022-02-24_Commission-Memorandum-and-Order-CLI-22-02.pdf at p 3.
[67] *Ibid* at p 2.
[68] *Ibid* at p 7.
[69] United States of America Nuclear Regulatory Commission, "Friends of the Earth's , Natural Resources Defense Council's, and Miami Waterkeeper's Petition For Review of the Atomic Safety and Licencing Board's Rulings in LBP-19-3 and LBP-19-06" (2019), online: https://www.nrdc.org/sites/default/files/appeal-turkey-point-20190809.pdf at p 21.

2032.[70] Therefore, at year 10 of NB Power's proposed 25-year licence, it would be necessary to consider a change from operations to potential decommissioning.

The intervenors **request** the CNSC seek clarity from the licensee regarding the timeline of potential events at the Point Lepreau site as there is no clear chronology in the hearing documents. For instance, CNSC staff find a 20-year licence would be appropriate in the circumstances because a 20-year licence (ending in 2042) is more closely aligned with the plant's post-refurbishment lifespan of 25-30 years. However, the basis for this comment by CNSC staff are historical documents, including a reference to a Safety Review dated 2003 and a prior licensing decision of the Commission, dated 2012.[71] Elsewhere in CNSC staff's CMD, it states "NB Power is projecting end of operation in 2040", which is the projected year of shutdown provided in NB Power's *Preliminary Decommissioning Plan*.[72] NB Power's *Environmental Risk Assessment* however, updated in 2021, states the operating life is to "at least 2032".[73]

These statements are incongruous, and a holistic reading of the licensing documents indicates a ten-year discrepancy in potential operating life. The CNSC cannot make a licensing decision when it does not have a clear indication of all events at the site.

Second, both the licensee and CNSC staff reference that a 20 or 25-year licence is appropriate because it would take the licencee nearer 'end-of-life' decisions. It is precisely for this reason that the intervenors submit a 20 or 25-year licence is *not* appropriate, as end-of-life decisions must be discussed well in advance, given their complex technical, procedural, and social dimensions. The decommissioning of nuclear reactors is among the foremost challenges facing the nuclear sector today,[74] and yet there is a paucity of consideration within the licensing documents which pre-emptively seeks to consider and discuss socially acceptable methods for the long-term oversight of the Point Lepreau station.

Decommissioning is the inevitable end for all nuclear power plants. However, as the IAEA cautions, the generation of radioactive waste and the radiological hazards associated with decommissioning have become concerns for operators, regulators, and the public only more recently. It was nearly 50 years after Canada's nuclear regulator (previously known as the Atomic Energy Control Board) was established, and our first nuclear laws passed, that it became a requirement of licensing to consider decommissioning activities.[75] The gap caused by the historical

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[70] ERA at pp 2-4.
[71] Canadian Nuclear Safety Commission, "Record of Proceedings, Including Reasons for Decision, for Public Hearing February 16, 2006 and May 18, 2006" (2006), online: http://www.nuclearsafety.gc.ca/eng/the-commission/pdf/2006-05-18-Decision-NBPower-e.pdf at para 3.
[72] CNSC staff CMD at p 97; New Brunswick Power, "Preliminary Decommissioning Plan" (2020) at p 2 [**PDP**].
[73] ERA at p 1-1.
[74] Mycle Schneider & Antony Froggatt, "The World Nuclear Industry Status Report 2018" (2018), online: https://www.worldnuclearreport.org/IMG/pdf/wnisr2018-v2-hr.pdf at p 134.
[75] Blaise & Stensil at p 232.

oversight of decommissioning considerations and the infancy of the CNSC's consideration of decommissioning strategies more broadly in Canada, means this licensing hearing ought to be used as an early engagement opportunity to review decommissioning plans, methods, and their accompanying impacts to human health, the environment.

The intervenors submit that life-extension projects have served to postpone decommissioning considerations, however, it is necessary now—in light of a 25-year licensing request—to assess the organizational, technical, and procedural challenges that have been pushed aside for decades.[76]

Third, the intervenors submit decommissioning considerations and accompanying risks to human health and the environment must be considered more thoroughly within the context of this licence renewal hearing, per section 6 of the *Class I Nuclear Facilities Regulations* ("Class I Regulations") which states:

> **6** An application for a licence to operate a Class I nuclear facility shall contain the following information in addition to the information required by section 3:
> […]
> **(h)** the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects;[77]

As section 6 is part of the application requirements for a licence to operate, it is clear that decommissioning planning is meant to be included in discussions, even when a reactor is still operational. The intervenors submit that the brief mention of decommissioning activities as provided in the CNSC Staff CMD is not sufficient in canvassing the 'effects which may result' to human health and the environment, as required by s 6(h) of the Class I Regulations:

> NB Power is projecting end of operation in 2040 and continues to propose a deferred decommissioning strategy for Point Lepreau NGS. It is envisioned that the entire site will be decommissioned as a single project, conducted in phases aiming to achieve an end-state suitable for release from CNSC regulatory control.[78]

Considerations of decommissioning planning are further complicated by the announcement of proposed SMRs at the Point Lepreau site. In light of these plans, the intervenors ask the CNSC to query whether decommissioning will happen after the CANDU reactor is shut down or after all the reactors and reprocessing plant are shut down?

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[76] Mycle Schneider & Antony Froggatt, "The World Nuclear Industry Status Report 2019" (2019), online: https://www.worldnuclearreport.org/IMG/pdf/wnisr2019-v2-hr.pdf at p 158.
[77] *Class I Nuclear Facilities Regulations*, SOR/2000-204 at s 6(h).
[78] CNSC Staff CMD at p 97.

Recommendation No. 20: The gap caused by the historical oversight of decommissioning considerations and the infancy of the CNSC's consideration of decommissioning strategies more broadly in Canada, means this licensing hearing ought to be used as an early engagement opportunity to review decommissioning plans, methods, and their accompanying impacts to human health and the environment.

Recommendation No. 21: Review of NB Power's proposed decommissioning strategy ought to be among the issues considered in Part 2 of the licence renewal hearing. Supplemental submissions should be provided by the licensee so that both the Commission members and the public can engage in a review of preliminary plans and strategies.

Recommendation No. 22: The CNSC ought to review NB Power's proposed decommissioning strategy in light of plans for SMRs at the site. For instance, will decommissioning happen after the CANDU reactor is shut down or after all the reactors and reprocessing plant are shut down?

E. NB Power's licence application fails to expressly consider climate change

The intervenors also strongly oppose a request for 25-year licence when NB Power has failed to consider the likely impacts of climate change on the site and its surroundings in their application, written submission, and associated studies. The intervenors submit climate considerations are a necessary component of the licence application if the CNSC is to find, pursuant to section 24(4) of the *NSCA*, that the licensee will make adequate protection for human heath and the environment.

First, the intervenors submit that it is critical to consider climate vulnerability in the CNSC's review. Potential climate impacts are directly within the purview of the CNSC because of its responsibility to protect people and the environment from unintended radioactive releases. As climate impacts become more frequent and pronounced, CRED-NB and CELA urge the CNSC to review the licence renewal application with express consideration given to climate impacts and climate resiliency.

Second, nuclear power plants and associated facilities are particularly vulnerable to climate change effects, including thermal disruptions (e.g., heatwaves and droughts) and extreme weather events. Climate change might increase the likelihood of flooding, which could also create problems for cooling reactors. Further, in the event of an accident, floods would make it harder to access the site, making an emergency response even more difficult.[79] As a recent study showed, extreme weather events have become the leading cause of nuclear power plant outages in North America

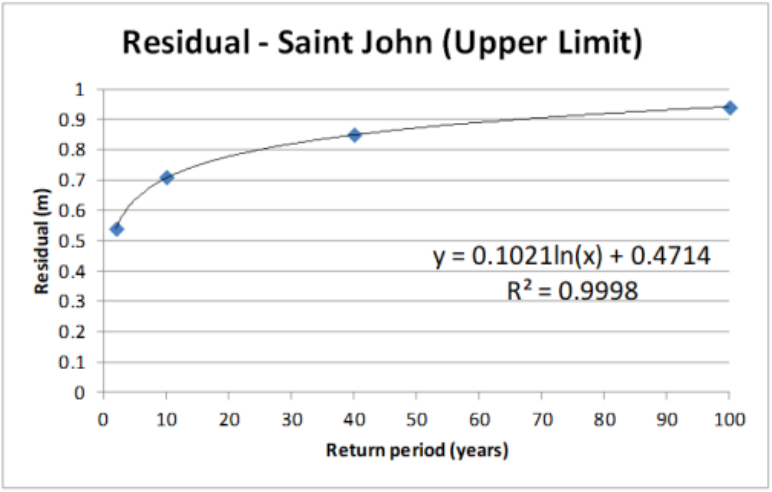
[79] Kopytko, Natalie, *Uncertain Seas, Uncertain Future for Nuclear Power*, (2015) 71(2) Bulletin of the Atomic Scientists 29–38, https://doi.org/10.1177/0096340215571905.
Kopytko, Natalie, and John Perkins, *Climate Change, Nuclear Power, and the Adaptation–Mitigation Dilemma*, (2011) 39(1) Energy Policy 318–33, https://doi.org/10.1016/j.enpol.2010.09.046.

and South and East Asia.[80] The frequency of climate-related nuclear plant outages is almost eight times higher than it was in the 1990s.[81]

Many of these weather events affect the availability of water, which in turn can cause accidents at nuclear power plants. Nuclear reactors circulate large quantities of water through their radioactive cores in order to remove the tremendous amounts of heat produced. Availability of adequate amounts of water at a suitable temperature is critical; absence could result a nuclear accident, as was demonstrated during the March 2011 Fukushima *Daiichi* disaster. At Fukushima, there was no shortage of water outside the reactor. But it was not possible to circulate this water through the reactor—and therefore remove the heat being generated there—because there was no electricity available to run water circulation pumps. The result was a nuclear meltdown. Such possibilities will become more frequent as climate change becomes worse.

The intervenors submit that climate change poses unique dangers to Point Lepreau due to its location on the Bay of Fundy: because of climate change, high water in the Bay of Fundy is predicted to rise on the order of 0.5 m over the next 50 years, and on the order of 1 m by the end of the century.[82] Sea level rise and flooding scenarios up to the year 2100 have been projected for coastal communities in New Brunswick, including Saint John and the Bay of Fundy region.[83]

Figure 1. Residual sea levels (with 5 to 95% uncertainty in grey) and associated return periods for Saint John[84]



[80] Ali Ahmad, *Increase in frequency of nuclear power outages due to changing climate*, (2021) 6 Nature Energy 755.
[81] *Ibid* at p 756.
[82] David A Greenberg, Wade Blanchard, Bruce Smith & Elaine Barrow, *Climate Change, Mean Sea Level and High Tides in the Bay of Fundy*, (2012), online: https://novascotia.ca/nse/climate-change/docs/cc_msl_hightides_bof.pdf [**Greenberg et al**].
[83] Réal Daigle, "Updated Sea-Level Rise and Flooding Estimates for New Brunswick Coastal Sections 2020: Based on IPCC 5th Assessment Report" (2020), online: https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Flooding-Inondations/SeaLevelRiseAndFloodingEstimates2020.pdf [**Daigle**]; Greenberg et al.
[84] Daigle at p 26.

The intervenors submit that particular consideration should be given to climate impacts and climate resiliency in the CNSC's evaluation of ongoing site suitability. As set out in REGDOC 1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities,* the suitability of a site is to be revisited throughout the lifecycle of the nuclear facility's operations.[85] Further, the Commission is required to consider ongoing site suitability as a Contracting Party under the *Convention on Nuclear Safety*. Article 17 of the Convention provides:

> **ARTICLE 17. SITING**
>
> Each Contracting Party shall take the appropriate steps to ensure that appropriate procedures are established and implemented:
>
> (i) for evaluating all relevant site-related factors likely to affect the safety of a nuclear installation for its projected lifetime;
>
> (ii) for evaluating the likely safety impact of a proposed nuclear installation on individuals, society and the environment;
>
> (iii) for re-evaluating as necessary all relevant factors referred to in sub-paragraphs (i) and (ii) so as to ensure the continued safety acceptability of the nuclear installation;
>
> […][86]

Therefore, the intervenors **submit** that site-specific climate change impacts and associated external events have to been assessed and used to set criteria for evaluation of the 25-year licence application.

Third, to meet the requirements under section 24 (4) of the *NSCA*, it is critical that detailed climate analysis be presented within the licence application and considered at the hearing. Currently, NB Power's analysis of environmental impacts, evacuation time estimates, and land use change only reflect the present-day circumstance at Point Lepreau. For instance, NB Power's Environmental Risk Assessment is based on a conceptual site model developed using "available information as to the current usage and features of the site".[87] Similarly, NB Power's Thermal Plume Assessment was based on data collected between 2014 to 2018.[88] Given that climate impacts are becoming more frequent and pronounced, particularly in coastal communities, these documents are outdated

[85] RegDoc 1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* at preface and Appendix C.
[86] International Atomic Energy Agency, *Convention on Nuclear Safety*, Legal Series No 16, IAEA, Vienna (1994) at Article 17.
[87] ERA at 2-74.
[88] New Brunswick Power, "Thermal Plume Monitoring at Point Lepreau Nuclear Generating Station to Support an Ecological Risk Assessment" (2019).

and insufficient to support CNSC staff's conclusion that NB Power will make adequate provisions for the protection of the environment and human health for the duration of a 25-year licence.

The intervenors submit that climate change considerations are directly relevant to the CNSC's determination about whether the licencee will make adequate provision for the protection of the environment and the health and safety of persons. As such, detailed climate analysis and site-specific modelling is necessary so that the public can fully understand the potential impacts, review the information, and provide comments to the CNSC.

Recommendation No. 23: The CNSC should review the licence renewal application with express consideration given to climate impacts and climate resiliency, including in the context of site suitability and impacts on safety and the environment.

Recommendation No. 24: The criteria by which climate change impacts and natural external events have been assessed and evaluated against the 25-year licence application must be clearly set out.

Recommendation No. 25: Detailed climate analysis must be presented in a public forum as part of the CNSC's licensing process.

Recommendation No. 26: NB Power's environmental impact studies, evacuation time estimates, and land use change studies should be modelled at least 25 years out.

F. NB Power's consideration of off-site emergency planning and preparedness at Point Lepreau is insufficient to protect human health and the environment

i. Jurisdiction & authority

The intervenors submit that the CNSC's jurisdiction includes considering the adequacy of the emergency plans in place at nuclear power plants. This means, in deciding whether to issue the licence requested, and/or whether to impose additional requirements by way of licence conditions to better protect health, safety and the environment, the adequacy of off-site emergency response plans must be reviewed.[89]

The CNSC is the only licensing authority in Canada for nuclear power plants and should ensure that licences are not issued without adequate assurance of the sufficiency of off-site emergency planning and that the public and environment will be protected in the event of a radiological emergency. Indeed, the *NSCA* requires the CNSC to limit risk to Canadian society in the event of a nuclear accident.

[89] NSCA at ss 3, 9, 24.

The IAE's Safety Standard *Preparedness and Response for a Nuclear Radiological Emergency* also sets out the following expectations and responsibilities of the regulatory for off-site planning and oversight:

> *Regulatory body*
>
> 4.12. The regulatory body is required to establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based. These regulations and guides shall include principles, requirements and associated criteria for emergency preparedness and response for the operating organization (see also paras 1.12 and 4.5).
>
> 4.13. The regulatory body shall require that arrangements for preparedness and response for a nuclear or radiological emergency be in place for the on-site area for any regulated facility or activity that could necessitate emergency response actions. Appropriate emergency arrangements shall be established by the time the source is brought to the site, and complete emergency arrangements shall be in place before the commencement of operation of the facility or commencement of the activity. The regulatory body shall verify compliance with the requirements for such arrangements.
>
> 4.14. Before commencement of operation of the facility or commencement of the activity, the regulatory body shall ensure, for all facilities and activities under regulatory control that could necessitate emergency response actions, that the on-site emergency arrangements:
>
> (a) Are integrated with those of other response organizations, as appropriate;
> (b) Are integrated with contingency plans in the context of Ref. [9] and with security plans in the context of Ref. [10];
> (c) Provide, to the extent practicable, assurance of an effective response to a nuclear or radiological emergency.[90]
>
> 4.15. The regulatory body shall ensure that the operating organization is given sufficient authority to promptly take necessary protective actions on the site in response to a nuclear or radiological emergency that could result in off-site consequences.

ii. Size of Emergency Planning Zones

The establishment of emergency planning zones ("EPZ") is a principal tool for offsite emergency planning and response. The New Brunswick Emergency Measures Organization (NB EMO) Point

[90] International Atomic Energy Agency (IAEA General Safety Requirements No. GSR Part 7 (2015), online: https://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf at pp 10-11 [**IAEA GSR Part 7**].

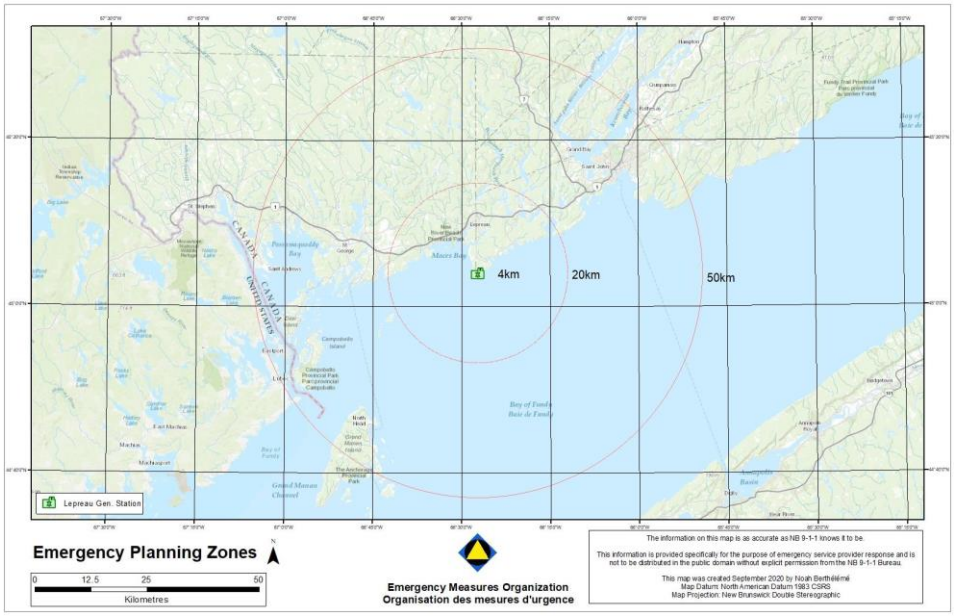
Lepreau Nuclear Off-Site Emergency Plan ("Emergency Plan") defines the following four zones with the indicated distances from the plant:[91]

- Automatic Action Zone ("AAZ"): 4km
- Detailed Planning Zone ("DPZ"): 20km
- Contingency Planning Zone ("CPZ"): 50km
- Ingestion Pathway Zone ("IPZ"): 57km

The intervenors submit that NB EMO's Ingestion Pathway Zone does not align with international guidance (see Figure 2). Specifically, the IAEA recommends that for reactors of 1000 MW(th) or more, the Ingestion and Commodities Planning Distance ought to be 300km (see Figure 3). The corresponding Ingestion Planning Zone at Point Lepreau only extends to a distance of 57 km. As Point Lepreau has a thermal capacity of 2180 MW(th),[92] the IPZ must be extended to 300 km and include the additional requirement that all municipalities within this zone maintain nuclear emergency response plans.

Recommendation No. 27: To conform with international guidance, the Ingestion Pathway Zone must be expanded from 57 km to 300 km and include the additional requirement that all municipalities within this zone maintain nuclear emergency response plans.

Figure 2. Excerpt – Emergency response zones



[91] Emergency Plan at s 1.14.1.
[92] IAEA, "Power Reactor Information System – Point Lepreau: Operational" (2022), online: https://pris.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=37

Figure 3. Comparison of New Brunswick Planning Zones to Other Jurisdictions and International Guidance

	New Brunswick[93]	**Ontario**[94]	**International Guidance**[95],[96]
Phases of Emergency Response	Warning, Impact, Response, Recovery (s. 1.7.1)	Early, Intermediate, Recovery, Transitioning (s 5.9)	Initial, emergency
Public Notification	Within 30 mins of accident categorization, public alerting system initiated (s 1.20.1)	Within 15 mins of initiation of the system (s 7.7.1)	Within 15 mins of declaration of general emergency[97]
Planning Zones	Automatic Action Zone – 4km	Automatic Action Zone - 3km	Precautionary action zone – 3-5km
	Detailed Planning Zone – 20 km: public awareness campaign and KI delivered door-to-door[98] (s 1.54.1)	Detailed Planning Zone – 10 km: public awareness campaign carried out, specifying measures to take in an emergency (s 3.2.10); evacuations not required beyond this boundary (s 3.3); KI pre-distributed within this zone	Urgent protective zone – 15-30km
	Contingency Planning Zone – 50 km	Contingency Planning Zone - 20 km	Extended planning distance: • For reactors 100 – 1000 MW(th): 50km • For reactors more or equal to 1000 MW(th): 100km
	Ingestion Planning Zone – 57 km: expandable if necessary[99] Ingestion Exposure Pathway – 80km[100]	Ingestion Planning Zone • Zone A: out to 30km • Zone B: between 30 – 50 km	Ingestion and commodities planning distance: • For reactors 100 – 1000 MW(th): 100km • For reactors more or equal to 1000 MW(th): 300km

[93] Emergency Plan.
[94] Ontario, "Provincial Nuclear Emergency Response Plan (PNERP) – Master Plan" (2017), online: https://files.ontario.ca/books/solgen-emo-pnerp-master-plan-2017-en-2022-01-06.pdf.
[95] IAEA GSR Part 7.
[96] IAEA, "Considerations in the Development of a Protection Strategy for a Nuclear or Radiological Emergency" (2020), online: https://www-pub.iaea.org/MTCD/Publications/PDF/EPR-Protection_Strategy_web.pdf.
[97] IAEA, "Arrangement for Preparedness and Response for a Nuclear or Radiological Emergency (Draft)" (2021), online: https://www.iaea.org/sites/default/files/21/07/draft_ds504.pdf at p 84.
[98] Emergency Plan at s 1.47.2.
[99] *Ibid.*
[100] *Ibid* at s 1.57.55.

iii. Plume Exposure Pathway

The intervenors submit that the appropriateness of off-site emergency planning and preparedness must be judged on efficacy of the plan to respond to a severe accident scenario. This means the off-site plan must be able to avoid health and safety consequences to members of the public, in addition to on-site workers and first responders resulting from a variety of exposure pathways. Exposure pathways include general gamma radiation from the plume of radioactive materials airborne or deposited on ground and buildings, inhalation of radioactive substances with subsequent radiation from internally deposited materials, skin deposition from externally deposited radioactive material on skin, hair, and clothes, and ingestion of deposited radioactive material as contaminated food and water enter the food chain.

According to the International Commission on Radiological Protection ("ICRP"), in the event of a severe nuclear reactor accident, the most significant component of projected dose would likely be received from contaminated foods.[101] Accordingly, the Emergency Plan recognizes:

> When radioactive material is released because of an accident or emergency, it may move through the air as a plume (cloud) of gas or particles or` be deposited on the ground or other surfaces. People and animals may be exposed to radiation though inhalation or submersion in a radioactive plume, or by being near radioactive material deposited by the plume on the ground or other surfaces[102]
>
> […]
>
> When radioactive material from a plume, or a liquid or solid spill, falls on crops, produce, or on surface water supplies, the potential exists for this radiation to be taken into the body through eating or drinking these radiological contaminated foodstuffs and drinking water.[…] Ingestion pathway exposure is best avoided or limited by preventing the ingestion of radiological contaminated material from occurring.[103]

To safeguard the public from the ingestion of contaminated food products, the Emergency Plan states arrangements are made to:

a) protect the food chain;
b) protect drinking water supplies;

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[101] International Commission on Radiological Protection, "Publication 109 - Application of the Commission's Recommendations for the Protection of People in Emergency Exposure Situations" (2008) at p 61 [**ICRP**].
[102] Emergency Plan at s 1.57.80.
[103] *Ibid* at s 2.15.2.

c) restrict consumption and distribution of potentially contaminated produce, wild-grown products, milk from grazing animals, rainwater, animal feed; and Note: Wild-grown products can include mushrooms and game.
d) restrict distribution of non-food commodities until further assessments are performed.[104]

In the event of a radiological release, the Emergency Plan states farmers may be advised to bring livestock in from pasture to a covered location and provided with protected feed and water.[105]

The intervenors **request** the CNSC to verify that the potential plume pathways have been modelled. Figure 4, below, is an excerpt from the Emergency Plan which notes the potential exposure pathways and accompanying protective actions. The intervenors submit that modelling of each of the potential pathways is a requirement for the sufficiency of the emergency response plan. If such modelling has already been conducted, then the intervenors **request** that the assessments be publicly disclosed prior to Part 2 of the hearing. Currently, the licence application and CMDs by NB Power and CNSC Staff are silent on exposure pathways and modelling.

Further, the intervenors question whether protective actions have been shared with farmers within the IPZ. Because the Emergency Plan assumes the ability to feed and water animals with pre-stocked feed, farmers will have to plan on how much feed and water from protected supplies must be kept on hand. Are agricultural-specific emergency response measures, such as what it means to shelter in place with animals or the need to restrict the distribution of produce and wild-grown products, part of the door-to-door public awareness campaign?[106]

Recommendation No. 28: Models of potential exposure pathways must be a requirement of emergency response planning and a prerequisite to any determination on the sufficiency of off-site preparedness. If such modelling has already been conducted, then the assessments should be publicly disclosed prior to Part 2 of the hearing.

Figure 4. Excerpt – Potential Exposure Pathways and Accompanying Protective Actions[107]

Potential Exposure Pathways				**Protective Actions**
1 – external radiation from plume	**Based on plant**			• Sheltering • Evacuation • Control of access

[104] *Ibid* at s 1.57.56.
[105] *Ibid* at s 1.50.1.
[106] *Ibid* at s 1.54.1.
[107] NB EMO, Emergency Plan.

2 – Inhalation of radioactivity in the plume	**conditions and dose**			• Sheltering • Stable Iodine • Evacuation • Control of access
3 – Contamination of skin and clothes	**projection models**	**Based upon**		• Sheltering • Evacuation • Decontamination of persons
4 – External radiation from ground deposition		**actual measurements**	**Based on**	• Evacuation • Temporary Relocation • Decontamination of land and property
5 – Inhalation of resuspended radioactivity			**actual measurements**	• Relocation • Resettlement • Decontamination of land and property
6 – Ingestion of contaminated food and water			**and sampling**	• Food and Water Controls

iv. KI Distribution

The intervenors support the pre-distribution of iodine. It is well established that potassium Iodide ("KI") is an effective blocker of thyroid radioiodine uptake and it can provide protective benefits to individuals who are particularly vulnerable to thyroid disease, such as pregnant and nursing women, newborns and children.[108]

As CELA has detailed in many previous submissions to the CNSC, reviewing the state of emergency planning, and the rationale to pre-distribute KI,[109] KI is important because its ingestion helps to block uptake of radioactive iodine in case of a severe offsite accident. Radioactive isotopes of iodine are among the earliest radionuclides emitted from a nuclear power plant in case of breach of containment or in controlled venting following an accident. Emergency response to protect against radioactive iodine is needed since iodine "concentrates in the thyroid gland... a quarter of all ingested iodine goes to the thyroid under normal circumstances. As a result, when iodine is

[108] City of Toronto, "Prepare to be Safe," online: http://www.preparetobesafe.ca.
[109] *See* submissions by CELA at prior licence renewals of the Pickering Nuclear Generating Station (2013, 2018) online: https://cela.ca/emergency-planning-at-the-pickering-nuclear-generating-station/ and https://cela.ca/submission-on-pickering-licence-renewal/; CELA, "Comments on CNSC KI Working Group draft Terms of Reference" (2019), online: https://cela.ca/celas-comments-on-the-canadian-nuclear-safety-commissions-ki-working-group-draft-terms-of-reference/ , CELA "Comments on REGDOC 2.10.1" (2014) online, https://cela.ca/further-comments-from-canadian-environmental-law-association-re-emergency-planning-regdoc-2-10-1/

ingested, the thyroid receives a very large dose compared to the rest of the body (roughly 1000 times as much)."[110]

The intervenors submit that KI must be pre-distributed because it must be ingested before, during, or shortly after a radioactive release.[111] It would not be reasonably feasible to quickly obtain KI after such a severe accident. In that scenario people will likely be required to shelter in place and/or evacuate so it will not be possible to go to pharmacies to obtain KI, nor would it be practical to have extensive distribution at that time. In any event, there is no possibility this could happen on time for the affected population numbers if KI had not been adequately pre-distribution.

The federal standard recognized in REGDOC 2.10.1 *Nuclear Emergency Preparedness and Response* requires "…that particular consideration is given to sensitive populations such as children and pregnant women within the designated ingestion control planning zone."[112] The intervenors submit that this statement must be interpreted in such a way that equal levels of protection are provided to all individuals within the Ingestion Protection Zone ("IPZ"). This echoes the Heads of the European Radiological Protection Competent Authorities ("HERCA") who also recommend that emergency strategies for iodine thyroid blocking ("ITB") extend to 100km.[113] The distribution of ITB to 100km is one of three requirements recommended in its 'general emergency response strategy'.[114] Other jurisdictions, such as Switzerland currently pre-distribute KI pills within 50km of each plant as a precautionary measure.[115]

The NB EMO Emergency Plan provides that KI Pills are distributed to all residences within the Detailed Planning Zone which extends out to a distance of 20 km. This does not cover the city of Saint John, which is 38 kms East of Point Lepreau and has a population of around 130,000.[116]

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[110] IAEA, "Arrangements for Preparedness for a Nuclear or Radiological Emergency" Guide GS-G-2.1 (2007), online: https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf at V.17 states "The thyroid gland absorbs and concentrates iodine once it has been inhaled or ingested; thus the potential exists for large thyroid doses following the occurrence of severe core damage at a large reactor. A large dose to the thyroid can result in deterministic effects in the thyroid gland and radiation induced thyroid cancer. In the event of actual or possible core damage, stable iodine prophylaxis should therefore be used: to prevent deterministic effects in the thyroid gland (e.g. hypothyroidism; to reasonably reduce the risk of stochastic effects (e.g. radiation induced thyroid cancer) from the inhalation of radioiodine within or near the facility" [**IAEA Guide GS-G-2.1**].

[111] IAEA Guide GS-G-2.1 at V.19.

[112] CNSC RegDoc 2.10.1, *Nuclear Emergency Preparedness and Response*, online: https://nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/published/html/regdoc2-10-1/index.cfm, s 2.3.4

[113] HERCA-WENRA, "Approach for a better cross-border coordination of protective actions during the early phase of a nuclear accident" (2014), online: http://www.herca.org/docstats/HERCAWENRA%20approach%20for%20better%20cross-border%20coordination.pdf at p 9.

[114] *Ibid* at p 38.

[115] Be Prepared Grey Bruce Huron, "Be Prepared for a Nuclear Emergency - Potassium Iodide (KI)", online: http://www.bepreparedgreybrucehuron.com/nuclear/ki-tablets/

[116] Statistics Canada, *Saint John, Census metropolitan area*, online: https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/Page.cfm?lang=E&r=1&dguid=2021S0503310

Further, an estimated 97,000 people live between 20 and 50 km of Point Lepreau. The intervenors submit that such a large number of people should not be left without adequate preparation for an accident and **recommend** pre-distribution of KI Pills to all residences within a 50km radius, and pre-stock and selectively pre-distribute to vulnerable populations within the IPZ (100 km radius).

Recommendation No. 29: We encourage the CNSC to require NB Power to provide KI by way of pre-distribution within a 50 km radius, and pre-stock to 100 km. In accordance with international best practice, the CNSC should extend KI stockpiles to 100 km and ensure that places frequented by vulnerable groups, such as children and pregnant women, maintain sufficient stockpiles.

v. Public Awareness

First and foremost, the CNSC is vested with protecting the public from any accident involving a nuclear reactor or site. This means that before proceeding with any licensing decision, the intervenors submit that CNSC must be satisfied that the public is prepared and has the information it needs to be informed *in advance* of a real accident.

Public awareness is critical to effectively responding to accidents. The more recent COVID-19 pandemic has underscored that being able to disseminate information, specifically to those most at risk, is critical to response action. The intervenors have reviewed NB Power's application and the CNSC staff CMD. Apart from statements that their Emergency Response Plan meets the regulatory requirements as set out in REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*[117], no details are provided on amendments or actions which would be taken to further offsite emergency planning protections in the context of COVID-19. For example, how will NB Power handle the lack of emergency response personnel? How will they respond if there is more than one crisis at once?

Currently, section 10.1 of the proposed Licence Conditions Handbook ("LCH") for NB Power states "The licensee <u>should provide</u> emergency communications outlining what surrounding community residents need to know and do before, during and after a nuclear emergency." The intervenors **recommend** "should" be replaced with the express requirement that "the licensee <u>must</u> provide emergency communications." As currently worded, the LCH leaves the public without a plan should they wish to raise their level of awareness. Also, as a condition of licence renewal, the CNSC should require ongoing public education for emergency preparedness and protective actions.

Recommendation No. 30: The CNSC should review the sufficiency of the Emergency Response Plan and actions which should be taken to further offsite emergency planning protections in the context of COVID-19.

[117] CNSC Staff CMD at p 89.

Recommendation No. 31: Licence Conditions Handbook section 10.1 be updated to read the "licensee must provide emergency communications" and not "should", as currently drafted.

Recommendation No. 32: The CNSC should require ongoing public education for emergency preparedness and protective actions.

vi. Evacuation

Evacuation is one of the most immediate actions to be taken in the event of a general emergency at any nuclear generating station. The ICRP indicates that the purpose of evacuation is to provide "rapid, temporary removal of people from an area to avoid or reduce short-term radiation exposure in an emergency exposure situation."[118] ICRP states that it is "most effective if it can be taken as a precautionary measure before there is any significant release of radioactive material."[119]

Evacuation before emissions have started is the most effective protective measure in the event of a nuclear emergency because it protects the whole body from radionuclides through all exposure pathways. Health Canada's *Generic Criteria and Operational Intervention for Nuclear Emergency Planning and Response* describe evacuation as having the "potential to avert most or all doses if carried out in the pre-release phase of an accident."[120]

The intervenors have a number of concerns with NB Power's Evacuation Time Study[121]. *First,* we are concerned about the inability of people without cars to evacuate. The U.S. Nuclear Regulatory Commission, in its Criteria for Development of Evacuation Time Estimate Studies, requires explicit calculation of numbers of people who would need to be evacuated. This includes population estimates of:[122]

1. **Permanent Residents and Transient Population** – Permanent residents include all people having a residence in the area. The transient population includes tourists, shoppers, employees, etc., who visit but do not reside in the area.
2. **Transit Dependent Permanent Residents** – Permanent residents who do not have access to a vehicle or are dependent upon help from outside the home to evacuate.

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[118] *See* International Commission on Radiological Protection "Publication 109 - Application of the Commission's Recommendations for the Protection of People in Emergency Exposure Situations" (2008) at p 62-63.
[119] *Ibid.*
[120] Health Canada, *Generic Criteria and Operational Intervention for Nuclear Emergency Planning and Response* (2018) online: https://publications.gc.ca/collections/collection_2018/sc-hc/H129-86-2018-eng.pdf at 20.
[121] KLD Engineering, PC, "Point Lepreau Nuclear Generating Station – Development of Evacuation Time Estimates" (2017) [**Evacuation Time Study**].
[122] U.S. Nuclear Regulatory Commission, "Criteria for Development of Evacuation Time Estimate Studies – NUREG/CR7002, Rev 1" (2021), online: https://www.nrc.gov/docs/ML2101/ML21013A504.pdf at p 2-1.

3. **Special Facility Residents** – Residents of nursing homes, assisted living centers, and those confined to hospitals, jails, prisons, etc.
4. **Schools** – All private and public educational facilities within the EPZ. Colleges and universities should be assessed on a case-by-case basis, recognizing that college students typically have access to a vehicle.

Transit Dependent Permanent Residents include:[123]

- households with no vehicles available during the evacuation
- residents unable to self-evacuate (e.g., elderly who do not drive at night or do not drive distances of more than a few miles)
- residents dependent on specialized transportation such as wheelchair vans or ambulances

The U.S. Criteria also specifies that a summary of (1) the total number of vehicles available to support evacuation of transit dependent residents, as well as (2) people with disabilities and (3) those with access and functional needs not residing in special facilities, be provided.[124]

The NB EMO's Emergency Plan states that an ambulance service "may be required" to enter the Emergency Evacuation Zone for emergency treatment and transport, and the Extra-Mural Program will also "assess the needs of their patients" in the evacuation zone and identify those requiring transportation assistance.[125] These transportation options are not sufficient in light of the best practices identified above. The intervenors **recommend** NB EMO be required to update its Emergency Plan to include explicit calculation of numbers of people who would need to be evacuated, including households with no vehicles, residents unable to self-evacuate, and residents dependent on specialized transportation.

Second, REGDOC 2.10.1, *Nuclear Emergency Preparedness and Response* requires the licensee to "collaborate with the municipal or regional authorities to develop and maintain public evacuation time estimates based on current census data, and future population growth projections on a per-decade estimation until end of life of the facility."[126] However, as drafted, the Emergency Plan is silent on how land use changes will be tracked and reported to the CNSC to ensure the sufficiency of emergency planning. The intervenors **recommend** NB EMO be required to update its Emergency Plan to include these details.

Third, based on the requirement in REGDOC 2.10.1, the intervenors submit evacuation time estimates and land use change ought to have been modelled at least 25 years out. NB Power's

[123] *Ibid* at p 2-3.
[124] *Ibid* at p 2-4.
[125] Emergency Plan at s 3.10.4.
[126] CNSC RegDoc 2.10.1, *Nuclear Emergency Preparedness and Response*, online: https://nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/published/html/regdoc2-10-1/index.cfm.

current Evacuation Time Study relies on data from 2016, and, as currently drafted, only includes projections out to the year 2035, which excludes the last 12 years of NB Power's proposed licence term. The intervenors **recommend** NB EMO be required to update its Emergency Plan and Evacuation Time Study to include projections out to the year 2047. The intervenors further **recommend** a requirement that NB Power "collaborate with the municipal or regional authorities to develop and maintain public evacuation time estimates based on current census data, and future population growth projections on a per-decade estimation until end of life of the facility" be made a condition of licensing.

Recommendation No. 33: Require NB EMO to update the off-site Emergency Plan to include explicit calculation of numbers of people who would need to be evacuated, including households with no vehicles, residents unable to self-evacuate, and residents dependent on specialized transportation.

Recommendation No. 34: Require NB EMO to update its Emergency Plan to include information on how land use changes will be tracked and reported to the CNSC to ensure the sufficiency of emergency planning.

Recommendation No. 35: Require NB Power to update its Evacuation Time Study to include projections out to the year 2047.

Recommendation No. 36: It should be made a condition of licencing that NB Power "collaborate with the municipal or regional authorities to develop and maintain public evacuation time estimates based on current census data, and future population growth projections on a per-decade estimation until end of life of the facility".

vii. Marine Response

Point Lepreau, located within 100 metres of the Bay of Fundy, is Canada's only nuclear generating station on an ocean. In recognition of the Bay of Fundy's unique geological formations and ecological significance, it was designated a UNESCO Biosphere Reserve in 2007.[127]

The marine environment immediately around the plant is described by the CNSC as including clams, dulse, fish, lobster, periwinkles, aquaculture salmon, and scallops.[128] In addition to the marine mammals like whales, porpoises, dolphins and seals that frequent the Bay of Fundy, colonial waterbirds also use the area during seasonal migrations. The Bay of Fundy is home to a

[127] United Nations Educational, Scientific and Cultural Organization, "Biosphere Reserves – Fundy" (2015) online: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/europenorth-america/canada/fundy/
[128] CNSC Staff CMD at p 83.

number of federally protected species under the *Species at Risk Act*, including the North Atlantic right whale.[129] the blue whale,[130] and the fin whale[131].

Given the globally recognized uniqueness and importance of the Bay of Fundy region, the intervenors submit the CNSC must consider the marine environment within its reading of "protection of the environment" and "safety of persons" per s 24(4) of the *NSCA*.

The only considerations of marine life, potential impact on fisheries, and pollution dispersion by water in the event of a large radiation release in NB EMO's Emergency Plan are the following:

- Port of Saint John: (a) A radiation monitoring post will be located at the Port of Saint John under the direction of the Port Authorities with assistance from NB Power. They are to be prepared to handle fishing boats, small craft and large ships including their crew and passengers; and (b). The Department of Agriculture, Aquaculture and Fisheries will arrange for the testing of marine products for contamination and will arrange for disposal, if necessary.[132]
- Port of Black: (a) radiation monitoring post will be in Blacks Harbour under the direction of the Wharfinger with assistance from NB Power. They are to be prepared to handle fishing boats, small crew and large ships including their crew and passengers; and (b) The Department of Agriculture, Aquaculture and Fisheries will arrange for the testing of marine products for contamination and will arrange for disposal, if necessary.[133]
- DFO to assist with ingestion pathway monitoring plan.[134]
- The Port of Saint John is a port the Canadian Coast Guard and DFO may direct vessels to a part of the evacuation at sea during a radiation emergency at the PLNGS.[135]
- The Emergency Off-Site Monitoring Program includes a Marine Survey (gamma dose rate along the local shoreline).[136]

The intervenors do not believe these parameters are sufficient to safeguard the marine environment. There are a number of outstanding questions which must be addressed before the adequacy of the off-site Emergency Plan can be determined as it relates to the protection of the environment and human health in the Bay of Fundy. For example, the Emergency Plan does not

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[129] Species at Risk Public Registry, "North Atlantic Right Whale" (2022) online: https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=780
[130] Species at Risk Public Registry, "Blue Whale Pacific" (2022) online: https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=718
[131] Species at Risk Public Registry, "Fin Whale Pacific" (2022) online: https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=875
[132] ERA at s 2.10.3.
[133] *Ibid* at s 2.10.3.
[134] *Ibid* at s 2.17.1.
[135] *Ibid* at s 2.17.1.
[136] *Ibid* at s 3.19.1.

provide any details or plans related to an "evacuation at sea". What are the roles of the Canadian Coast Guard and DFO? Are there maps illustrating the plan for an evacuation at sea? The Emergency Plan also does not provide an explanation for limiting the Marine Survey to the local shoreline. Why is there no offshore marine monitoring? In the event of an accident, would there be any monitoring offshore?

Recommendation No. 37: CRED-NB and CELA submit that this licence should not be granted until a marine-based offsite emergency plan is made public. The CNSC must ensure emergency response at sea allows for an effective response to accidents and demonstrates a high level of preparedness.

viii. Cyber security

The intervenors submit that NB Power's consideration of cyber security in their licence application and CMD is insufficient to protect the health and safety of persons and maintain national security, as required under s 24(4) of the *NSCA*. Specific references to 'cyber security' in NB Power's licence application and CMD are limited to the following:

- Point Lepreau has a cyber security program that protects Cyber Essential Assets that perform or impact: (i) functions important to nuclear safety; (ii) nuclear security functions; and (iii) emergency preparedness and response function.[137]
- In the fall of 2021, PLNGS in coordination with the province of New Brunswick and other response partners from the local, municipal, federal and international levels successfully conducted a full-scale emergency exercise Synergy Challenge 2021. […] The exercise scenario included responding to and investigating a cyber security event, in addition to response to a radiological emergency.[138]

CNSC Staff's CMD is similarly limited in describing the extent and rigour of the cyber security regime at Point Lepreau. Their brief evaluation is as follows:

> CNSC staff noted that during the current licensing period, NB Power maintained their cyber security program to protect computer-based systems that perform safety, security, emergency preparedness, and safeguard functions against cyber-attacks.
>
> CNSC staff also confirmed that NB Power completed updating their cyber security program to meet the requirements of CSA N290.7-14 in 2020.[139]

[137] Licence Application at p 125; NB Power CMD at p 118.
[138] NB Power CMD at p 110.
[139] CNSC Staff CMD at p 100.

The intervenors raise this concern, recognizing that the number of cyberattacks against nuclear facilities has significantly increased since 2000.[140] For example, in 2014 alone, malware was introduced into the control room at Japan's Monju nuclear power plant and the Korea Hydro and Nuclear Power in South Korea was hacked.[141] These two cases resulted in the release of technical data online. In 2019, India's Kudankulam nuclear power plant was also hacked.[142] Given the increasing urgency and known occurrence of serious cyber-attacks, a far greater emphasis on cyber security provisions at Point Lepreau would have been expected in NB Power's licence application and CMD.

A January 2021 article published by Georgetown University notes that "[cyber security incidents] at nuclear facilities in the United States and abroad highlight the importance of developing and implementing rigorous regulatory frameworks, risk-based assessments, and improved digital protection capabilities."[143] The authors note that "new technologies and the creation of new operating environments" involve "managing increasingly complex risks".[144] In particular, "the increasing use of digital infrastructure in nuclear power and subsequent cyber vulnerability should be accompanied by total system risk assessment, and greater regulation and guidance at the national and international level."[145]

The IAEA recently issued its first implementing guide to comprehensively address computer security – Nuclear Security Series (NSS) No. 42-G *Computer Security for Nuclear Security* – to support experts worldwide in implementing computer security measures to strengthen their national nuclear security regimes.[146]

While CNSC staff's CMD notes that "CNSC staff are proposing amendments to the Nuclear Security Program, which includes adding a requirement requiring NPP licensees to assess their vulnerability to cyber threats, and that cyber threat be included in their threat and risk assessment (TRA)", it is unclear when and how this will apply at Point Lepreau.[147] The intervenors **recommend** the Commission seek clarification on this point.

Further, CNSC Staff's CMD notes that "CSA N290.7-21 is expected to be published in Q4 2021. CNSC staff will require NB Power to perform a gap analysis between their current CSA N290.7-

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[140] Nuclear Threat Initiative, "Outpacing Cyber Threats: Priorities for Cybersecurity at Nuclear Facilities" (2016), online: https://media.nti.org/documents/NTI_CyberThreats__FINAL.pdf at 10.
[141] *Ibid.*
[142] Online: https://www.theindiaforum.in/article/computer-infection-kudankulam-and-its-implications.
[143] Susan Y Pickering and Peter B Davies, "Cyber Security of Nuclear Power Plants: US and Global Perspectives" (2021) Georgetown Journal of International Affairs, online: https://gjia.georgetown.edu/2021/01/22/cyber-security-of-nuclear-power-plants-us-and-global-perspectives/.
[144] *Ibid.*
[145] *Ibid.*
[146] IAEA, Nuclear Security Series (NSS) No. 42-G *Computer Security for Nuclear Security* (2021) online: https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1918_web.pdf.
[147] CNSC Staff CMD at p 101.

14 cyber security program and the requirements in the new revision of CSA N290.7-21."[148] The intervenors submit that further clarification is required regarding when NB Power will be required to perform a gap analysis and how this will be communicated to the public and the Commission.

The intervenors submit there are several outstanding questions which must be addressed before the adequacy of NB Power's cyber security program can be determined. For example, what interim measures are being taken by NB Power until CSA N290.7-21 is fully implemented? Is NB Power's cyber security program in line with recent international guidance, such as NSS No. 17-T (Rev. 1) *Technical Guidance on Computer Security Techniques for Nuclear Facilities*[149] published in September 2021, and NSS No. 33-T *Technical Guidance on Computer Security of Instrumentation and Control Systems at Nuclear Facilities*[150]. What will the speed of 'evolving' cyber security threats mean for the frequency of security testing exercises at Point Lepreau?

Further, given the speed of evolving cyber security threats, we have very little basis to foresee the kinds of cyber risks that might be prevalent in the next 5 to 10 years, let alone over the next two and half decades. The intervenors submit this is yet another reason the CNSC should not grant NB Power a 25-year licence.

Recommendation No. 38: The CNSC should seek clarification regarding: (1) when and how amendments to the Nuclear Security Program will apply at Point Lepreau, (2) when NB Power will be required to perform a gap analysis between their current CSA N290.7-14 cyber security program and the requirements in the new revision of CSA N290.7-21, and how this will be communicated to the public and the Commission, and (3) what interim measures are being taken by NB Power until CSA N290.7-21 is fully implemented.

Recommendation No. 39: CRED-NB and CELA submit that this licence should not be granted until NB Power's cyber security program is made public, and the public is given a chance to evaluate whether it is in line with international guidance and sufficient to ensure the protection of the health and safety of persons and the maintenance of national security.

Recommendation No. 40: Given the speed of evolving cyber security threats and uncertainty of risks, the CNSC should not grant NB Power the 25-year licence extension as applied for.

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[148] CNSC Staff CMD at p 101.
[149] IAEA, NSS No. 17-T (Rev. 1) *Technical Guidance on Computer Security Techniques for Nuclear Facilities* (2021), online: https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1921_web.pdf.
[150] IAEA, NSS No. 33-T *Technical Guidance on Computer Security of Instrumentation and Control Systems at Nuclear Facilities* (2018), online: https://www-pub.iaea.org/MTCD/Publications/PDF/P1787_web.pdf; The preamble of the NSCA recognizes it is essential in the national interest that consistent national and international standards be applied to the development, production and use of nuclear energy.

VI. CONCLUSION & ORDER REQUESTED

For the foregoing reasons provided in this intervention, CRED-NB and CELA submit there is no reasonable basis to proceed with the licensing renewal request and recommend the CNSC issue an order:

(1) Granting CRED-NB and CELA the status of intervenor;

(2) Granting CRED-NB and CELA the opportunity to make an oral presentation at the May 2022 hearing;

(3) Denying NB Power's request for a 25-year licence on the basis that:

a. A 25-year licence would remove the right to a public hearing for a full generation, compromise meaningful public participation in nuclear matters and erode public confidence in both the Commission and the licensee;

b. A 25-year licence would be unjustified given NB Power's plans to deploy two Small Modular Reactors ("SMRs") at the Point Lepreau site during that timeframe;

c. Climate change, which will result in increasingly dire weather events, has not been expressly considered in the licence application nor impacts modelled; and

d. Off-site emergency planning and preparedness at Point Lepreau is insufficient to protect human health and the environment;

(4) Denying CNSC staff's recommendation for a 20-year licence;

(5) Directing NB Power to revise its licence renewal application, considering all of the deficiencies and recommendations herein;

(6) Making it a condition of licencing that another full and public hearing be held following NB Power's commencement of licensing for the proposed SMR projects to evaluate whether the cumulative effects of the licence will uphold the protection of the public and environment from potential radiological effects and emergencies.

Sincerely,

COALITION FOR RESPONSIBLE ENERGY DEVELOPMENT IN NEW BRUNSWICK
CANADIAN ENVIRONMENTAL LAW ASSOCIATION

Gail Wylie
Representative, CRED-NB

Kerrie Blaise
Legal Counsel, CELA

Krystal-Anne Roussel
Legal Counsel, CELA

APPENDIX A – SUMMARY OF RECOMMENDATIONS

Recommendation No. 1: The CNCS should provide a pre-hearing opportunity where CNSC Staff, licensees and intervenors alike can weigh in on the issues which should frame the licensing hearing and accompanying documents. Given the trend to longer licences, soliciting public comment on the scope of issues which they believe are critical, would provide a starting point for early public engagement.

Recommendation No. 2: Documents relied upon in NB Power's and CNSC Staff's CMDs ought to be publicly available by default and not available upon request only.

Recommendation No. 3: At a minimum, the CNSC should require all licensing documents be publicly disclosed to advance the public's right to know. This is critical, not only in advancing the right to know, but the public's trust in the regulator and the actions of the licensee.

Recommendation No. 4: The CNSC should immediately initiate a comprehensive review of action items made in previous licensing hearings, to ensure past commitments are upheld and tracked for compliance.

Recommendation No. 5: References contained in CNSC Staff's and the licensee's CMDs ought to be publicly available so that subject matter experts can provide peer review of the documents. This is necessary for the CNSC is to uphold its obligations to disseminate "objective" information.

Recommendation No. 6: The right to cross-examination must be adopted as part of the hearing process so that members of the public have the ability to pose questions regarding, for instance, a study's methods, scope and findings.

Recommendation No. 7: The renewal of nuclear operating licences should be fully subject to the federal *Impact Assessment Act* so that considerations of the need and purpose of the project, as well as alternatives, could be fully assessed against a range of factors including accidents and malfunctions, cumulative effects, sustainability, identity factors and Indigenous knowledge and culture.

Recommendation No. 8: Licence renewals should be subject to shorter licensing terms as it provides the opportunity for public hearings under section 40(1) of the *NSCA*, and enhances the openness and transparency of the CNSC, and its oversight of nuclear uses and technologies. These opportunities are critical to building the public's trust in the regulator and would be lost if there is only one chance every generation for the public to participate in a hearing and engage in dialogue with the CNSC and the licencee about their concerns.

Recommendation No. 9: Regulatory Oversight Reports and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings, nor used as a stand-in for public hearings.

Recommendation No. 10: The CNSC should disregard CNSC staff's recommendation for a 20-year licencing term.

Recommendation No. 11: Without a more thorough review of legislation and licencing procedures in other jurisdictions, international precedence and benchmarking do not justify longer term licences in Canada.

Recommendation No. 12: The CNSC should direct CNSC Staff and NB Power to revise all licensing documents to avoid implying 'no change' will occur at the Point Lepreau site during the proposed licensing term.

Recommendation No. 13: As a condition of licensing, upon receipt of an application to construct or site an SMR at Point Lepreau, a public hearing for NB Power's operating licence shall occur pursuant to section 40(5)(b)[151] of the *NSCA*, and both licences at the Point Lepreau site considered in tandem, so that a site-wide and comprehensive review of cumulative effects, emergency planning, and impacts from accidents and malfunctions can be carried out.

Recommendation No. 14: In the event of a change in ownership or transference of the licence during the licensing term, a public hearing should be held pursuant to section 40(5)(b) of the *NSCA*.

Recommendation No. 15: NB Power should be required to forecast environmental impacts for years 1 – 25 of the proposed licence period.

Recommendation No. 16: NB Power should be required to consider impacts to physical, biological, and human (including social, health and cultural) environments.

Recommendation No. 17: Given the unprecedented request for a 25-year licence, the ERA should be updated with data from 2019 and 2020, and, if possible, with data from 2021, before the Commission makes any decision regarding the requested licence renewal.

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[151] **40(5)** The Commission shall, subject to any by-laws made under section 15 and any regulations made under section 44, hold a public hearing with respect to
(a) the proposed exercise by the Commission, or by a panel established under section 22, of the power under subsection 24(2) to issue, renew, suspend, amend, revoke or replace a licence; and
(b) any other matter within its jurisdiction under this Act, if the Commission is satisfied that it would be in the public interest to do so.

Recommendation No. 18: NB Power should be required to predict or evaluate potential changes to the environment and likely effects in the subsequent 25-year licensing period.

Recommendation No. 19: The CNSC should make it a condition of licencing that all emissions monitoring data be publicly reported in real time.

Recommendation No. 20: The gap caused by the historical oversight of decommissioning considerations and the infancy of the CNSC's consideration of decommissioning strategies more broadly in Canada, means this licensing hearing ought to be used as an early engagement opportunity to review decommissioning plans, methods, and their accompanying impacts to human health and the environment.

Recommendation No. 21: Review of NB Power's proposed decommissioning strategy ought to be among the issues considered in Part 2 of the licence renewal hearing. Supplemental submissions should be provided by the licensee so that both the Commission members and the public can engage in a review of preliminary plans and strategies.

Recommendation No. 22: The CNSC ought to review NB Power's proposed decommissioning strategy in light of plans for SMRs at the site. For instance, will decommissioning happen after the CANDU reactor is shut down or after all the reactors and reprocessing plant are shut down?

Recommendation No. 23: The CNSC should review the licence renewal application with express consideration given to climate impacts and climate resiliency, including in the context of site suitability and impacts on safety and the environment.

Recommendation No. 24: The criteria by which climate change impacts and natural external events have been assessed and evaluated against the 25-year licence application must be clearly set out.

Recommendation No. 25: Detailed climate analysis must be presented in a public forum as part of the CNSC's licensing process.

Recommendation No. 26: NB Power's environmental impact studies, evacuation time estimates, and land use change studies should be modelled at least 25 years out.

Recommendation No. 27: To conform with international guidance, the Ingestion Pathway Zone must be expanded from 57 km to 300 km and include the additional requirement that all municipalities within this zone maintain nuclear emergency response plans.

Recommendation No. 28: Models of potential exposure pathways must be a requirement of emergency response planning and a prerequisite to any determination on the sufficiency of off-site preparedness. If such modelling has already been conducted, then the assessments should be publicly disclosed prior to Part 2 of the hearing.

Recommendation No. 29: We encourage the CNSC to require NB Power to provide KI by way of pre-distribution within a 50 km radius, and pre-stock to 100 km. In accordance with international best practice, the CNSC should extend KI stockpiles to 100 km and ensure that places frequented by vulnerable groups, such as children and pregnant women, maintain sufficient stockpiles.

Recommendation No. 30: The CNSC should review the sufficiency of the Emergency Response Plan and actions which should be taken to further offsite emergency planning protections in the context of COVID-19.

Recommendation No. 31: Licence Conditions Handbook section 10.1 be updated to read the "licensee must provide emergency communications" and not "should", as currently drafted.

Recommendation No. 32: The CNSC should require ongoing public education for emergency preparedness and protective actions.

Recommendation No. 33: Require NB EMO to update the off-site Emergency Plan to include explicit calculation of numbers of people who would need to be evacuated, including households with no vehicles, residents unable to self-evacuate, and residents dependent on specialized transportation.

Recommendation No. 34: Require NB EMO to update its Emergency Plan to include information on how land use changes will be tracked and reported to the CNSC to ensure the sufficiency of emergency planning.

Recommendation No. 35: Require NB Power to update its Evacuation Time Study to include projections out to the year 2047.

Recommendation No. 36: It should be made a condition of licencing that NB Power "collaborate with the municipal or regional authorities to develop and maintain public evacuation time estimates based on current census data, and future population growth projections on a per-decade estimation until end of life of the facility".

Recommendation No. 37: CRED-NB and CELA submit that this licence should not be granted until a marine-based offsite emergency plan is made public. The CNSC must ensure emergency

response at sea allows for an effective response to accidents and demonstrates a high level of preparedness.

Recommendation No. 38: The CNSC should seek clarification regarding: (1) when and how amendments to the Nuclear Security Program will apply at Point Lepreau, (2) when NB Power will be required to perform a gap analysis between their current CSA N290.7-14 cyber security program and the requirements in the new revision of CSA N290.7-21, and how this will be communicated to the public and the Commission, and (3) what interim measures are being taken by NB Power until CSA N290.7-21 is fully implemented.

Recommendation No. 39: CRED-NB and CELA submit that this licence should not be granted until NB Power's cyber security program is made public, and the public is given a chance to evaluate whether it is in line with international guidance and sufficient to ensure the protection of the health and safety of persons and the maintenance of national security.

Recommendation No. 40: Given the speed of evolving cyber security threats and uncertainty of risks, the CNSC should not grant NB Power the 25-year licence extension as applied for.

APPENDIX B – LIST OF CRED-NB MEMBERS & CHAMPIONS

Coalition core members

- Concerned Citizens of Saint John (rep: Paula Tippett)
- Council of Canadians Fredericton (rep: Gail Wylie)
- Council of Canadians Saint John (rep: Ann McAllister)
- Extinction Rebellion New Brunswick (rep: Doug Swain)
- Environment & Society Program at St. Thomas University (rep: Janice Harvey)
- Leap4wards (rep: David Thompson)
- New Brunswick Anti-Shale Gas Alliance (NBASGA) (rep: Roy Ries)
- Rural Action and Voices for the Environment (RAVEN) at the University of New Brunswick (rep: Susan O'Donnell)
- Sierra Club Canada Foundation, Atlantic Chapter (rep: Maggie Bunbury)
- Sustainable Energy Group Carleton County (rep: Sam Arnold)

Organizations and businesses

- Agile Design + Fabrication, Moncton, NB
- Community Energy Cooperative of New Brunswick, Ltd., Knowlesville, NB
- Congregation of Notre Dame Office of Justice, Peace & Integrity of
- Creation (JPIC), Bedford, NS
- EOS Eco-Energy, Sackville, NB
- Fundy Solar, Jolicure, NB
- Librairie Pélagie, Shippigan, NB
- MJM Solar, Fredericton, NB
- Natural Forces, Halifax, NS
- Nova Scotia Voice of Women for Peace, NS
- PEACE NB, Saint John, NB
- Sophabulous, Inc., NB
- Tantramar Alliance Against Hydro-Fracking (TAAHF), NB
- VOICES for Sustainable Environments and Communities, NB

Individuals

- Adam Birchweaver, Mactaquac, NB
- Adam Morgan, Fredericton, NB
- Adrian Prado, Saint-Joseph-de-Madawaska, NB
- Alex Miller, Upper Cloverdale, NB
- Andrew Secord, Fredericton, NB
- Andy Walton, Hartland, NB
- Ann-Marie Cournoyer, Fredericton, NB

- Art MacKay, St. Stephen, NB
- Auréa Cormier, Moncton, NB
- Bernice Steele, Charlottetown, PEI
- Brenda Parks, Keswick Ridge, NB
- Carl Duivenvoorden, Upper Kingsclear, NB
- Carolyn Wagner, Fredericton, NB
- Catherine Gillespie, Upper Dorchester, NB
- Charlotte Poirier, Landry Office, NB
- Chris Corey, St. Stephen, NB
- Christine Spencer, Pugwash, NS
- Christopher Reibling, Saint John, NB
- Cynthia Perry, Saint John, NB
- Daniel Cole, Moncton, NB
- Dave Bailie, Sackville, NB
- David Beaudin, Rothesay, NB
- David Lewis, Ammon, NB
- David Storey, Kingston, NB
- David Wagner, Fredericton, NB
- Deanna Davis, Grande Digue, NB
- Debbie Baxter, Moncton, NB
- Debra Crowe, Baxters Corner, NB
- Denis Boulet, Haut-Madawaska, NB
- Denise Lirette, Dieppe, NB
- Donna MacKenzie, Moncton, NB
- Dorice Pinet, Caraquet, NB
- Elena Bennett, Macadam, NB
- Elizabeth Kline, North Battleford, SK
- Elizabeth Lee, St. Anthony, NL
- Frank Silver, NS
- Gerry McAlister, Fredericton, NB
- Geoffrey Ritchie, Fredericton, NB
- Greg Cook, Aulac, NB
- Greta Doucet, Moncton, NB
- Heather Wilkins, Durham Bridge, NB
- Hugh Akagi, St. Andrews, NB
- Hyungjin Son, Fredericton, NB
- Jean-Claude Basque, Moncton, NB
- Jean Desrosiers, Nicholas-Denys, NB

- Jean-Guy Levesque, Saint-Andre, NB
- Jean-Paul Bourque, Moncton, NB
- Jenn Kang, Lockhartville, NS
- Jessica Spencer, Moncton, NB
- Joanne Raye, St. Stephen, NB
- Jonathan Fulford, Belfast, Maine, USA
- John Reist, Rollingdam, NB
- Julie Basque, Tracadie, NB
- Julien Cormier, Shippigan, NB
- Kathrin Winkler, Halifax, NS
- Karen Buckley Robichaud, Moncton, NB
- Karen Dewolfe-Cox, Fredericton, NB
- Keith Carver, Hillsborough, NB
- Keith Towse, Halifax, NS
- Kim Reeder, Charlotte County, NB
- Larry Lack, St. Andrews, NB
- Laura Myers, Hampton, NB
- Lauren Clark, Moncton, NB
- Leslie Chandler, Moncton, NB
- Leticia Adair, Saint John, NB
- Liane Thibodeau, Summerville, NB
- Lise Auffray, Moncton, NB
- Louise Comeau, Keswick Ridge, NB
- Margo Sheppard, Fredericton, NB
- Marian Lucas-Jefferies, Public Landing, NB
- Marilyn Lerch, Sackville, NB
- Marion Bencze, Norton, NB
- Mary Milander, Saint John, NB
- Meg Morris, Halifax, NS,
- Megan McCann, Fredericton, NB
- Mark E. Leblanc, Moncton, NB
- Mark McCann, Fredericton, NB
- Michel Albert, Shediac River, NB
- Michèle Caron, Dieppe, NB
- Michel Duguay, Québec, QC
- Nancy Alcox, Brown’s Yard, NB
- Nancy Covington, Halifax, NS
- Nancy Juneau, Caraquet, NB

- Nicolas Jelic, Moncton, NB
- Norman Knight, Fredericton, NB
- Oliver Rukavina, Charlottetown, PEI
- Pablo Cortez, Dieppe, NB
- Patricia Donahue, Shediac, NB
- Patricia Gibbs, Moncton, NB
- Patrick Groulx, Toronto, ON
- Paul Filteau, Thunder Bay, ON
- Paul Leger, Moncton, NB
- Réjean J. Simard, Saint Louis-de-Kent, NB
- Rob Moir, Clifton Royal, NB
- Robin Stanley, Saint John, NB
- Roger Godin, Val-Comeau, NB
- Roger Olmstead, Upper Woodstock, NB
- Roland Chiasson, Sackville, NB
- Roma De Robertis, Saint John, NB
- Romeo LeBlanc, St. Edouard de Kent, NB
- Ron Batt, Moncton, NB
- Ron Powers, Minto, NB
- Ronald Babin, Moncton, NB
- Rose Doucet, Baxter's Corner, NB
- Ryan Hillier, Moncton, NB
- Sandy Greenberg, Halifax, NS
- Sarah Colwell, Moncton, NB
- Sean Tapley, Moncton, NB
- Shelly Bailie, Sackville, NB
- Sharon Murphy, Saint John, NB
- Stella Arsenault, Dieppe, NB
- Stephanie Grout, Winnipeg, MB
- Tim Leblanc Murphy, Sainte-Marie-de-Kent, NB
- Tom McLean, New Maryland, NB
- Tony Reddin, Bonshaw, PEI
- Taeyon Kim, Fredericton, NB
- Tynette Deveaux, Halifax, NS
- Victor Lau, Regina, SK
- Vincent Zelazny, Fredericton North, NB
- Woody Thompson, Jolicure, NB