From: CRED New Brunswick
Sent: July 4, 2022 6:18:58 AM
To: ec.ministre-minister.ec@canada.ca
Cc: information@iaac-aeic.gc.ca; L'honorable Marc Miller; L'honorable Jean-Yves Duclos; The Honourable Jonathan Wilkinson; The Honourable Chrystia Freeland; francois-philippe.champagne@parl.gc.ca; L'honorable Mélanie Joly; L'honorable Dominic LeBlanc; ginette.petitpastaylor@parl.gc.ca; candice.bergen@parl.gc.ca; Jagmeet.Singh@parl.gc.ca; Yves-Francois.Blanchet@parl.gc.ca; Elizabeth.May@parl.gc.ca; Higgs, Premier Blaine (PO/CPM); Arlene.Dunn@gnb.ca; Gary.Crossman@gnb.ca; Dorothy.Shephard@gnb.ca; Mike.Holland@gnb.ca; Roger.L.Melanson@gnb.ca; David.Coon@gnb.ca; Ernie.Steeves@gnb.ca
Subject: Small Modular Reactor (SMR) Demonstration Project, New Brunswick - Request for Designation under s. 9 of the Impact Assessment Act
Response requested: Yes
Sensitivity: Normal
Attachments:
2022-07-02-CRED-NB-Minister Guilbeault.pdf;

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Honourable Minister Steven Guilbeault
Minister of Environment and Climate Change
Fontaine Building 12th floor
200 Sacré-Coeur Blvd
Gatineau QC K1A 0H3

Sent via email

July 4, 2022

Dear Minister Guilbeault,

On behalf of our membership, we write to request you exercise your authority pursuant to section 9(1) of the *Impact Assessment Act* to designate the proposed Small Modular Nuclear Reactor (SMR) demonstration project at Point Lepreau, New Brunswick for a federal impact assessment. This request is supported by groups across Canada.

Attached please find our formal request.

We are also asking for a meeting to discuss our request with you at your earliest convenience.

Please acknowledge receipt of this email. Thank you.

Regards,

Ann McAllister, Rothesay, New Brunswick
Roy Ries, Harvey, Albert County, New Brunswick
Sam Arnold, Woodstock, New Brunswick
on behalf of the Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

cc: Impact Assessment Agency of Canada

cc to Members of Parliament:
Minister of Crown-Indigenous Relations, Marc Miller
Minister of Health, Jean-Yves Duclos
Minister of Natural Resources, Jonathan Wilkinson
Minister of Finance, Chrystia Freeland
Minister of Innovation, Science and Economic Development, François-Philippe Champagne
Minister of Foreign Affairs, Mélanie Joly
Minister of Intergovernmental Affairs, Infrastructure and Communities, Dominic Leblanc
Minister Responsible for the Atlantic Canada Opportunities Agency, Ginette Petitpas Taylor
Leader of the Conservative Party of Canada, Candice Bergen
Leader of the New Democratic Party of Canada, Jagmeet Singh
Leader of the Bloc Québécois, Yves-François Blanchet
House leader of the Green Party of Canada, Elizabeth May

cc to Members of the Legislative Assembly of New Brunswick:
Minister Responsible for Inter-government Affairs and Premier, Blaine Higgs
Minister of Aboriginal Affairs, Arlene Dunn
Minister of the Environment and Climate Change, Gary Crossman
Minister of Health, Dorothy Shephard
Minister of Natural Resources and Energy Development, Mike Holland
Minister of Finance, Ernie Steeves
Leader of the New Brunswick Liberal Party, Roger Melanson
Leader of the Green Party of New Brunswick, David Coon

bcc to groups with letters of support included in our request:
Passamaquoddy Recognition Group
Wolastoq Grand Council
Conservation Council of New Brunswick
Sustainable Energy Group - Carleton Chapter
Council of Canadians Fredericton Chapter
RAVEN project at the University of New Brunswick
Canadian Environmental Law Association
Canadian Coalition for Nuclear Responsibility
Ontario Clean Air Alliance
Concerned Citizens of Renfrew County and Area
Interchurch Uranium Committee Educational Co-operative
Protect our Waterways No Nuclear Waste
Council of Canadians Ottawa Chapter

Coalition for Responsible Energy Development in New Brunswick (CRED-NB)
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Coalition for
Responsible Energy Development
in New Brunswick

CREDNB.CA

Honourable Minister Steven Guilbeault
Minister of Environment and Climate Change
Fontaine Building 12th floor
200 Sacré-Coeur Blvd
Gatineau QC K1A 0H3

Sent via email ec.ministre-minister.ec@canada.ca

July 4, 2022

Dear Minister Guilbeault,

Re: Small Modular Reactor Demonstration Project, New Brunswick - Request for Designation under s. 9 of the *Impact Assessment Act*

The Coalition for Responsible Energy Development in New Brunswick (CRED-NB), a community-based organization, advocates for responsible, renewable, nuclear-free energy development to address the climate crisis. CRED-NB is comprised of more than 20 citizen groups and businesses and more than 100 individuals across New Brunswick (Appendix A). Since forming in May 2020, CRED-NB has expressed concern and shared information with the public about the health, safety, environmental, cultural and financial impacts of nuclear power.

On behalf of our membership, **we write to request you exercise your authority pursuant to section 9(1) of the *Impact Assessment Act* ("*IAA*") to designate the proposed Small Modular Nuclear Reactor (SMR) demonstration project at Point Lepreau, New Brunswick (the "project") for a federal impact assessment.**

Fifteen groups in New Brunswick and across Canada, including the Passamaquoddy Recognition Group representing the Peskotomuhkati Nation, and the Wolastoq Grand Council, have written letters of support for our request, included in Appendix B.

... /2

The New Brunswick public utility NB Power, proposing the SMR demonstration project, has announced partnerships with two nuclear vendors to site, construct and operate two nuclear reactor designs at Point Lepreau on the Bay of Fundy. The proposed technology includes a molten salt SMR and spent fuel reprocessing unit (Moltex Energy) and a sodium-cooled SMR (Advanced Reactor Concepts–ARC).

Currently, the threshold for nuclear projects requiring an IA has been set so high under the *Physical Activities Regulation* of the *Impact Assessment Act*, that it effectively exempts SMRs from a federal impact assessment.

CRED-NB submits that the designation for an IA is warranted in this circumstance as the proposed project in New Brunswick meets both conditions below:

a) the project is not prescribed by regulations and carrying out the activity will result in adverse effects within federal jurisdiction as well as adverse direct or incidental effects; and
b) there are significant public concerns related to those effects.

As a first of its kind experimental nuclear project, located in a beautiful, coastal rural region with locally important fishing, tourism, wild blueberry farming, and many other rural enterprises, and near to the Musquash Estuary Nature Reserve and the globally significant UNESCO Biosphere Reserve on the Bay of Fundy, the SMR demonstration project at Point Lepreau ought to attract the most rigorous form of public engagement and planning, through the *IAA*.

As the project has not substantially begun, and nor has a federal authority exercised a power or function that could permit the project to be carried out, in whole or in part, the Minister is permitted to make this designation request pursuant to section 9 of the *IAA*.

Our request is outlined in the following pages; please let us know if you require more information.

CRED-NB also asks for a meeting to discuss our request with you at your earliest possible convenience.

Regards,
Ann McAllister, Rothesay, New Brunswick
Roy Ries, Harvey, Albert County, New Brunswick
Sam Arnold, Woodstock, New Brunswick
On behalf of the Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

cc: Impact Assessment Agency of Canada (information@iaac-aeic.gc.ca)

... /3

cc to Members of Parliament:
Minister of Crown-Indigenous Relations, Marc Miller
Minister of Health, Jean-Yves Duclos
Minister of Natural Resources, Jonathan Wilkinson
Minister of Finance, Chrystia Freeland
Minister of Innovation, Science and Economic Development, François-Philippe Champagne
Minister of Foreign Affairs, Mélanie Joly
Minister of Intergovernmental Affairs, Infrastructure and Communities, Dominic Leblanc
Minister Responsible for the Atlantic Canada Opportunities Agency, Ginette Petitpas Taylor
Leader of the Conservative Party of Canada, Candice Bergen
Leader of the New Democratic Party of Canada, Jagmeet Singh
Leader of the Bloc Québécois, Yves-François Blanchet
House leader of the Green Party of Canada, Elizabeth May
cc to Members of the Legislative Assembly of New Brunswick:
Minister Responsible for Inter-government Affairs and Premier, Blaine Higgs
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bcc to groups with letters of support included in our request (Appendix B):
Passamaquoddy Recognition Group
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Sustainable Energy Group - Carleton Chapter
Council of Canadians Fredericton Chapter
RAVEN project at the University of New Brunswick
Canadian Environmental Law Association
Canadian Coalition for Nuclear Responsibility
Prevent Cancer Now
Interchurch Uranium Committee Educational Co-operative
Northwatch
Ontario Clean Air Alliance
Concerned Citizens of Renfrew County and Area
Protect our Waterways No Nuclear Waste
Council of Canadians Ottawa Chapter

REQUEST FOR DESIGNATION OF A PHYSICAL ACTIVITY UNDER SECTION 9 OF THE *IMPACT ASSESSMENT ACT*

Small Modular Reactor Demonstration Project, New Brunswick

July 4, 2022

Prepared by:

Kerrie Blaise, JD MSc
Ann McAllister
Roy Ries
Sam Arnold
Susan O'Donnell, PhD

Submitted by:

Coalition for Responsible Energy Development in New Brunswick
P.O. Box 4561
Rothesay, NB E2E 5X3
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Table of Contents

I. BACKGROUND

As a result of changes to Canada's federal environmental assessment law in 2019, some nuclear reactor projects were removed from the list of projects requiring an impact assessment (IA).

In the lead up to these legislative reforms in 2019, nuclear proponents as well as Canada's nuclear regulator, the Canadian Nuclear Safety Commission, lobbied the federal government to exclude so-called "small modular nuclear reactors" (SMRs) from assessment under the new *Impact Assessment Act (IAA)*.

As recommended by Canada's nuclear regulator at the time, "a threshold be established for power reactors so that small units are not subject to an impact assessment."[1,2] The regulator even contemplated prior to the coming into force of the *IAA* that "the number of nuclear project (sic) subject to an IA will likely be very limited in the foreseeable future."[3]

Nuclear proponents were also among the vocal supporters for the reduction in IA oversight for SMRs. In their 2018 release of the "A Call to Action: A Canadian Roadmap for Small Modular Reactors," they recommended SMRs equal to or less than 300 Mwe be excluded from federal environmental impact assessment legislation.[4]

While civil society groups decried the plan to exempt many nuclear reactors from IA,[5] legislative changes were made, and the *IAA's* 'Project List' regulation was released; notable among its exclusions for projects which must undergo an IA, was SMRs.

The *IAA* project list specifies that only nuclear reactors greater than 200 megawatt thermal (MWth) - or 900 MWth if on an existing nuclear site - require an IA.

This threshold means that SMRs (which generally produce up to 300 MW of electricity) currently proposed for demonstration, off-grid and on-grid uses in Canada can escape review under the *IAA*.

---

[1] Shawn-Patrick Stensil, "Greenpeace comments on RegDoc 1.1.5 – Licence Application Guide: small Modular Reactors," (28 Sept 2018), online: https://www.nuclearsafety.gc.ca/eng/pdfs/REGDOC-comments-received/Comments-REGDOC-1-1-5-PC-Greenpeace.pdf

[2] Blaise, K and Stensil, S-P, "Small Modular Reactors in Canada: Eroding Public Oversight and Canada's Transition to Sustainable Development," in Black-Branch J & Fleck D, eds, *Nuclear Non-Proliferation in International Law, Vol V* (The Hague: TMC Asser Press, 2020) p 221

[3] *Ibid*

[4] Canadian Small Modular Reactor Roadmap Steering Committee (2018) "A Call to Action: A Canadian Roadmap for Small Modular Reactors." Ottawa, Canada, p 56

[5] Canadian Environmental Law Association, "Media Release: Civil society groups condemn plan to exempt nuclear reactors from Bill C-69 impact assessment" (7 May 2019), online: https://cela.ca/civil-society-groups-condemn-plan-to-exempt-nuclear-reactors-from-bill-c-69-impact-assessment/

Now, as plans for SMR projects are announced across the country, members of the public, communities, and civil society groups are left with only one option to ensure SMR projects are not removed from public oversight and participation, as protected in the IA process – and that is to request the Minister, per section 9 of the *IAA* to designate the project for review.

In the chapters that follow, the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) sets out why this is an urgent matter for not only those in New Brunswick where an SMR demonstration project is proposed but also the many off-grid, remote and Indigenous communities where SMRs are proposed to be deployed.

1.0 Project Description

Énergie NB Power ("NB Power" or the "proponent") is proposing a small modular nuclear reactor (SMR) demonstration project at its Point Lepreau nuclear site, in the Bay of Fundy region of New Brunswick, where it would operate two SMRs and a spent fuel reprocessing facility.

In March 2021, the federal government granted $4,999,568 to NB Power to help the public utility prepare the site at Point Lepreau for SMR deployment and demonstration.[6]

NB Power has announced partnerships with two nuclear vendors to site, construct and operate the following nuclear reactor designs and accompanying CANDU spent fuel reprocessing facility for its demonstration project:[7]

- Moltex Energy has proposed a 300 MWe (750 MWth)[8] Stable Salt Reactor-Wasteburner (SSR-W) SMR with accompanying spent fuel recovery system and fuel reprocessing facility ("Moltex SMR")[9]

- Advanced Reactor Concepts has proposed a 100 MWe (286 MWth) ARC-100 SMR ("ARC SMR")[10]

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[6] 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
[7] Énergie NB Power, "What's happening in New Brunswick," online: https://smrnb.ca/whats-happening-in-new-brunswick/
[8] Canadian Nuclear Safety Commission, "Phase 1 pre-licensing vendor design review executive summary: Moltex Energy" (2021), online: https://nuclearsafety.gc.ca/eng/reactors/power-plants/pre-licensing-vendor-design-review/moltex-energy-executive-summary.cfm
[9] Moltex Energy, "Our first reactor," online: https://www.moltexenergy.com/our-first-reactor/
[10] ARC Clean Energy, "The ARC-100 Advanced Small Modular Reactor," online: https://www.arcenergy.co/technology

The combined thermal capacity of these new nuclear reactors at the Point Lepreau site in New Brunswick would be 1036 MWth. Accounting for the existing Point Lepreau nuclear generating station, the site's total capacity would be 3216 MWth.[11]

Neither of these SMR designs currently exist as a working reactor. Many countries have attempted and failed to build and commercialize these two types of reactors (molten salt and sodium-cooled). However, NB Power aims to have the Moltex SMR and spent fuel reprocessing unit in operation by the early 2030s and the ARC SMR fully operational in 2029.[12]

As demonstration projects, according to the nuclear vendors, their performance in New Brunswick could be relied upon to commercialize these SMR designs for use at other sites throughout Canada, including Indigenous communities which are currently diesel reliant and for use by heavy industry. They also plan to sell these units worldwide.

1.1 Moltex SMR and Fuel Waste Reprocessing Facility

The Moltex SMR design is a molten salt reactor to generate 300 MW of electricity. Moltex named its reactor the "Stable Salt Reactor-Wasteburner" (SSR-W).

Moltex calls its SMR a "wasteburner" because Moltex is proposing that the fuel for the SMR will be made (reprocessed) from existing high-level nuclear waste (used fuel) at Point Lepreau.

For its reprocessing facility, Moltex proposes to access bundles of used CANDU fuel, turn the solid bundles into a liquid form, remove the plutonium, and use that as new fuel. Moltex calls its reprocessing technology "Waste To Stable Salt" (WATSS).

Less than one percent (0.6%) of the used CANDU fuel bundle could potentially be re-used as new fuel; the rest will remain as new kinds of radioactive waste streams that will need to be managed. How to manage these new forms of nuclear waste is unknown; no approved management methods exist for these new radioactive materials.

(More information about the Moltex SMR and reprocessing facility can be found in Part II of this report, sections 1.1, 5.2, 5.3.)

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[11] The existing thermal capacity of the Point Lepreau nuclear generating station is 2180 MWth, *see online*: https://pris.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=37

[12] Governments of Ontario, New Brunswick, Saskatchewan and Alberta, "A Strategic Plan for the Deployment of Small Modular Reactors," online: https://www.ontario.ca/page/strategic-plan-deployment-small-modular-reactors, p 45 [Strategic Plan]

1.2 ARC SMR

The ARC SMR design is a sodium-cooled fast reactor known as the ARC-100, proposed to generate 100 MW of electricity.

The proposed ARC reactor system is comprised of a small nuclear core fueled with enriched uranium, submerged in a tank of liquid sodium. The liquid sodium is passed through the core and heated to 950°F (510°C). It is then passed through a heat exchanger where it heats sodium in an intermediate loop, which heats working fluid for energy conversion turbines. The reactor, control rods, and heat exchange system are physically sealed and located in a silo below-ground.

The enriched uranium fuel for the proposed ARC reactor will need to be imported because Canada does not have a uranium enrichment plant. ARC has stated publicly that its original plan was to import enriched uranium fuel from Russia, however after that country's invasion of Ukraine, that plan was abandoned, and ARC is still searching for a fuel supply.[13] The eventual plan will involve importing enriched uranium into Canada and transporting it on roads through New Brunswick to the site at Point Lepreau.

(More information about the ARC SMR is in Part II of this report, sections 1.2, 2.1, 5.2.)

2.0 SMRs and Project List Designation

But for the SMR project being two distinct designs and thus two projects being undertaken by the NB Power, the demonstration SMR project proposed for the Point Lepreau site would trigger the *Impact Assessment Act* by virtue of the new reactors exceeding the 900 MWth threshold as set out in the *Physical Activities Regulation* (Project List).[14]

The Project List was released in May 2019 and sets out the projects to which federal impact assessment (IA) applies.[15] By virtue of the *IAA*'s approach to triggering, wherein projects are reviewed 'only in if included' on the Project List, there has been a narrowing of and reduction in the number of projects requiring federal review.

CRED-NB remains dismayed that the government has not provided any information to justify this threshold approach despite earlier claims that the creation of the Project List would be a "transparent, evidence-based approach."[16]

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[13] *New Brunswick Telegraph Journal,* "N.B. company looking to replace Russian enriched uranium supplier" by Adam Huras, March 29, 2022.
[14] *Impact Assessment Act,* S.C. 2019, c. 28, s. 1
[15] SOR/2019-285
[16] Government of Canada, "Consultation Paper on Approach to Revising the Project List: A Proposed Impact Assessment System" (Ottawa: May 2019), p 5

Currently, only new nuclear reactor projects exceeding 200 MWth, or 900 MWth should the project be located on an existing nuclear facility site, require an impact assessment:

> **27** The site preparation for, and the construction, operation and decommissioning of, one or more new nuclear fission or fusion reactors if
>
> **(a)** that activity is located within the licensed boundaries of an existing Class IA nuclear facility and the new reactors have a combined thermal capacity of more than 900 MWth; or
>
> **(b)** that activity is not located within the licensed boundaries of an existing Class IA nuclear facility and the new reactors have a combined thermal capacity of more than 200 MWth.[17]

As indicated above, the combined thermal capacity of the new nuclear reactors would be 1036 MWth. Taking into account the existing Point Lepreau nuclear generating station, the site's total capacity would be 3216 MWth.[18] By virtue of the two SMR designs combined exceeding the 900 MWth as set out in the Project List, CRED-NB submits that the Minister ought to designate the project for an impact assessment.

CRED-NB is also concerned that the project is being improperly framed as two separate SMR projects, when in reality, NB Power is seeking to create a single demonstration project consisting of two different SMR technologies. Differences in timing to site, construct and license the two SMR designs should not serve as a bar to an IA – given that the combined output of the planned demonstration project exceeds the threshold set out in the Project List.

As the province of New Brunswick has indicated, the project is intended to be a demonstration project, potentially leading to the eventual commercialization of the reactors:

> The demonstration of both reactors at Point Lepreau represents the potential for national and international deployment. With a successful ARC-100 commercial demonstration, additional units in New Brunswick will be considered. ARC Canada's technology may also be beneficial for use for the later units planned in other provinces, as well as for the oil and gas industry as a pathway to reduce its carbon footprint [emphasis added][19]

CRED-NB submits that NB Power is engaging in 'project splitting' – the intentional breaking up of the project in its components parts in order to circumvent the IA process.[20]

---

[17] *Physical Activities Regulation,* SOR/2019-285*,* s 27
[18] The existing thermal capacity of the Point Lepreau nuclear generating station is 2180 MWth *see online*: https://pris.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=37
[19] Strategic Plan
[20] *Mining Watch v Canada,* 2010 SSC 2, para 40

Project-splitting impacts the cumulative impact assessment of the development, and compromises considerations of alternatives and impacts to Indigenous rights, which are among the factors which must be taken account as part of the IA process.[21] As a result of project-splitting, the full scale and impact of the project cannot be fully presented, either to the federal government or the public and Indigenous nations.

For this reason, CRED-NB submits that it is necessary to view the demonstration project in its entirety as one project and not as two separate SMR demonstration projects. Given that the SMRs' combined output exceeds the threshold for IA set out in the *IAA* is further evidence that an IA is required for the project.

II. RATIONALE IN SUPPORT OF REQUEST

1.0 The project relies on novel technologies and activities

The demonstration project is proposing to develop the SMR designs to a stage where they can be built at Point Lepreau and prove that they will work to generate electricity safely and reliably. Ultimately the vendors want to commercialize the technology so it can be sold.

Currently, both SMR designs are novel technologies, far from commercialization.[22,23] CRED-NB submits that given their novelty, much more research and development will be needed before either of these conceptual SMR designs are considered for construction in New Brunswick.

For this reason, an IA is entirely appropriate as it allows an upfront review of the technologies, their impacts and adverse effects, *before* any other federal regulatory process commences.

Therefore, to ensure the demonstration project's feasibility and ability to avoid significant adverse environmental effects, this project must undergo an IA before licensing begins by the Canadian Nuclear Safety Commission (CNSC).

1.1 Moltex SMR and Fuel Waste Reprocessing Facility

The Moltex SMR design is for a molten salt reactor. Molten salt reactors have been attempted several times in the past but have never been successfully commercialized. Historically, only two molten salt reactors have ever operated, both in the US and both more than 50 years ago. Neither

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[21] *IAA,* s 22
[22] E. Lyman: Advanced isn't always better: Assessing the Safety, Security, and Environmental Impacts of Non-Light-Water Nuclear Reactors, available online: https://www.ucsusa.org/resources/advanced-isnt-always-better
[23] M.V. Ramana: "Small Modular and Advanced Nuclear Reactors: A Reality Check, Available from: https://ieeexplore.ieee.org/document/9374057

generated electricity, and neither operated for long (less than one year, and less than four years, respectively).[24]

The novelty of the Moltex SSR-W SMR design and its safety features was flagged by the Canadian Nuclear Safety Commission after the design underwent an optional pre-licensing vendor design review. In May 2021, the CNSC published a summary report stating that "additional information will be required to confirm":[25]

- the adequacy of the research and development activities to substantiate the fuel qualification program, including the role of a first-of-a-kind reactor
- the validation and verification of the capability of the software tools to model the reactor and to analyze the reactor behaviour under all operating modes
- the functionality, adequacy and reliability of inherent and passive safety systems and components claimed in the safety case for the reactor

As part of the demonstration project at Point Lepreau, in addition to its molten salt SMR, Moltex Energy proposes to develop a reprocessing technology, called "pyroprocessing," to access used (irradiated) CANDU fuel, turn the solid fuel rods into a liquid form, extract the plutonium and minor actinides, and use that as new fuel for the molten salt SMR. Currently, no industrially proven method exists to convert used fuel to molten metal alloys, as claimed by the company.

Not only would this technology be novel – to convert used CANDU fuel to molten alloys in a single step – but the only experience of pyroprocessing to date has shown little success. Since 1996, researchers at the Idaho National Laboratory have struggled to pyroprocess 26 metric tons of metallic spent fuel from the shutdown EBR-II and other reactors. In 2000, the US Department of Energy estimated that the Idaho pyroprocessing project would finish by 2010, but due to complexities and delays, as of December 2020 only an approximate 20% of the spent fuel had been processed, at a significantly higher cost.[26]

In short, the Idaho project – the only experiment thus far related to the proposed Moltex pyroprocessing technology – not only attests to the novelty of this technology but also raises questions that need to be explored during an IA.

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[24] See the recent history of molten salt reactors, by M.V. Ramana published in the *Bulletin of Atomic Scientists*, "Molten salt reactors were trouble in the 1960s—and they remain trouble today," June 20, 2022. https://thebulletin.org/2022/06/molten-salt-reactors-were-trouble-in-the-1960s-and-they-remain-trouble-today/

[25] Canadian Nuclear Safety Commission, "Phase 1 Pre-Licensing Vendor Design Review Executive Summary: Moltex Energy" online: https://nuclearsafety.gc.ca/eng/reactors/power-plants/pre-licensing-vendor-design-review/moltex-energy-executive-summary.cfm

[26] Lyman, E. (2017, August 12). *The Pyroprocessing Files - Union of Concerned Scientists*. Union of Concerned Scientists, All Things Nuclear, online: https://allthingsnuclear.org/elyman/the-pyroprocessing-files/

1.2 ARC SMR

ARC's SMR design is for a sodium-cooled fast reactor. Historically, despite several attempts, sodium-cooled fast reactors have not been successfully commercialized in western countries.

One of the first American attempts at commercialization failed spectacularly with a partial meltdown of the Fermi I nuclear reactor. This close call was caused by a feature added to provide better protection in event of a meltdown.[27,28]

Around the globe, currently only two sodium-cooled fast reactors are operational, both in Russia (the BN-600 and BN-800). However, they operate on weapons-grade fuel that would not be allowed in commercial operations in Canada because of international nonproliferation protocols.[29]

The novelty of the ARC design and its safety features has already been flagged by Canada's nuclear regulator after the ARC design underwent a pre-licensing vendor design review (VDR).[30] The CNSC published a summary report of the ARC design VDR review in October 2019, stating that "additional information will be required to confirm":[31]

a) adequacy of the R&D activities to substantiate ARC-100 safety claims and the fuel qualification program, including the role of a first-of-a-kind reactor
b) applicability of the operating experience data from previous sodium fast reactors to the ARC-100 design and safety analyses
c) consistency between the safety functions and the safety classification for the structures, systems and components, and the relationship to ARC's demonstration of proven engineering practices for specific technological proposals
d) adequacy of shutdown means, shutdown margins and the guaranteed shutdown state, which includes demonstration of independence, separation and diversity between control and protection system for all aspects, including design of sensors, logic and actuation
e) adequacy of containment function and isolation for all potential initiating events
f) verification and validation of computer codes used in the safety analysis

---

[27] Nuclear Plant Accidents: Fermi Unit 1, by David Lochbaum (July 12, 2016) https://allthingsnuclear.org/dlochbaum/nuclear-plant-accidents-fermi-unit-1/

[28] This early nuclear accident close to a major city was later described in the book, "We Almost Lost Detroit."

[29] E. Lyman: Advanced isn't always better: Assessing the Safety, Security, and Environmental Impacts of Non-Light-Water Nuclear Reactors, available online: https://www.ucsusa.org/resources/advanced-isnt-always-better

[30] CRED-NB wants to flag that the CNSC is clear that a VDR is not a technical review. The VDR process is optional, not required before applying for a licence to build a nuclear reactor.

[31] Canadian Nuclear Safety Commission, "Phase 1 Pre-Licensing Vendor Design Review Executive Summary: ARC Nuclear Canada Inc." online: https://nuclearsafety.gc.ca/eng/reactors/power-plants/pre-licensing-vendor-design-review/arc-nuclear-canada-executive-summary.cfm

g) functionality, adequacy and reliability of inherent and passive safety systems and components claimed in the safety case for the reactor

This long list of areas where more information is needed by the nuclear regulator calls into question NB Power's claims that the ARC model is 'advanced' in its development.

Keith Cronkhite, the CEO of NB Power, claimed at a New Brunswick Legislative hearing in 2021 that he is "laser focused" on having the ARC reactor operational by 2030, when NB Power must shutter its coal power plant at Belledune. At the same hearing, the former head of NB Power Gaëtan Thomas suggested that the ARC reactor might not be ready by 2030.[32] The public needs the opportunity to question these inconsistencies.

In summary, the negative experiences with attempts to commercialize sodium-cooled reactors in the past attests to the novelty of the ARC SMR design. An IA would provide the public an opportunity to probe the many questions about safety functions and accident-prevention systems raised by the CNSC pre-licence review.

2.0 No alternate or equivalent Impact Assessment process exists

CRED-NB submits that no alternate or equivalent process could stand-in for an IA. While the SMRs will be required to undergo licensing by the CNSC, for the following interrelated reasons, we submit that the regulatory licensing process under the *Nuclear Safety and Control Act* is not an adequate stand in nor substitute for impact assessment under the *IAA*.

2.1 Accidents and Malfunctions

Critically, an IA will ensure an upfront examination of changes to environment, health and social or economic conditions in the event of a malfunction or accident, per section 22 of the *IAA* that provides:

> **Factors — impact assessment**
> **22 (1)** The impact assessment of a designated project, whether conducted by the Agency or a review panel, must take into account the following factors:
>
> **(a)** the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including
>
> […]
>
> **(i) the effects if malfunctions or accidents that may occur in connection with the designated project**

[32] CBC News online: https://www.cbc.ca/news/canada/new-brunswick/liberal-mla-nb-power-shop-around-smrs-1.6321835

A serious nuclear accident at Point Lepreau would have ramifications for the Bay of Fundy, the beautiful rural coastal lands and communities, essential local industries – fishing, wild blueberry farms, tourism – and many rural enterprises. The proposed site is very close to New River Beach Provincial Park, one of the province's most popular tourist attractions,[33] and near the Musquash Estuary Nature Reserve.[34] Further down the Fundy coast is the UNESCO Fundy Biosphere Reserve.[35]

The SMR proponents claim that their SMR types will be "inherently safe" and "walkaway safe" with "passive safety features."[36,37] At the same time however, in the SMR Roadmap these companies asked the federal government for liability insurance, given that homeowners' insurance policies do not provide coverage in the event of a nuclear accident.[38]

The nuclear industry's reliance on nuclear liability legislation, which protects reactor operators and suppliers from accident risk, suggests their private assessments of SMR risks may be quite different than their public portrayals.[39]

All nuclear facilities, including SMRs, can experience severe accidents causing widespread and long-lived contamination. Where loss of life has been minimal from past nuclear disasters, large tracts of land have become toxic no-go zones.

After the 2011 triple reactor meltdowns in Japan at Fukushima for example, when the three damaged reactors released radioactive elements into the regional environment, more than 160,000 people were displaced, leaving behind their homes, businesses and farms. Their lives and communities were disrupted for months and years, with associated costs, health and mental health problems. Some have been unable to return home.[40]

In many countries across the globe, nuclear reactors have had accidents. Some were caused by human error, some by technical design. Others resulted from natural disasters - like the triple

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[33] *New Brunswick Telegraph Journal*, July 2, 2022, "New Brunswick's Top Five Tourist Draws" p10.
[34] https://www.natureconservancy.ca/en/where-we-work/new-brunswick/featured-projects/bay-of-fundy/musquash-estuary/
[35] https://en.unesco.org/biosphere/eu-na/fundy
[36] http://businessdocbox.com/Green_Solutions/122492409-An-introduction-to-the-moltex-energy-technology-portfolio.html
[37] https://aris.iaea.org/Publications/SMR_Book_2020.pdf
[38] https://www.nrcan.gc.ca/our-natural-resources/energy-sources-distribution/nuclear-energy-uranium/nuclear-liability-compensation-act/19224
[39] Quote from page 228 of Blaise & Stencil: Chapter 11 Small Modular Reactors in Canada: Eroding Public Oversight and Canada's Transition to Sustainable Development (2021), https://cela.ca/wp-content/uploads/2021/01/Blaise-Stensil-Ch11-Small-Modular-Reactors.pdf
[40] Recovery policy of the contaminated territories of Fukushima. https://www.irsn.fr/EN/publications/thematic-safety/fukushima/fukushima-2016/Pages/Fukushima-in-2016-Evacuees-situation-and-social-consequences.aspx#.

meltdowns at Fukushima after an earthquake and tsunami. Accidents have also happened from a combination of these causes.

The impact of accidents can also be exacerbated by climate change, where in the event of an accident, floods would make it harder to access the site, making an emergency response even more difficult.[41,42] Climate-related problems, including extreme weather events, will worsen in the coming decades, including at Point Lepreau.

Nuclear accidents create adverse economic impacts on local industries. At Fukushima, the local fishing industry as well as environmentalists globally have been protesting since 2021 when Japan announced it would release at least 1.25 million tons of radioactive wastewater contaminated by the wrecked Fukushima Daiichi Nuclear Power Plant into the Pacific Ocean.[43]

Regarding the ARC SMR, sodium as a coolant rather than the more conventional choice of water presents several unique issues; sodium's major disadvantage is that it reacts violently with water and burns if exposed to air.

Steam generators, in which molten-sodium and high-pressure water are separated by thin metal, have proved to be one of the most troublesome features of these reactors. Any leak results in a reaction that can rupture piping and lead to a major sodium-water fire that cannot be easily put out.

Sodium-cooled nuclear reactors have suffered severe accidents, including a partial nuclear meltdown at the Experimental Breeder Reactor (EBR) I in Idaho.[44] Sodium fires and erratic performances led to the abandonment of sodium-cooled reactors in France (the Superphénix), in Japan (the Monju breeder), in Germany (the Kalkar plant), and in Scotland (the Dounreay reactor).

All these shutdown sodium-cooled reactors have been far more expensive to decommission than they were to build. The costs of radioactive decontamination are extraordinarily high in every single case.

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[41] 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.
[42] 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.
[43] Fukushima: Japan announces it will dump contaminated water into sea, online: https://www.theguardian.com/environment/2021/apr/13/fukushima-japan-to-start-dumping-contaminated-water-pacific-ocean
[44] https://www.atlasobscura.com/articles/ebri-reactor-meltdown-1955-nuclear-power

Historical experiments have shown that a significant fraction of the liquid-sodium-cooled reactors built have been shut down for long periods by sodium fires. For example, between 1980 and 1997, the Russian BN-600 had 27 sodium leaks, 14 of which resulted in sodium fires.[45] France's Rapsodie, Phénix and Superphénix breeder reactors and the U.K.'s Dounreay Fast Reactor (DFR) and Prototype Fast Reactor (PFR) all suffered significant sodium leaks, some of which resulted in severe fires.[46]

Secondly, the sodium that cools the reactor core becomes intensely radioactive. When it absorbs a neutron, ordinary sodium-23 becomes sodium-24 which has a 15-hour half-life. In the event of a leak, this could cause significant health hazards to workers and the environment.

Other engineering challenges include corrosion control. As researchers have proposed, there could be a connection between sodium leaks and a type of corrosion that occurs in certain materials when exposed to carbon in a process called "metal dusting."[47] The simplest way to reduce the corrosion rate would be to lower the maximum temperature of sodium within the reactor. However, less electrical power would be generated, and in turn, the economic value would decrease.

The CNSC has also noted that sodium-containing systems must be in inert cells and concrete must be steel lined.[48] The extra sodium loops, associated pumps and other precautions contribute to higher costs.

Considering the serious safety concerns with previous reactors of the type proposed for Point Lepreau, CRED-NB submits that an IA for the SMR demonstration project must consider:

- **Accident scenarios -** including an assessment of:
    - worst case, unmitigated, accident scenarios, including assuming that emergency actions cannot be counted upon in remote communities (given these SMRs are proposed for commercial use in remote locations);
    - accident scenarios and radionuclide releases based on contained and uncontained accident scenarios.

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[45] T. Cochran et al. "Fast Breeder Reactor Programs: History and Status" Research Report 8, International Panel on Fissile Materials, online: https://fissilematerials.org/library/rr08.pdf

[46] *Ibid*, Arizzoli, B., Guttmann, D., Guttmann, M., & Reger, M. (1990). Expert investigation of the sodium leak of Super Phenix fuel storage drum. Soudage et Techniques Connexes, 44(11-12), 29-34 [Arizzoli et al, 1990]; S. Rajendran Pillai & M. V. Ramana (2014) Breeder reactors: A possible connection between metal corrosion and sodium leaks, Bulletin of the Atomic Scientists, 70:3, 49-55, DOI: 10.1177/0096340214531178 [Pillai & Ramana, 2014]

[47] Pillai & Ramana, 2014

[48] Canadian Nuclear Safety Commission, (2018) "Information Seminar on Sodium Fast Reactors," online: http://www.nuclearsafety.gc.ca/eng/pdfs/research-report/2018-2019/RSP-658-1.pdf

- **Safeguards** – including consideration of:
    - how radiation doses to nearby populations, the environment and atmosphere, in near-real time conditions should be mapped should an accident occur;
    - containment system, including what type of overpressures it is capable of withstanding in the event of an accident;
    - monitoring system in place for tracking of radionuclides in the environment.

Additional risks that could only be explored during an IA include environmental, cultural and other socio-economic risks in remote northern communities and sites where these SMRs could be deployed. For example, the community infrastructure, including fire and safety equipment and personnel, are radically different in small northern communities and southern cities in Canada.

2.2 Cumulative Effects

Licensing pursuant to the *Nuclear Safety and Control Act* is a narrower framework and not equivalent to impact assessment law that requires an upfront examination of ecological, socio-economic and sustainability impacts spanning the duration of the project.

An impact assessment is also a much broader, multi-staged, public proceeding which reviews a project against numerous factors, including the purpose and need for the project, alternatives to the project, the effects of malfunctions and accidents, and cumulative effects of the project and related physical activities.

CRED-NB submits that an IA is necessary so that there can be a site-wide, comprehensive review of cumulative effects of the demonstration project in concert with existing activities at the Point Lepreau nuclear site, per section 22 of the *IAA* that provides:

> **Factors — impact assessment**
> **22 (1)** The impact assessment of a designated project, whether it is conducted by the Agency or a review panel, must consider the following factors:
>
> **(a)** the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including
>
> […]
>
> **(ii) any cumulative effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out, and ...**

An IA requires the cumulative effects from the project, in combination with other physical activities that have already been carried out or will be carried out, including interactions of those effects to be examined.

Unlike an IA, the CNSC's licensing process is a regulatory proceeding, narrowly defined by the stage of activity being licensed (i.e., site preparation, operations, decommissioning). This piecemeal approach is not effective: it views the project's life stages in isolation, in licensing hearings spaced years if not decades apart.

The environmental and socio-economic impacts of failed nuclear experiments in other jurisdictions have lasted for decades. The public needs the opportunity to review the full scale and lifetime impacts of the proposed project before it begins.

Furthermore, the CNSC's licensing process does not account for the cumulative effects of combined technologies or activities (i.e., the combined and interrelated effects of the Point Lepreau nuclear generation station in tandem with one or both of the SMRs in the demonstration project). This is a critical defect of the CNSC licensing process, and one that sets it apart from the hallmark cumulative impact assessment evaluation of IA.

2.3 Provincial Environmental Assessment

The process for environmental assessment in New Brunswick is set out by the *Environmental Impact Assessment Regulation* (EIA) under *New Brunswick's Clean Environment Act.*[49] Should the projects proceed, they will need to be registered on the public register managed by the Department of Environment.

However, just because the undertakings are registered for the EIA process, does not mean that they will be subject to a full environmental assessment (i.e., with public hearings with due process built in), as this is at the discretion of the Minister.

Further, there is not an equivalent list of prescribed factors, such as that found in section 22 of the *IAA,* and the provincial Act is silent on considerations of a project's contribution to sustainability and the inclusion of Indigenous knowledge.

CRED-NB submits that a provincial EIA alone is not appropriate in the circumstance given the need to avoid adverse environmental effects in areas of federal jurisdiction, as outlined below in section 3.0.

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[49] *New Brunswick's Clean Environment Act*, O.C. 87-558

However, granting the designation request for the SMR project would be in keeping with the federal government's 'one project, one assessment' approach, as the provincial EIA regime includes coordination of EAs among federal and provincial authorities.[50] For this reason, granting the designation SMR would provide enhanced opportunities for cooperation with the province of New Brunswick.

3.0 The project poses adverse effects within core areas of federal jurisdiction

While NB Power's proposed SMR project might not currently trigger the impact assessment process under the *IAA,* it would have been subject to federal environmental assessment (EA) requirements under predecessor legislation, including the *Canadian Environmental Assessment Act, 2012.* While not determinative, this is indicative that the project has impacts on areas of federal jurisdiction.

CRED-NB further submits that the project will also adversely impact effects within federal jurisdiction, including the protection of Indigenous rights, fish and fish habitat and migratory birds, as defined in section 2 the *IAA.*

3.1 Protecting Indigenous Rights

The proposed project, in the territory of the Peskotomuhkati Nation with implications for the rights of the Wolastoqey and Mi'kmaq Nations, has the potential to negatively impact section 35 Aboriginal rights which are recognized and affirmed by the *Constitution Act, 1982.*

CRED submits that the *IAA* contains unique provisions specific to Indigenous rights and jurisdiction, which are not found in the *Nuclear Safety and Control Act.* Thus, an IA for the SMR demonstration project would provide for a more robust participatory process and one with greater procedural and participatory protections.

As set out in the letters of support from the Passamaquoddy Recognition Group representing the Peskotomuhkati Nation, and the Wolastoq Grand Council (Appendix B), an impact assessment would allow for more in-depth consultation and further rights of engagement and accommodation.

The Passamaquoddy Recognition Group states in their letter that designating the project for an IA is proactive and required because of the Treaty relationship as well as Canada's commitments

[50] Canada, "The Proposed Impact Assessment System," (14 Aug 2018), online: https://www.canada.ca/content/dam/themes/environment/conservation/environmental-reviews/technical-guide.pdf, p 8

to Indigenous peoples. Further, they believe that a positive answer to this request would be a small act toward reconciling.

Two of the Passamaquoddy Recognition Group's major concerns–cumulative impacts and radioactive waste–could be addressed with an IA that would allow full discovery of related issues.

The Passamaquoddy Recognition Group is asking for a co-produced IA. This would allow all rightsholders and stakeholders in the process to agree on which experts and sources are valid for the IA. They could then use the agreed data and analyses to compare cumulative effects or timelines to implementation of alternatives to SMRs. A co-produced IA would also allow consideration of the current and cumulative social, environmental and financial risks of SMRs in a transparent manner.

In their support letter, the Wolastoq Grand Council writes that on many occasions they have stated their concerns about SMRs on their Homeland and the long-term effects.

The Wolastoq Grand Council asked CRED-NB to include their entire "Resolution on nuclear energy developments and nuclear waste use and disposal on Wolastokuk" in this designation request (Appendix C).

The Resolution invokes several articles of the United Nations Declaration on the Rights of Indigenous Peoples, including Article 29(2): “States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the homelands of Indigenous peoples without their free, prior and informed consent.”

The Resolution notes that nuclear reactors, regardless of size, produce by-products and radioactive waste material that must be contained and will be toxic and dangerous to human health for thousands of years.

The Resolution further states that "Nuclear power is not 'green' or 'clean.' The nuclear fuel chain includes the mining of uranium, the refining of the mined material to extract the uranium, the processing and conversion/ fabrication plants, the nuclear reactor/power generation and the ongoing waste management with each step in the fuel chain leaving a wasteland affecting Indigenous people worldwide."

Clearly, the Passamaquoddy Recognition Group and the Wolastoq Grand Council are asking for an Impact Assessment, a process that would allow for more in-depth consultation and further rights of engagement and accommodation. The Passamaquoddy Recognition Group is asking for a meaningful, co-produced IA.

3.2 Fish and Fish Habitat

Despite four decades of operation, the Point Lepreau nuclear power plant continues to operate without authorization under the *Fisheries Act.* The nuclear plant operation without authorization is continuing, despite a recent determination by the Department of Fisheries and Oceans (DFO) "that the station does cause serious harm to fish and fish habitat."[51]

The fact that NB Power's Lepreau nuclear plant has been operating without authorization under the *Fisheries Act* underscores the critical need to consider impacts to fish and fish habitat from the proposed demonstration project before it is developed.

The Bay of Fundy experiences ongoing impacts such as pollution, habitat loss, overfishing, and fishing gear entanglements. These are augmented by warming waters, ocean acidification, sea level rise and increasing frequency and severity of storms, all caused by climate disruption.

In addition, fish, fish habitat and aquatic species in freshwater and marine ecosystems at and near Point Lepreau have been impacted by the operations of the Lepreau nuclear plant for 40 years.

CRED-NB submits that given the existing radiological and non-radiological contaminants to fish and fish habitat from the existing activities at the Point Lepreau site, it is critical that the NB Power demonstration project, its cumulative and interrelated effects, be assessed in tandem with the existing operations.

The existing radiological contaminants from the Lepreau nuclear site include emissions of tritium, carbon-14, iodine-131, noble gasses, and gross beta.

In samples from ponds, lakes, streams and puddles on the Point Lepreau site, tritium appears in surface freshwater and sediments as the most abundant radionuclide at 15,200 Bequerels per Litre (Bq/L). This is more than twice the drinking water limit of 7,000 Bq/L.[52] Heavy metals such as cadmium and chromium, and the toxin arsenic, were similarly measurable in surface freshwater and sediments.[53]

CRED-NB has reviewed existing data from the Point Lepreau site and notes that metals are found in concentrations from highest to lowest in freshwater sediments, followed by groundwater, surface freshwater and marine water. The lack of toxicity thresholds for metals,

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[51] Canadian Nuclear Safety Commission, "Public Hearing – Transcript of May 12th, 2022," online: http://nuclearsafety.gc.ca/eng/the-commission/pdf/Transcript-May12-Hearing-e.pdf, p 73, 74

[52] New Brunswick Power. (2021). Point Lepreau Nuclear Generating Station Environmental Risk Assessment Update. ENA-07005-7005 Rev. 2. Table 4.9 On-Site Surface Water Concentrations for Radiological COPCs, p 158-159.

[53] *Ibid*

PFAS, hydrazine and barium makes it unfortunately impossible to determine whether or not these contaminants are present in levels toxic to biota.

In light of new nuclear development proposed at the Point Lepreau site, CRED-NB submits that an impact assessment is necessary so that the cumulative impacts of radiological and non-radiological contaminants, their accumulation in marine environments sediments over time, including rates of decay and the migration and mobility of these contaminants in land-based and aquatic environments, can be studied.

An IA would also enable a review of the cumulative environmental impact of multiple reactors and potential reprocessing facility operating at the Point Lepreau site, taking into account existing pressures on the marine environment.

Issues of site-wide impacts, ancillary activities and cumulative impacts cannot be considered solely by the CNSC in tandem with the DFO; impact assessment is uniquely positioned to publicly demonstrate that cumulative effects of both the proposed project and its ancillary activities have been considered before a decision as to whether the project should proceed.

3.3 Species at Risk

In recognition of the Bay of Fundy's unique geological formations and ecological significance, a section of the Bay further along the coast from Point Lepreau was designated a UNESCO Biosphere Reserve in 2007.[54]

The Bay of Fundy is home to several federally protected species under the *Species at Risk Act*, including the North Atlantic right whale,[55] the blue whale,[56] and the fin whale.[57]

As previously noted, an IA will provide an opportunity to publicly review the cumulative impact of the demonstration project, the multiple reactors and the fuel conversion facility at the Point Lepreau site to understand novel pressures and impacts on already endangered marine mammals.

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[54] United Nations Educational, Scientific and Cultural Organization, "Biosphere Reserves – Fundy" (2022) online: https://www.fundy-biosphere.ca/en/
[55] Species at Risk Public Registry, "North Atlantic Right Whale" (2022)
[56] Species at Risk Public Registry, "Blue Whale Pacific" (2022)
[57] Species at Risk Public Registry, "Fin Whale Pacific" (2022)

3.4 Migratory Birds

In addition to the marine mammals like whales, porpoises, dolphins and seals that frequent the Bay of Fundy, thousands of shore and colonial waterbirds also use the area during seasonal migrations, for foraging and nesting.[58,59]

Near Point Lepreau is the Musquash Estuary Nature Reserve. The Nature Conservancy of Canada spent more than 20 years creating this nature reserve with partners across Canada and has this to say about it:[60]

> *At the 2,200-hectare Musquash Estuary Nature Reserve, the majestic Musquash River winds through Acadian forest and vast marshes to meet the world's highest tides in the Bay of Fundy. NCC's largest nature reserve in Atlantic Canada is a haven for wildlife. At-risk species like peregrine falcon thrive here, as well as bobcat, moose, deer and harbor seal.*
>
> *The Musquash Estuary Nature Reserve is an important conservation area for the Atlantic region. It's the only large, undeveloped river estuary remaining in the Bay of Fundy, and it surrounds New Brunswick's only Marine Protected Area. We're keeping the Musquash Estuary wild, which is critical for many species, both on land and in the ocean.*
>
> *Located along the Atlantic flyway, the Musquash Estuary is a key stopover site for many species of migratory birds, including white-winged scoter, surf scoter, black guillemot, common eider and semipalmated sandpiper.*

A critical part of the IA process is to identify priority migratory species and comprehensively review seasonal migratory bird data, both on land and at-sea. Migratory pathways should be charted against plume exposure, in the event of an accident, and the capacity for marine response and migratory bird monitoring assessed.

As a required component of IA, it is critical that NB Power be able to demonstrate concrete, measurable steps to minimize and offset effects to migratory birds caused by light, radiological and non-radiological emissions, and accidents.

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[58] Saint John Naturalists' Club Inc. "Point Lepreau / Maces Bay Important Bird Area, New Brunswick" (Oct 2020), online: https://www.ibacanada.org/documents/conservationplans/nbpointlepreau.pdf
[59] P. Hicklin, "The Migration of Shorebirds in the Bay of Fundy," 1987, Wilson Bulletin 99(4), p 540 – 570.
[60] Online: https://www.natureconservancy.ca/en/where-we-work/new-brunswick/featured-projects/bay-of-fundy/musquash-estuary/

3.5 Effects to Lands Outside of New Brunswick

The Point Lepreau site on the Lepreau Peninsula in New Brunswick is 40 km southwest of Saint John, NB. The province of Nova Scotia is 63 kms south of the facility across the Bay of Fundy; Prince Edward Island is 252 kms northeast of the facility; and Quebec is 313 kms northwest of the facility. The state of Maine, USA, is 44 kms southwest of the facility.[61]

As such, any new nuclear reactor at the site must be reviewed in congruence with potential environmental effects in other provinces and on the neighbouring country. As the following diagram illustrates (**Image 1**), the existing emergency planning zones for the site intersect with other provinces and the United States. CRED-NB's initial discussions with the Sierra Club Maine chapter indicate that citizens in Maine would be keen to participate in this review.

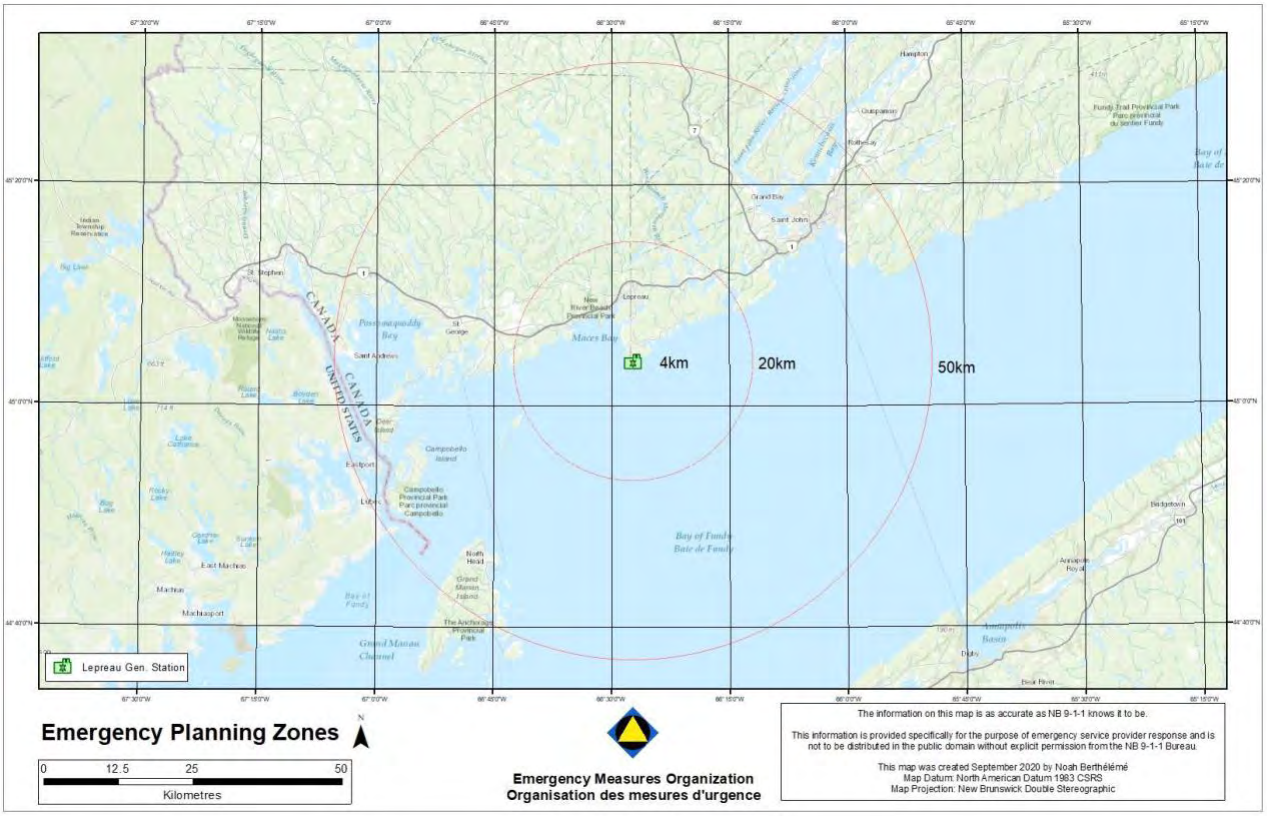

Image 1. Emergency Planning Zones[62]

CRED-NB submits the critical need to reassess the appropriateness of off-site emergency planning and the efficacy of emergency response measures to a severe accident scenario,

[61] New Brunswick Emergency Measures Organization, "Point Lepreau Nuclear Off-Site Emergency Plan" (June 2021) at s 2.3.1
[62] *Ibid.*

considering the potential for a multi-unit reactor accident, given the proposed introduction of additional reactors at the site.

It is also critical that exposure pathways be updated and mapped as an 'ingestion planning zone' including any parts of the surrounding provinces and states, taking into account the sum of all nuclear activities at the Point Lepreau site.

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[63] and thus measures to safeguard the public from the ingestion of contaminated food products, must be planned. In particular, the local wild blueberry industry needs to be engaged in this review.

CRED-NB is concerned that should the sufficiency of emergency response measures be evaluated on a project-by-project or activity-by-activity basis, it would fail to account for the severity of combined offsite effects on provinces and jurisdictions external to New Brunswick.

4.0 The public has demonstrated significant concern about the project

Canadians across the country have demonstrated their longstanding concern about the advancement of SMRs.

Since it was proposed in 2019 that SMRs would be exempt from the new environmental assessment legislation, ushered in by Bill C-69, CRED-NB and more than 120 public interest groups and First Nations from across Canada have communicated their concern to the federal government regarding the regulatory rollback of oversight for nuclear expansions and opposition to the use of public funds for SMR projects.

CRED-NB has been involved in a number of efforts, summarized below, attesting to not only significant public interest but also the great deal of public concern to ensure the protection of human health and the environment and the critical need for public input in any decisions regarding nuclear expansion.

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[63] International Commission on Radiological Protection, "Publication 109 - Application of the Commission's Recommendations for the Protection of People in Emergency Exposure Situations" (2008), p 61

4.1 Women leaders, First Nations and civil society groups across Canada raise concerns about using public funds for SMR developments

As early as 2020, CRED-NB expressed its deep concern about federal funding for development of SMRs, noting opposition to use the public funds for new nuclear development.[64]

We also wrote to the federal government, informing them of the significant public opposition in New Brunswick to the development of SMRs in the province and our concerns about the use of federal infrastructure funding to back projects in the province that would have little economic benefit.[65]

CRED-NB members were also among the signatories to a letter to the federal Treasury Board expressing concern about the use of taxpayer funds for developments which would 'pass the buck to future generations,' through the production of long-lived hazardous waste.[66]

4.2 Civil society groups and First Nations from coast to coast to coast decry lack of public engagement on SMRs

CRED-NB and more than 120 other civil society groups and First Nations from across Canada, groups representing many thousands of members, have signed a statement declaring that, "The federal government has never consulted the public about small modular reactors, which would create environmental risks and financial liabilities for Canadians."[67]

Among the concerns shared by these groups, are that new SMRs, proposed to be built across Canada, would produce radioactive waste of many kinds. As noted, some proposed models would extract plutonium from irradiated fuel, worsening international concerns about weapons proliferation globally and creating new forms of radioactive waste that are especially complex and dangerous to manage.

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[64] Letter to the Right Honourable Justin Trudeau and Honourable Seamus O'Regan, "Request for federal funding for development of small modular nuclear reactors (SMNRs) in New Brunswick" (19 May 2020), https://crednb.files.wordpress.com/2020/05/2020-05-19-pm-and-oregan.pdf

[65] Letter to the Honourable Catherine McKenna, "Request by Premier Higgs to use Infrastructure Funds for SMNRs" (21 May 2020): https://crednb.files.wordpress.com/2020/05/2020-05-21-mckenna.pdf

[66] Letter to the Treasury Board, "Letter from Women Leaders Across Canada re: Small Nuclear Reactors" (21 Sept 2020): https://concernedcitizens.net/2020/09/21/letter-to-treasury-board-from-women-leaders-across-canada-re-small-nuclear-reactors/

[67] Open Letter, "Statement on Small Modular Reactors" (17 Nov 2020, updated June 2022) https://cela.ca/statement-on-small-modular-reactors/

Similarly, in a letter to the CNSC dated January 29, 2021, CRED-NB was among the more than 40 public interest groups calling out the CNSC for holding meetings on SMRs which exclude any opportunity for public engagement. As the letter addressing the CNSC notes,

> We are deeply disappointed in your decision to use the Commission's virtual meeting of January 21, 2021 as a platform for would-be proponents and/or licensees of experimental small modular nuclear reactors without granting the same privilege to public interest groups and independent experts active on the SMR file
> […]
> At your meeting on January 21, we witnessed a parade of presenters offering perspectives and opinion on small modular reactors, all from a common view, i.e., the view of SMR promoters and proponents. Where was the balance? Where was the public interest perspective?

The signatories compelled the CNSC to "seize the opportunity to redress this imbalance by convening a virtual meeting for the Commission to hear from independent experts and public interest groups on key issues related to SMRs which were missing from the presentations on January 21." This request remains outstanding.

In a letter from the Anishinabek Nation in advance of the federal government's unveiling of the industry written SMR Roadmap, then Grand Council Chief Glen Hare noted: "Natural Resources Canada has undertaken no consultation whatsoever with our First Nations people but has interacted with the "stakeholders" in the nuclear industry and organizations willing to sign on to a statement of support for SMRs."

Subsequently, other Indigenous governing bodies including the Chiefs of Ontario and the Assembly of First Nations have passed resolutions opposing SMRs in First Nation communities, asking Canada to cease funding and supporting SMR projects.[68,69]

4.3 Public interest groups and First Nations express concerns about SMR exemption from impact assessment laws

In a range of letters to the federal government and media releases, civil society groups and First Nations, the public has continued to raise its concern about the lack of federal impact assessment for novel SMR projects.

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[68] Chiefs of Ontario, "Special Chiefs Assembly – Small Modular Reactors," (Nov 2018), online: http://www.ccnr.org/COO_resolution_SMRs_2018.pdf
[69] Assembly of First Nations, "Special Chiefs Assembly Small Modular Nuclear Reactors," (Dec 2018), online: http://www.ccnr.org/AFN_resolution_SMRs_2018.pdf

In advance of the passing of Bill C-69, which created the *Impact Assessment Act,* civil society groups including the Sierra Club Canada Foundation, the Canadian Environmental Law Association and Ralliement Contre La Pollution Radioactive condemned the federal government's proposal to exempt SMRs, noting "Excluding nuclear energy projects from impact assessment means there will be no credible sustainability-based assessment of the environmental, health, economic or social impacts of new, expanded or refurbished nuclear energy projects before they proceed."[70]

As CRED-NB requested in its letter dated October 27, 2020, to the then Minister of Environment and Climate Change, Jonathan Wilkinson, "CRED-NB requests the documentation that led to the decision to exclude SMNRs from IA protocols and to release the research and data that supports it."[71]

5.0 Other considerations that can be included in an Impact Assessment

5.1 Feasibility, Economics, and Alternatives to the Project

As the CNSC has repeatedly held that economic matters and costs are not within their mandate,[72] it is critical there be an IA so that socio-economic factors, including the need for and purpose of the proposed SMR demonstration project, can be duly considered.

Both the ARC and Moltex SMR designs are unproven concepts. Their development costs, therefore, are highly unpredictable. Neither ARC nor Moltex have publicly released their proposed costs; however, the CEO of Moltex stated publicly in 2016 that building its SMR would cost between $1.8 billion and $2.6 billion CDN.

Considerable international evidence exists of the financial risk of SMRs. To take the most obvious example, consider the NuScale design. Widely regarded as the closest to deployment in the United States, NuScale was the first SMR design to have received a final safety evaluation report from the US Nuclear Regulatory Commission.

Although a NuScale reactor is not yet built, the first project planned to be constructed has been reporting increased costs. In 2018, NuScale's estimated total cost was US$4.2 billion. By 2020, that had jumped to US$6.1 billion.

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[70] Media Release, "Civil society groups condemn plan to exempt nuclear reactors from Bill C-69 impact assessment" (7 May 2019): https://cela.ca/civil-society-groups-condemn-plan-to-exempt-nuclear-reactors-from-bill-c-69-impact-assessment/

[71] Letter to the Honourable Wilkinson, (27 Oct 2020): https://crednb.files.wordpress.com/2020/11/2020-10-27-wilkinson-trudeau.pdf

[72] *See for instance* Canadian Nuclear Safety Commission (2018) Transcript of Proceeding – Pickering Licence Renewal, dated 28 June 2018.

Despite the fact that the US Department of Energy had announced funding of up to $1.4 billion to the NuScale project, at least eight municipalities withdrew from the project, and others cut the amount of electricity they were willing to commit to purchase.[73]

The costs of managing the high-level radioactive waste generated by the novel SMRs proposed for Point Lepreau (molten salt and sodium-cooled) are unknown but projected to be much higher than the waste from a CANDU reactor.

As for "re-using" or "re-cycling" high-level waste, the Idaho National Laboratories is the location of the only previous experiment with the pyroprocessing technology that Moltex is proposing to develop at Point Lepreau. At the Idaho Lab, the costs of extracting plutonium from the spent fuel have inflated from an initial prediction of just under $18,000 US per kilogram to an average of $50,000 per kilogram in 2020 and $80,000 per kilogram during the past few years. Due to accompanying delays, costs for extraction and interim storage have also continued to escalate.[74]

SMRs are heavily dependent upon government financing because the financial industry is resistant to investing, given the lack of business case and SMR customers.[75,76] Given all these factors, an IA is needed to explore the economic feasibility of the proposed demonstration project.

We note that the auditor general of New Brunswick has consistently expressed concern about the high cost of NB Power's nuclear operations. NB Power has the highest debt to equity ratio at 94% and worst 10-year average interest coverage ratio compared to peer utilities in Canada. Rating agencies have signaled that NB Power is the province's largest contingent risk.[77]

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[73] Sonal Patel, "Shakeup for 720-Mw Nuclear SMR Project as More Cities Withdraw Participation," Power Magazine, October 29, 2020, sec. Markets, https://www.powermag.com/shakeup-for-720-mw-nuclear-smr-projectas-more-cities-withdraw-participation/.

[74] Lyman, E (2021). The problems of pyroprocessing. Panel 2: Bay of Fundy: Natural wonder or nuclear test site. https://www.youtube.com/watch?v=StHKVG0jlp8&t=2266s 49:10 to 51:04

[75] Are thousands of New Nuclear Generators in Canada's Future? by M.V. Ramana, online: https://thetyee.ca/Opinion/2018/11/07/Nuclear-Generators-Canada-Future/

[76] See a series of studies by M.V. Ramana and colleagues about countries touted as likely customers for SMRs, explaining why none of them were buying SMRs: "Small Modular Reactors for Nuclear Power: Hope or Mirage?" *Energy Studies Institute Bulletin,* December 2017 • "Thinking Big? Ghana, Small Reactors, and Nuclear Power." Energy Research & Social Science 21 (November 2016): 101–13. https://doi.org/10.1016/j.erss.2016.07.001. • "Wishful Thinking and Real Problems: Small Modular Reactors, Planning Constraints, and Nuclear Power in Jordan." *Energy Policy* 93 (2016): 236–45.

[77] https://www.cbc.ca/news/canada/new-brunswick/standard-poors-credit-rating-new-brunswick-1.4720624

NB Power is $4.9 billion in debt, with $3.6 billion related to the cost overruns of the construction and refurbishment of the reactor at the Lepreau plant.[78] This amounts to more than $4,500 in nuclear debt for every adult and child living in our province.

An IA would also allow public input on alternatives to the proposed project.

Proponents claim SMRs are necessary to mitigate climate change, but research has highlighted the lack of evidence for that claim.[79,80,81,82]

The energy produced by SMRs will cost up to four times more than solar, wind and existing hydro which are deployable in a much shorter time frame.[83] An academic briefing paper about the feasibility of SMRs in New Brunswick highlights the alternatives to SMRs in the province.[84]

The Passamaquoddy Recognition Group believes that SMNRs are a false climate solution, stating in their letter (Appendix B) that "They are re-directing financial and intellectual investment as well as precious time away from climate-focused efforts that could be implemented today." In addition, importantly, "an IA will help to determine 'alternatives to' the current SMNR proposals which may include developing transmission connections with our neighbours that use existing hydro power."

SMR proponents have stated publicly many times that their technology is required "when the wind doesn't blow or the sun does not shine," and that SMRs can be the basis of a grid that has to provide power 24/7, 365 days per year. However, nuclear plants have high planned and unplanned shutdowns in numerous countries in which they operate, including Canada.

For example, the Point Lepreau CANDU reactor has had reliability issues since its $2.4 billion refurbishment, when the reactor was shut down for more than four years from 2008 to 2012,

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[78] Auditor General of New Brunswick: https://www.agnb-vgnb.ca/content/dam/agnb-vgnb/pdf/Reports-Rapports/2020V2/Chap3e.pdf

[79] Arjun Makhijani, M. V. Ramana: "Can small modular reactors help mitigate climate change?" in Bulletin of the Atomic Scientists, July 21, 2021, https://thebulletin.org/premium/2021-07/can-small-modular-reactors-help-mitigate-climate-change/#post-heading

[80] "Nuclear power is too risky and expensive to address the growing threat of climate change, according to an international coalition of former regulators," published by Bloomberg online, January 25, 2022: https://www.bloomberg.com/news/articles/2022-01-25/nuclear-is-too-risky-to-aid-climate-fight-former-regulators-say

[81] Allison Macfarlane, "Nuclear Energy Will Not Be the Solution to Climate Change," published by *Foreign Affairs*, July 8, 2021 online: https://www.foreignaffairs.com/articles/2021-07-08/nuclear-energy-will-not-be-solution-climate-change

[82] *World Nuclear Industry Status Report 2021*, online: https://www.worldnuclearreport.org/-World-Nuclear-Industry-Status-Report-2021-.html

[83] *Ibid,* p. 18.

[84] Briefing Paper: The Proposed Nuclear Reactors (SMRs) for New Brunswick, online: https://raven-research.org/smrs-nb-briefing/

requiring an additional $500 million in capital improvements since. In 2021, an unplanned shutdown lasted for 40 days in the coldest part of the winter, due to mechanical problems.[85]

Given the significant financial issues raised in our discussion, and the significant public funding investment required for SMRs, CRED-NB submits that the public must be provided the most rigorous opportunity to provide input and comment on any SMR project, which can happen during an IA.

5.2 Intergenerational Legacy of Radioactive Waste

As noted earlier, the intergenerational legacy of radioactive waste is a core concern of Indigenous nations. The proposed SMR demonstration project will create radioactive waste that will remain toxic and will need to be safely contained, kept away from all living things for hundreds of thousands of years.

CRED-NB submits that it is critical that an IA occur to ensure an upfront examination of the environmental risk transferred to future generations because of the reactors' waste legacy. Sustainability assessment has a clear goal to discourage decisions which transfer the negative impacts of our activities today onto future generations.[86]

Canada's current generation of CANDU reactors were built without environmental assessments or meaningful consideration of the intergenerational impacts of radioactive waste production.[87] CRED-NB submits that it would be irresponsible to do the same with the new generation of nuclear reactors, SMRs.

SMRs – like all nuclear reactors – will produce low-level radioactive waste as well as intermediate and high-level waste (spent nuclear fuel) that will require secure containment for hundreds of thousands of years to keep the dangerous radioactive materials away from living beings.

The latest academic analysis indicates that the radioactive waste generated by SMRs will be more voluminous and difficult to manage than the current fleet of nuclear reactors cooled by water.[88]

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[85] Amory Lovins and M.V. Ramana, Three Myths About Renewable Energy and the Grid, Debunked: https://e360.yale.edu/features/three-myths-about-renewable-energy-and-the-grid-debunked

[86] Gibson RB, Doelle M, Sinclair AJ (2016) Fulfilling the Promise: Basic Components of Next Generation Environmental Assessment. 29 JELP 251

[87] Blaise, K and Stensil, S-P, "Small Modular Reactors in Canada: Eroding Public Oversight and Canada's Transition to Sustainable Development," in Black-Branch J & Fleck D, eds, *Nuclear Non-Proliferation in International Law, Vol V* (The Hague: TMC Asser Press, 2020) p 224

[88] Krall, L. M., Macfarlane, A. M., & Ewing, R. C. (2022). Nuclear waste from small modular reactors. *Proceedings of the National Academy of Sciences*, *119*(23), e2111833119.

Should these proposed SMRs be built and actually operate at Point Lepreau, the additional costs for managing even greater volumes of nuclear waste and keeping it out of the environment for many generations will be borne by the province's ratepayers and/or taxpayers, not the private companies that will benefit in the short term.

As mentioned earlier, the Moltex SMR includes developing reprocessing unit and a technology called "pyroprocessing" to make the fuel for its SMR. First, Moltex will access the solid bundles of high-level used fuel waste currently stored at Point Lepreau and dissolve them in molten salt.

Next, Moltex plans to extract the plutonium and minor actinides and certain fission products called "lanthanides." The idea that pyroprocessing will work is highly theoretical and open to criticism.[89] It is risky, unproven, and very expensive.[90]

The pyroprocessing technology leaves behind more than 98% of the mass of spent fuel, now divided into new, different waste products. Most of it is depleted uranium plus a small volume of fiercely radioactive fission products and activation products. Moltex has not produced a credible plan for dealing with these new radioactive products that will remain toxic for many generations.

Also as discussed earlier, the only previous experiment with pyroprocessing, at the US Idaho National Labs, does not support the claims about the by the proponent that the new waste produced can be easily managed.[91]

The ARC SMR's liquid sodium coolant will become a new category of liquid radioactive waste, and past experience with waste sodium coolant which the ARC SMR will inevitably create, sounds a note of warning.

Radioactive waste fuel from liquid sodium reactors like the ARC-100 SMR must be treated before it can safely be disposed. This involves removing the sodium to prevent underground explosions, because sodium reacts violently on contact with air and water, and water inevitably seeps into underground cavities like mines and deep geological repositories.

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[89] CBC online: "Former U.S. regulator questions small nuclear reactor technology" Jan. 15, 2021, https://www.cbc.ca/news/canada/new-brunswick/nuclear-waste-reactors-new-brunswick-allison-macfarlane-moltex-arc-1.5873542

[90] Lyman, E. (2017, August 12). *The Pyroprocessing Files - Union of Concerned Scientists*. Union of Concerned Scientists, All Things Nuclear, online: https://allthingsnuclear.org/elyman/the-pyroprocessing-files/

[91] Lyman, E. (2021). *The Problems with Pyroprocessing Files - Union of Concerned Scientists*. On YouTube: https://www.youtube.com/watch?v=wpFIwlYM8L0&t=254s

This experience raises serious concerns about the legacy of the proposed project at Point Lepreau and how the waste products will be safely isolated from the biosphere, including the Bay of Fundy's ecologically unique and sensitive biota, for many generations into the future.

5.3 Weapons Proliferation and Security

CRED-NB submits that an IA will be critical to ensure an upfront examination of the nonproliferation aspects of the SMR Demonstration Project. Analysts in both Canada and the US have raised specific concerns about this aspect of the project.[92]

The nuclear fuel conversion facility that would accompany the Moltex SMR requires pyroprocessing technology to extract plutonium from the high-level radioactive waste at Point Lepreau. Since plutonium is usable in nuclear explosives, this will require heightened security and increased inspection levels by international regulators at Point Lepreau.

Moltex claims that its pyroprocessing method produces "highly impure plutonium," that "the numerous complex steps to produce pure plutonium are simply not required," and that "this reduces the risk of proliferation substantially."[93]

On the contrary, in July 2009, the US nuclear laboratories conducted a comprehensive review of the technology and concluded that in comparison with the existing PUREX method of reprocessing spent fuel, pyroprocessing offers only a modest improvement in reducing proliferation risk.[94]

On May 25, 2021, nine US non-proliferation experts sent an open letter to Prime Minister Justin Trudeau expressing concern about the Moltex project. The experts stated that by "backing spent-fuel reprocessing and plutonium extraction, the Government of Canada will undermine the global nuclear weapons non-proliferation regime that Canada has done so much to strengthen."[95]

The nine signatories to the letter include senior White House appointees and other US government advisers who worked under six US presidents: John F. Kennedy, Lyndon B. Johnson, Richard Nixon, George H.W. Bush, Bill Clinton, and Barack Obama; and who hold

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[92] O'Donnell, S.& Edwards, G. (2021). Will Canada remain a credible nonproliferation partner? *Bulletin of the Atomic Scientists*, June 14. https://thebulletin.org/2021/07/will-canada-remain-a-credible-nonproliferation-partner/

[93] p. 21: http://businessdocbox.com/Green_Solutions/122492409-An-introduction-to-the-moltex-energy-technology-portfolio.html.

[94] Brookhaven National Laboratory, Proliferation Risk Reduction Study of Alternative Spent Fuel Processing, Upton, New York, USA. Report BNL-90264-2009-CP, July 2009. Available HERE.

[95] Open Letter, "US experts concerned that Canadian support for extracting plutonium from spent nuclear fuel is undermining the global nuclear-weapons nonproliferation regime," (25 May 2021), online: http://ccnr.org/Open_Letter_to_Trudeau_2021.pdf

professorships at the Harvard Kennedy School, University of Maryland, Georgetown University, University of Texas at Austin, George Washington University, and Princeton University.

The government acknowledged but did not respond to the letter from the US nonproliferation experts. In part, their letter noted:

> *We write as US nonproliferation experts and former government officials and advisors with related responsibilities to express our concern about your government's financial support of Moltex – a startup company that proposes to reprocess CANDU spent fuel to recover its contained plutonium for use in molten-salt-cooled reactors.*
>
> *We understand your government's motivation to support nuclear power and to reduce fossil fuel use but saving the world from climate disaster need not be in conflict with saving it from nuclear weapons.*
>
> *Also, like other reprocessing efforts, Moltex, even in the R&D stage, would create a costly legacy of contaminated facilities and radioactive waste streams and require substantial additional government funding for cleanup and stabilization prior to disposal.*[96]

Following the strong recommendation of the international nonproliferation experts, CRED-NB submits that the IA should include **an international nonproliferation expert review** – to identify:

- international obligations and proliferation risks posed by the SMRs both individually and in tandem with the existing nuclear operations at Point Lepreau;
- the inconsistency between the plan to use fuel with enrichment levels well above what has ever been used in CANDU reactors, and the Canadian government's advocacy to stop the production of fissile materials, including enriched uranium, in other countries such as Iran;
- proliferation and security risks posed throughout lifecycle of the SMR (i.e., operation, import, handling and transport of spent fuel and storage of waste) and across the range of nuclear sites where SMRs are identified to be deployed (i.e., rural, remote and off-grid communities) as well as potential locations globally, while considering the human rights records of potential client countries;
- mechanisms for oversight and inspection including in remote locations where site accessibility will be challenging for CNSC and International Atomic Energy Agency (IAEA) inspectors at certain times of the year and under unpredictable weather conditions;
- tracking mechanisms for measuring plutonium in spent fuel.

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[96] *Ibed.*

III. CONCLUSION

Done well, an Impact Assessment (IA) ensures a "look before you leap" approach. An IA provides an upfront public review of the ecological, socioeconomic and cultural impacts of a proposed project; it provides the public the opportunity to be meaningfully informed and consulted before a thorough investigative decision is rendered.

The exclusion of this SMR demonstration project from Canada's *Impact Assessment Act* deprives the public and Indigenous nations of the opportunity to weigh in on all aspects of NB Power's proposal. We want to fully understand and be able to comment on the need for the project, its purpose, and the potential alternatives to it.

The CNSC's licensing process cannot be relied upon. The scope of the CNSC process is too narrow. It does not encompass a comprehensive review of cumulative social, cultural, Indigenous and human rights impacts.

Crucially, the CNSC licensing process altogether does not consider the need or purpose of the project, nor any alternatives.

Accordingly, CRED-NB submits that the designation is warranted in this circumstance as:
a) the project is not prescribed by regulations, and carrying out the activity will result in adverse effects within federal jurisdiction as well as adverse direct or incidental effects; and
b) the public has expressed significant concerns related to those effects.

CRED-NB submits that the proposed project in New Brunswick meets both above conditions.

As the first of its kind demonstration nuclear project, located in a region recognized as nationally and globally significant, the project ought to attract the most rigorous form of public engagement and planning, through the *IAA*.

As the project has not substantially begun, and a federal authority has not exercised a power or function that could permit the project to be carried out, in whole or in part, the Minister is authorized to make this designation request pursuant to section 9 of the *IAA*.

Sincerely,
Ann McAllister
Roy Ries
Sam Arnold
On behalf of the Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

APPENDIX A: LIST OF CRED-NB MEMBERS & CHAMPIONS

This list is also available on the CRED-NB website.[97]

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
- 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

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[97] CRED-NB, *Members and Champions,* online: https://crednb.ca/about

- Alex Miller, Upper Cloverdale, NB
- Andrew Secord, Fredericton, NB
- Andy Walton, Hartland, NB
- Angela Dickison, Grafton, NB
- Ann-Marie Cournoyer, Fredericton, NB
- Art MacKay, St. Stephen, NB
- Auréa Cormier, Moncton, NB
- Bernice Steele, Charlottetown, PEI
- Beth McCann, Saint John, NB
- 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, Baxter's 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
- Kelly Newman, Pocologan, NB
- 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
- Lise Ethier, 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
- Maurice Aubin, Moncton, NB
- 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
- Pat Poole, Saint John, 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 Greenlaw, Grand Manan Island, 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

APPENDIX B: LETTERS OF SUPPORT FOR OUR REQUEST

Letters of support for our request are included from the following 15 groups:

Passamaquoddy Recognition Group
Wolastoq Grand Council
Conservation Council of New Brunswick
Sustainable Energy Group - Carleton Chapter
Council of Canadians Fredericton Chapter
RAVEN project at the University of New Brunswick
Canadian Environmental Law Association
Canadian Coalition for Nuclear Responsibility
Prevent Cancer Now
Interchurch Uranium Committee Educational Co-operative
Northwatch
Ontario Clean Air Alliance
Concerned Citizens of Renfrew County and Area
Protect our Waterways No Nuclear Waste
Council of Canadians Ottawa Chapter

Passamaquoddy Recognition Group Inc
PO Box 144
St. Stephen, NB E3L 2X1

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

June 30, 2022

Letter of Support **Request to Designate New Brunswick SMNR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

The Passamaquoddy Recognition Group Inc (PRGI) offers its full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular nuclear reactor (SMNR) demonstration project in New Brunswick. Further, we request that an IA is required for any SMNR project completed in Canada.

PRGI is a not-for-profit Indigenous-led organization representing the Peskotomuhkati Nation in Canada. We represent the interests of rights holders and the Peskotomuhkatik ecosystem, which includes Point Lepreau. Our duty is to protect our lands, waters, and environment for all present and future generations.

The planned location of New Brunswick's small modular nuclear reactor experiment is within our homeland, Peskotomuhkatihkuk.

PRGI strongly supports CRED's request and trust that you will designate the project for an IA because both the Treaty relationship as well as Canada's commitments to Indigenous peoples dictates it should be so. A positive answer to this request can be looked upon as a small act toward reconciling.

We have met with the SMNR proponents numerous times, we have attended SMNR supply chain events, we have attended proponent sponsored open-houses, we are actively participating in the learning process. We are also discussing the SMNR topic with both NB Power as well as the Canadian Nuclear Safety Commission. We therefore believe we are informed to the best of the proponents' ability; however, we remain seeking answers regarding both the government and proponents' plans.

We understand that SMNR development will trigger a provincial EIA as well as a number of assessments through the CNSC, however, we note that a federal IA is more comprehensive than the CNSC assessments that do not include a full socio-economic review.

As was discussed by CNSC staff members on October 13th 2021, during a PRGI/CNSC meeting (e-Docs 6666861), "the type of environmental review conducted for any SMNR application on the Point Lepreau site would depend on the characteristics of the project proposal submitted." Instead of

waiting for proponents to apply, which will work to determine the type of assessment, we recommend taking a proactive stance, indicating the SMNR process will be subject to a co-produced IA.

An IA is an approved Government of Canada process that can appropriately and easily be utilized in this scenario to advance the discovery of issues related to cumulative impacts and waste streams, two of our major concerns related to SMNRs. The IA is essential due to the modular aspect of SMNRs which can be ‘stacked’ eventually exceeding the IA trigger, thus there is a need to be proactive with assessment. An IA is a necessary step in seeking the achievement of Free, Prior and Informed consent for SMNRs.

As was stated in our intervention to the Canadian Nuclear safety Commission (CMD22-H2.244 and CMD22-H2.244A) earlier this year, “we must ensure that the small modular nuclear reactors (SMNRs) proposed in Canada are fully subject to the federal *Impact Assessment Act*. Currently, SMNRs are not required to undergo an IA because the Act adopts a threshold list, and only reactors above 900MW thermal on an existing nuclear site, or above 200MW thermal elsewhere require an IA review. The Peskotomuhkati are very concerned about proposed SMNR projects, their impacts to the health and wellbeing of the environment and communities, and the intergenerational risks they pose. SMNRs 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, can be fully assessed against a range of factors including accidents and malfunctions, cumulative

effects, sustainability, identity factors and Indigenous knowledge and culture."

We must have the accumulated knowledge, discovery and witnessing process that an IA attempts to provide.

Currently, we believe SMNRs are a false climate solution. They are re-directing financial and intellectual investment as well as precious time away from climate-focused efforts that could be implemented today. Nuclear projects of all sizes are notoriously plagued by repeated delays and massive cost overruns - IF projects are ever completed. In our territory alone, the Point Lepreau refurbishment took three years longer than expected and ran $1 billion over budget. On a national level, we provide the example of the Atomic Energy of Canada Limited who received $433.5 million in federal subsidies between 2002 and 2009, to develop the Advanced CANDU Reactor 25, but none were ever built.

Spending resources pursuing speculative, unproven technology during the climate emergency is irresponsible, a death sentence.

Importantly, an IA will help to determine '*alternatives to'* the current SMNR proposals which may include developing transmission connections with our neighbours that use existing hydro power.

During a co-produced IA, we can agree on which experts and sources all rightsholders and stakeholders deem valid and use their data and analyses

to compare the cumulative effects or timelines to implementation, for instance, of pumped hydro developments, to SMNRs.

An IA will have us consider the current and cumulative social, environmental and financial risks of SMNRs in a transparent manner.

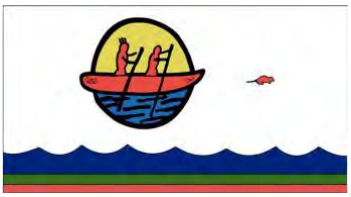
To attain the Free, Prior and Informed consent of the Peskotomuhkati, we must trust the process, a co-produced IA would advance this goal.

On this basis, we offer our full support to CRED-NB's request for an impact assessment of the SMNR demonstration project in New Brunswick.

Additional to the Request to Designate, we also are requesting official consultation on the matter of SMNRs.

All My Relations,

Hugh M. Akagi
Chief of Passamaquoddy Peoples



Wolastoq Grand Council

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

July 27th, 2022

Letter of Support **Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

Wolastoq Grand Council offers it full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick.

Wolastoq Grand Council is mandated to "Protect and Preserve Wolastokuk" our unceded and unsurrendered Homeland.

Wolastoq Grand Council strongly supports this request and asks that you designate the project for an IA for it is our understanding that we as; Wolastoqewiyik (People of the Beautiful and Bountiful River) are the original people of this Homeland and it is our philosophy that flora, fauna, waterways and all animal species have the right to live and prosper in their natural state.

Wolastoq Grand Council has on many occasions stated our concerns relating to the SMR on our Homeland and the long-term effects.

On this basis, we offer our full support to CRED-NB's request for an impact assessment of the SMR demonstration project in New Brunswick.

Regards,

Wolastoq Grand Chief,
spasaqsit possesom – Ron Tremblay

Conservation Council *of* New Brunswick
Conseil de conservation *du* Nouveau-Brunswick
www.conservationcouncil.ca

June 29, 2022

Hon. Steven Guilbeault
House of Commons
Ottawa, Ontario,
Canada
K1A 0A6

Re: Small Modular Reactor Project, New Brunswick - Request for designation under s. 9 of the Impact Assessment Act

Dear Minister:

The Conservation Council of New Brunswick (CCNB) respectively requests that you exercise your authority pursuant to section 9(1) of the Impact Assessment Act ("IAA") to designate the proposed Small Modular Reactor (SMR) demonstration project at Point Lepreau, New Brunswick (the "project") for a federal impact assessment.

CCNB supports the submission of the Coalition for Responsible Energy Development (CRED) and its assessment that the novel nature of the proposed small modular nuclear projects, the size of the projects, the potential for significant cumulative effects, and the need to fully engage Indigenous communities require a federal impact assessment. A provincial environmental impact assessment alone is not appropriate in the circumstance given the need to avoid adverse environmental effects in areas of federal jurisdiction and offers no guarantee of public consultation.

CCNB wishes to highlight from the CRED submission that:

- Moltex Energy proposes to develop a pyroprocessing technology to access irradiated CANDU fuel, turn the solid fuel rods into a liquid form, remove the plutonium, and use that as new fuel for the SSR-W SMR design. Currently, no industrially proven method exists to convert used fuel to molten metal alloys, as claimed by the company.
- The liquid sodium coolant from the proposed ARC SMR will become a new category of liquid radioactive waste, posing special problems that promise to be very expensive. Radioactive waste fuel from liquid sodium reactors like the ARC-100 SMR must be treated before it can safely be disposed. This involves removing the sodium in order to prevent underground explosions, because sodium reacts violently on contact with air and water, and water inevitably seeps into underground cavities like mines and deep geological repositories.
- The combined thermal capacity of the new nuclear reactors would be 1036 MW. Taking into account the existing Point Lepreau nuclear generating station, the site's total capacity would be 3216MW. By virtue of the two SMR designs combined exceeding the 900MWth as set out in the Project List, the Minister ought to designate the project for an impact assessment.

We cannot rely on the Canadian Nuclear Safety Commission's licensing process alone, as its scope is too narrow to encompass a comprehensive review of cumulative social, cultural, Indigenous and human rights impacts, and it altogether does not consider the need or purpose of the project nor alternatives.

Respectfully,

Louise Comeau
Director Climate Change and Energy Solutions

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

June 28, 2022

Letter of Support **Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

The Sustainable Energy Group (SEG) offers its full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick.

The Sustainable Energy Group is mandated that through public education by moving to sustainable renewable energy options with minimal impact on the environment will bring less harm to future generations and nature.

SEG strongly supports this request. We ask that you designate the project for an IA because it is the appropriate action for a risky and unproven technology; the CNSC licensing process and provincial environmental assessment process are insufficient; our concerns for environment, health, fish, birds; the need for Indigenous rights to be considered and honoured.

SEG has a direct interest in this matter as set out in our concern for the environment and our involvement with nuclear issues and SMRs.

On this basis, we offer our full support to CRED-NB's request for an impact assessment of the SMR demonstration project in New Brunswick.

Regards,

Sam Arnold, Coordinator
Sustainable Energy Group – Carleton Chapter
Woodstock, New Brunswick E7M 1K6

Council of Canadians, Fredericton Chapter

The Honorable Steven Guilbeault
Minister of Environment and Climate Change

June 30, 2022

Letter of Support; Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment

Dear Minister Guilbeault,

The Fredericton Chapter of Council of Canadians fully supports the request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project at Point Lepreau N.B., a submitted by the Coalition for Responsible Energy Development in New Brunswick (CRED-NB).

As part of the national Council of Canadians we work through collective action and grassroots organizing to challenge corporate power and advocate for people, the planet and democracy.

Our Chapter members have been aware of this project being promoted and funded by your government along with the NB Provincial government and NB Power over the last two years. This has proceeded without prior public consultation about expanding the use of nuclear energy versus alternative, truly clean and truly renewable, energy sources. In addition to attending expert webinars to become informed citizens, we have also been observing the three sets of House of Commons Committee hearings touching on the development of SMRs in recent months. These have displayed a circus of many poorly informed Members of Parliament, along with representatives of the nuclear industry, openly promoting the development of SMRs without any regard to learning anything about the technological, environmental or economic implications. Democracy has not been well served!

It is now obvious to our Fredericton Chapter members that a full IA under the Impact Assessment Act is critical for this project, given the implications of displacing the option of an urgently needed shift to low carbon energy by building renewable -wind, solar and geothermal- sources with existing technology and supply chains, versus this long-term option of SMR development with uncertain outcomes even in one or two decades.

Equally, the unknowns relating to the characteristics and volumes of wastes produced from the proposed ARC 'liquid sodium' or Moltex 'molten salt' technologies, highlight the need for a thorough analysis of the longer-term health and nuclear proliferation aspects of the project. The industry pitch that the 'environmental assessment' included in the CNSC's licencing process is adequate, is simply false as it does not cover many of the aspects covered by an IA, including the impact on indigenous culture.

Lastly, the nuclear industry is a federally regulated industry for many profoundly serious reasons. It is a dangerous form of deregulation and an abrogation of federal responsibility, for this significant experimental nuclear project not to trigger a federal impact assessment.

We strongly support the CRED-NB request for an impact assessment of the New Brunswick SMR project, for all of the above reasons.

Regards,

Council of Canadians, Fredericton Chapter

Garry Guild
Chapter Secretary

June 29, 2022

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

Support for the Request to Designate the New Brunswick SMR Demonstration Project for an Impact Assessment

Dear Minister Guilbeault,

Almost three years ago, our project Rural Action and Voices for the Environment (RAVEN) at the University of New Brunswick became interested in plans to develop so-called "small modular nuclear reactors" (SMRs) in New Brunswick. We began writing about what we learned.

In March 2021, five PhD colleagues wrote a briefing paper about SMRs, and RAVEN published it on our website. We met twice with Mike Holland, New Brunswick Minister of Natural Resources and Energy Development, to discuss it. The briefing paper, HERE, outlines our concerns with the SMR plans, described in the designation request as the "SMR demonstration project at Point Lepreau."

Most recently the House of Commons Science and Research Committee invited me as a witness for their study on SMRs. My presentation on June 9 focused on the lack of rigorous scientific review for federally funded SMR R&D projects. I recommended that the government move all funding for SMR research and development to the Natural Sciences and Engineering Council of Canada, to ensure independent peer review.

We fully support the request by CRED-NB to designate the SMR demonstration project for an Impact Assessment. Our research and analysis to date indicates that an IA is warranted for the SMR project for all the reasons outlined in the designation request document.

.../2

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SUSAN O'DONNELL, PhD
Researcher and Adjunct Professor
UNB Sociology

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As you are aware, the Government of Canada is financially supporting a private company, Moltex Energy, to develop an experimental technology at Point Lepreau to extract plutonium from used nuclear fuel. We have many questions about this plan.

An IA could explore the links between nuclear fuel reprocessing and global security. As stated in the designation request document, American nonproliferation experts have raised significant concerns about the nonproliferation and environmental aspects of the Moltex project.

The experimental process to extract plutonium from used CANDU fuel, called pyroprocessing, would generate significant amounts of new kinds of nuclear waste. To date, we have seen no plans for managing and storing these novel radioactive materials, nuclear waste that will owned by the people of New Brunswick. An IA could induce the proponents to reveal their plans.

In 2021, the RAVEN project hosted a webinar with national and international participation and including Indigenous leaders as speakers. A nuclear fuel cycle expert based in Washington, Dr. Edwin Lyman with the Union of Concerned Scientists, presented his analysis of the Moltex pyroprocessing plan. Dr. Lyman's presentation is available on YouTube, HERE.

As principal investigator of RAVEN, I would welcome the opportunity to meet to share my knowledge about SMR development in New Brunswick and why an IA is necessary moving forward.

Thank you.

Sincerely,

[redacted]

Susan O'Donnell
Researcher and Adjunct Professor
Principal Investigator, RAVEN project

Canadian Environmental Law Association
EQUITY. JUSTICE. HEALTH.

CELEBRATING 50 Years 1970 - 2020 OF ENVIRONMENTAL PROTECTION

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

June 30, 2022

BY EMAIL

Dear Minister Guilbeault,

Re: Letter of Support from the Canadian Environmental Law Association
Request to Designate NB Power SMR Demonstration Project for Impact Assessment

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Please accept this letter as confirmation of the Canadian Environmental Law Association's ("CELA") full support for the request to designate the small modular reactor ("SMR") demonstration project at the Point Lepreau nuclear site for a federal impact assessment, as filed by the Coalition for Responsible Energy Development in New Brunswick (CRED-NB).

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 over 50 years, CELA has used legal tools to advance the public interest, through advocacy and law reform, in order to increase environmental protection and safeguard communities across Canada.

CELA has a direct interest in this matter based on our decades-long experience intervening in the public interest on nuclear projects. On numerous occasions, CELA has appeared before the Canadian Nuclear Safety Commission on licensing matters and we remain active in federal environmental assessments, including the proposed micro-modular SMR at Chalk River, Ontario and the *in situ* decommissioning of the Whiteshell reactor in Pinawa, Manitoba (both of which are proceeding under predecessor IA legislation, the *Canadian Environmental Assessment Act, 2012*). We have also sought to uphold high standards for environmental protection and nuclear oversight in appeals before the Federal Court and Federal Court of Appeal.

As a result of changes to Canada's federal environmental assessment law in 2019, new-nuclear projects below a certain megawatt threshold no longer require impact assessment (IA) review.

Impact assessment promotes a ‘look before you leap’ approach to decision-making so that independent reviews of risk and harm, alternatives to the project, the purpose of the project and impacts on social, economic, Indigenous and environmental values can be duly evaluated. With SMRs being exempt from this process – and there being no equivalent process required by any of Canada’s other environmental laws – there is a pressing need to designate this project for an IA.

It is of critical significance that the public, including remote and Indigenous communities who have been targeted for SMR use and the affected public, who will live far into the future with the radioactive legacy of Canada’s nuclear industry, have access to an independent IA process and the participatory rights and cumulative assessment review of social, economic, and environmental affects it provides.

On this basis, we offer our full support for CRED-NB’s request for an impact assessment of the proposed SMR demonstration project at the Point Lepreau nuclear site in New Brunswick.

Regards,

CANADIAN ENVIRONMENTAL LAW ASSOCIATION
Theresa McClenaghan
Executive Director & Legal Counsel

Canadian Coalition for Nuclear Responsibility

Regroupement pour la surveillance du nucléaire

Letter of Support **Request to Designate New Brunswick Power's SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

The Canadian Coalition for Nuclear Responsibility / Le Regroupement pour la surveillance du nucléaire fully supports the request by CRED-NB asking you, Mr. Minister, to order an impact assessment of the so-called "Small Modular Reactor Demonstration Project" proposed by New Brunswick Power Corporation. This demonstration project is intended to be on the site of the existing Point Lepreau NGS.

This project, as described by the proponent NB Power, would include two nuclear reactors from two different vendors – the SSR-W reactor (with molten salt coolant) and the ARC-100 reactor (with liquid sodium metal coolant) – and one used nuclear fuel reprocessing plant, the WATSS pyroprocessing facility, to extract plutonium and minor actinides from used CANDU fuel stored at Point Lepreau NGS.

According to the Project List for the Impact Assessment Act, any "new nuclear fission or fusion reactor, or reactors, with a cumulative thermal capacity of more than 900 megawatts thermal on a site that is within the boundaries of an existing Class 1A nuclear facility" is subject to an IA under the Act. The heat output capacity of the SSR-W reactor, according to the CNSC, is 750 megawatts thermal, while the heat output capacity of the ARC-100 reactor is 286 megawatts thermal. As the cumulative thermal capacity of the two reactors in question exceeds 900 megawatts thermal, it seems clear to our organization that NB Power's proposed SMR demonstration project ought to be subjected to an IA under the law.

It is possible that NB Power may attempt to circumvent the requirement for an IA by separating its project into two separate projects, as the thermal capacity of each individual reactor is less than 900 megawatts thermal. In such a case, Mr. Minister, we still believe that an IA should be required and we ask you to order an IA for both projects in such a case.

The planned Moltex SSR-W reactor is a "Stable Salt Wasteburner" reactor. It is designed to use molten fluoride salts as the primary coolant to remove heat from solid fuel rods that are filled with a liquid mix of plutonium, minor actinides, and molten salt. Fuelling such a reactor requires obtaining the requisite mixture of plutonium and minor actinides to be used as fuel, and therefore a facility for extracting such materials from used CANDU fuel will be built & operated – the WATSS facility, "Waste to Stable Salt".

As there has not been a single molten salt reactor in commercial operation anywhere in the world, and since only two small prototype research reactors have operated previously, both in the 1950s, it seems obvious to our organization that a rigorous impact assessment of the SSR-W facility would be desirable and should be required. Such an IA would include the reprocessing operation WATSS as well as the

reactor operation, and would necessarily include the short-term and long-term management of the various waste streams that will result from the Moltex "reprocessing plus reactor" project.

The ARC-100 reactor is intended to be a sodium-cooled reactor with metallic enriched uranium fuel. Despite numerous attempts – Fermi-1 near Detroit (closed after a fuel melting accident), Superphénix in France (abandoned by the government), Kalkar in Germany (completed but never operated), Dounreay in Scotland (spotty performance for many years until funding was withdrawn), Monju in Japan – there is no commercially successful sodium-cooled reactor in the Western World, although there are two in Russia. Given the erratic track record of sodium-cooled reactors and the dangers of fires and explosions due to the chemical volatility of sodium metal (which reacts violently on contact with air or water), an impact assessment of the ARC-100 proposal would be desirable and should be required.

The Canadian Coalition for Nuclear Responsibility was formed in 1975. It is a not-for-profit organization, federally incorporated since 1978. It is dedicated to education and research on all issues related to nuclear energy, whether civilian or military – including non-nuclear alternatives – especially those pertaining to Canada.

CCNR representatives have testified at Environmental Assessment Hearings and before Legislative bodies on nuclear issues and facilities in Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Newfoundland/Labrador, Northwest Territories, and Nunavut. CCNR has frequently been invited to testify by House of Commons Parliamentary Committees (most recently the Environment and Sustainable Development Committee and the Science and Research Committee). CCNR has intervened in dozens of licencing hearings (most recently the Point Lepreau NGS and the Chalk River NSDF hearings).

We are glad to add our voices to those of CRED-NB to request you, Mr. Minister, to do all in your power to ensure that NB Power's proposed "SMR Development Project" – either in its present form or in a subsequent subdivided form – undergo a rigorous impact assessment under the terms of the law.

Your very truly,

[redacted]

Gordon Edwards.

Gordon Edwards, Ph.D., President,
Canadian Coalition for Nuclear Responsibility,
Regroupement pour la surveillance du nucléaire,
www.ccnr.org

53 rue Dufferin
Hampstead QC
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(514) 489 5118 [office]
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Gordon Edwards - Curriculum Vitae: www.ccnr.org/GE_CV.pdf

www.PreventCancerNow.ca

P.O. Box 86058 Marda Loop,
Calgary, AB T2T 6B7

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

July 2, 2022

Letter of Support **Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

Prevent Cancer Now is writing to express our full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular nuclear reactor (SMR) demonstration project in New Brunswick.

Prevent Cancer Now is a national Canadian group that focuses on primary cancer prevention, by elimination of preventable contributors to cancer. Radionuclides are known carcinogens.

Prevent Cancer Now strongly supports this request and asks that you designate the project for an IA because this is the first such reactor to reach this stage of research and planning, so this is an important juncture for public participation as to knowledge, credibility and agreement with key factors (e.g., need, feasibility, technological risks, site-related risks with climate change, potential benefits, and stewardship of long-standing waste with a life-time that dwarfs the life span of any reactor).

This is a major turning point in Canada's nuclear developments, with a novel (yet-unproven) design, possible "recycling" of waste that could result in higher volume, riskier wastes, and final "disposal" of these reactors and their long-lived, toxic payload that may leave them in place on the landscape, virtually forever. Time will erase knowledge about these structures, and our ancestors will be curious. Imagine what would have happened if the pyramids' secrets were nuclear waste instead of artefacts such as mummies and treasures.

The proposal to further develop and build a novel "small, modular nuclear reactor" calls for robust public participation and broad scope (determined with public consultation up front).

Prevent Cancer Now has engaged previously with the Canadian Nuclear Safety Commission regarding facility licencing, and waste, including when narrow scope has excluded questions of public interest. Only with a Federal Impact Assessment may all important issues be considered, such as short- and long-term concerns about this technological approach, at this stage during the climate crisis, and implications for human and environmental health, including Indigenous rights and perspectives for life in the sea, air and land.

Prevent Cancer Now has a direct interest in this matter as we follow nuclear topic on an ongoing basis, collaborate with experts, and have commented on numerous nuclear issues previously.

On this basis, we offer our full support to CRED-NB's request for an Impact Assessment of the SMR demonstration project in New Brunswick.

Regards,

[redacted]

Prevent Cancer Now
Meg Sears, PhD
Chairperson, Prevent Cancer Now.

ICUCEC
Inter-Church Uranium Committee
Educational Co-operative
Box 7724 – Saskatoon, SK Canada S7K 4R4
www.icucec.org
email: icucec.sk@gmail.com

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

June 30, 2022

Letter of Support Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment

Dear Minister Guilbeault,

The Inter-Church Uranium Committee Educational Cooperative [ICUCEC] offers it full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick.

ICUCEC exists to achieve the following goals:

- To educate people in Saskatchewan and elsewhere about the many peace, environmental and health issues arising from the mining of uranium in Saskatchewan and the nuclear industry world-wide.
- To be a voice for people, especially First Nations' and Metis' communities, affected by the uranium industry in Saskatchewan.
- To prevent the further expansion of the uranium/nuclear industry in Saskatchewan.
- To stand in solidarity with others opposing the nuclear industry across Canada and around the world.
- To bring about the ecologically sound stewardship of Saskatchewan uranium mine tailings, and just reparations to those who have been affected by the uranium industry in Saskatchewan from the 1950's to the present.
- support economic development alternatives in and for Northern Saskatchewan
- promote alternative sustainable energy options

ICUCEC strongly supports this request and asks that you designate the project for an IA. Since our founding in 1979 we have had to be a nuclear "watchdog" in Saskatchewan because the CNSC (and its predecessor bodies) is a captured regulator

and in the words of CNSC's previous president, Michael Binder, serves "to promote and promulgate the nuclear industry." ICUCEC has even taken CNSC (Canadian Nuclear Safety Commission) to court over its failure to abide by its own regulations. The only way the five pillars of the Canadian Impact Assessment Act of 2019--environmental, health, economic, social, cultural--can be met with respect to SMRs is through opening them to an Impact Assessment.

ICUCEC has a direct interest in this matter as Saskatchewan has signed a Memorandum of Understanding with New Brunswick, Ontario, and Alberta and prepared "A Strategic Plan for the Deployment of Small Modular Reactors." Many crucial questions are raised which so far the federal and provincial governments and regulators have failed to address. Some of the most important are:

1. We have seen no evidence that an independent peer review has been conducted of the plans for the SMNR technologies you are promoting. Do you have such evidence?

2. Have the federal and provincial legislatures, with adequate parliamentary debate, addressed the sanity of building new nuclear reactors when there are no approved long-term storage facilities anywhere in Canada for the radioactive waste from existing reactors?

3. Has the government considered the risks involved in using "advanced"-nuclear fuels? Both the use of plutonium and enriched uranium as fuels will require new levels of safety and security beyond those required for existing CANDU reactors and more extensive decommissioning procedures.

4. Given plans to sell these new reactors abroad, has sufficient consideration been given to the danger of nuclear weapons proliferation with the use of plutonium-based fuels?

5. The industry and supporting governments anticipate "recycling" of existing used nuclear fuel to extract plutonium through reprocessing or pyro-processing technology. Has your government investigated the extraordinary costs and difficulties in dealing with the radioactive waste streams resulting from such activities ?

On this basis, we offer our full support to CRED-NB's request for an impact assessment of the SMR demonstration project in New Brunswick.

Regards,
Michael Poellet, President
Inter-Church Uranium Committee Educational Cooperative

NORTHWATCH

June 30, 2022

The Honourable Steven Guilbeault
Minister of Environment and Climate Change
House of Commons, Ottawa ON K1A 0A6

Dear Minister Guilbeault,

Re. Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment

We understand that the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) is submitting to you a request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick. We are writing today to express our strong support, and to ask that you designate the project for a full impact assessment under the Impact Assessment Act.

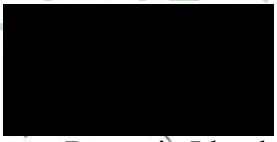
As you will be aware, there are multiple different proposals and designs for small modular reactors being promoted for development in Canada. The projects being considered for New Brunswick are of particular concern because of the proliferation risk associated with their particular design, but all of these reactor designs carry with them a set of issues that warrant consideration through a full impact assessment process. In the case of the New Brunswick demonstration project, as a first-of-a-kind and potentially first-in-Canada project, this is absolutely the case.

Northwatch is a regional environmental non-governmental organization in northern Ontario, established in 1988. One of our founding concerns was radioactive waste and its long-term management. Small modular reactors – should they ever come into operation – further complicate the future of nuclear fuel waste management in Canada, with different characteristics, dimensions and burnup rates from one SMR design to another, but even more so between the SMR designs and the CANDU fuel which is generated by all commercial reactors in Canada. If for no other reason – and there are several other reasons – new reactor proposals should be subject to a full impact assessment process to give due consideration to the generation and short and long term management of the associated radioactive wastes.

Unfortunately, the nuclear licensing body – the Canadian Nuclear Safety Commission – has such an intimate relationship with the SMR developers and the nuclear industry more generally and such a limited and opaque review process that they cannot be relied upon to provide the rigorous review required. The Impact Assessment Agency must be the lead agency, and a thorough review must be carried out under the Impact Assessment Act.

For these and other reasons – including but not limited to the potential impacts on the environment, the need to examine alternatives, need and purpose of the project, Canada's commitment to establishing Free, Prior and Informed Consent from potentially affected Indigenous peoples before proceeding – we urge you to respond positively to CRED-NB's request for an impact assessment of the SMR demonstration project in New Brunswick.

Sincerely,



Brennain Lloyd
Northwatch

ONTARIO CLEAN AIR ALLIANCE

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

June 30, 2022

Letter of Support: **Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

We are very concerned that the SMR Demonstration Project at Point Lepreau on the Bay of Fundy could proceed without a full Impact Assessment (IA). We worry that this could set a precedent for other SMR projects to be deployed across the country without IAs.

A full IA would allow the public to weigh in on alternatives to the project, consider risks emanating from all stages of the project (from building to eventual decommissioning and oversight of the radioactive materials), and the project's cumulative social, economic and environmental impacts. These things are not considered in regulatory proceedings such as a licence hearing.

Given the potential serious consequences of this proposed SMR Demonstration Project at Point Lepreau, it ought to attract the most rigorous form of public engagement and planning, through the *Impact Assessment Act.*

For these reasons and more, we are in full support of the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick.

As you well know, the nuclear industry, in steep decline worldwide, is working hard to convince governments that it has a bright technological future in the form of small modular reactors. The industry's problem is that not only does this technology not exist beyond the very early conceptual stage, but it offers no answers to the problems that are driving the industry's current decline.

Waste

After more than half a century of nuclear operations in Canada, there is still no long-term solution for high-level radioactive waste disposal. No other industry would be allowed to

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CleanAirAlliance.org

continue operating while producing deadly toxic waste it lacks the ability to properly remediate, and which will remain toxic for millions of years.

No high-level radioactive waste storage facility exists anywhere in the world for good reason: the safety concerns surrounding such facilities make finding "willing host" communities extremely difficult. The likelihood of finding any waste storage "solution" will depend on exploiting low-opportunity, high social stress communities. But Canada's First Nations have made it clear they do not welcome such facilities in their territories.

Furthermore, the technical challenges of storing such waste for tens of thousands of years are massive (and likely unsolvable under any honest risk assessment). Industry spin aside, we are little closer to solving these challenges than we were 50 years ago. Worse, SMRs will not solve the waste issue but will *make it worse*. A study published May 31 in *Proceedings of the National Academy of Sciences* concludes:

> "Our results show that most small modular reactor designs will actually **increase** the volume of nuclear waste in need of management and disposal, **by factors of 2 to 30** for the reactors in our case study. These findings stand in sharp contrast to the cost and waste reduction benefits that advocates have claimed for advanced nuclear technologies."

Cost

The Canadian Small Modular Reactor Roadmap Steering Committee optimistically projects that power from SMRs will cost 16.3 cents per kWh, almost three times the current price of power from wind and solar. Unlike these easy-to-deploy forms of waste-free energy with declining costs, the outlook for complex SMR technology does not suggest a rapid fall in costs. No SMR components are currently being manufactured and none are actually modular. This continues to be "bespoke" technology poorly suited to the kind of "learning curve" price declines we have seen in solar and wind. Even remote communities can meet their power needs at a much lower costs with a combination of renewables and storage today.

Security

The idea that we will "drop in" nuclear reactors filled with fissionable materials to remote communities is a security nightmare in the making. Let's remember that far too many of Canada's First Nation communities are still struggling to secure and maintain working water-treatment systems. The idea that SMRs are a solution to these communities' energy needs is farfetched at best and more likely, completely untenable in terms of community acceptance and risk. Who is going to pay for and implement the security measures needed? Who is going to deal with any incidents when access to communities often takes hours of travel?

Similarly, the notion of using SMRs to power oil sands operations makes little sense. These are sunset operations in any case. By the time SMRs might possibly be ready, the oil sands will be well on their way into the history books.

Not a good fit

Whether Canada recognizes it or not, the world is moving toward a major tipping point in electricity system design that will involve a rapid shift to highly decentralized systems instead of the old hub-and-spoke model that SMRs are designed for (being not particularly small). We now have the technological know-how to effectively blend efficiency, highly distributed renewable power and multiple kinds of storage to create systems that are more resilient, more efficient and less costly for meeting our energy needs. SMRs, with their inflexible and costly power output, are poorly suited to this fast-emerging system type and will be little more than white elephants within such systems.

Beyond industry hype, there is little to suggest any pressing need for SMR technology or any likelihood that they are going to be part of an effective climate solution. We have the tools we need to decarbonize electricity right now (as study after study has confirmed) and do not need to wait 20 to 30 years for the nuclear industry to develop yet another "false promise" technology.

Canada has wasted tens of billions of dollars on the failed Maple Reactor technology and on Advanced CANDUs that ended up never being built. Wasting more public money on a clear technological dead-end is not only a mistake, but also scandalous at a time when we need immediate and effective action to reduce emissions and curb climate damage.

It is time to tune out nuclear industry promises that "this time it will be different" and instead seriously consider whether an industry that has never completed a project on time or on budget is really a good bet for limited funding meant to drive real action on climate.

I urge you, as Minister of the Environment, to ensure that this project has the benefit of a full environmental Impact Assessment.

Thank you.

Angela Bischoff, Director
angela@cleanairalliance.org

Concerned Citizens of Renfrew County and Area

2065Woodcrest Road
Ottawa, Ontario K1H 6H9

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

June 28, 2022

Letter of Support **Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

Our group, Concerned Citizens of Renfrew County and Area (CCRCA), supports the request of the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) to designate the small modular reactor (SMR) demonstration project in New Brunswick under the *Impact Assessment Act*.

CCRCA has been working for the clean-up and prevention of radioactive pollution from the nuclear industry in the Ottawa Valley for 40+ years. An SMR demonstration project at the Chalk River Laboratories in our area - the "Micro Modular Reactor" (MMR) Project - is undergoing a CNSC licensing process and environmental assessment under the *Canadian Environmental Assessment Act, 2012*.

We made submissions on the MMR project description and on the scope of the MMR environmental assessment. We noted that the project description provides no credible plan for reactor decommissioning and management of decommissioning waste, no commitment to measure total greenhouse gas emissions over the project life time, and no accommodation of the interests of local First Nations.

We requested that the CNSC employ the more robust provisions of the *Impact Assessment Act* to assess the MMR project, regarding its effects on rights of Indigenous peoples and on the extent to which it would hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change.

The CNSC did not respond to our submissions on the project description or on the scope of the environmental assessment. This suggests that the CNSC is not prepared to perform an adequate assessment of SMR projects - either the MMR project, or those proposed in New Brunswick.

The *Impact Assessment Act* - including its purposes (Section 6) and factors to be considered (Section 22) - is well suited for an assessment of the New Brunswick SMR Demonstration Project.

Noting your power to designate (Section 9) and the public interest (Section 36(2)) in SMR projects, CCRCA strongly supports the request from CRED-NB for designation under the *Act.*

Indeed, we recommend that, owing to the experimental nature of SMRs, you designate all SMR projects for impact assessment.

Best regards,

[redacted]

\Ole Hendrickson
Researcher, Concerned Citizens of Renfrew County and Area

Protect Our Waterways No Nuclear Waste

The Honourable Steven Guilbeault
Minister of Environment and Climate Change

BY EMAIL

June 30 2022

Letter of Support **Request to Designate New Brunswick SMR Demonstration Project for an Impact Assessment**

Dear Minister Guilbeault,

Protect Our Waterways No Nuclear Waste offers it full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick.

Protect our Waterways -No Nuclear Waste strongly supports this request and asks that you designate the project for an IA because the Nuclear Industry and its supporters fail to provide a balance view of the social and environmental impacts of the projects they undertake. All that is heard from the Nuclear Industry and the Canadian Nuclear Safety Commission is information that only supports the Nuclear Industry agenda. In many situations, we discover that the Nuclear Industry and its supporters only share information that they deem is supportive of their cause.

Protect our Waterways No Nuclear Waste is a group of concerned residents of South Bruce who are facing the potential plan of the Nuclear Waste Management Organization (NWMO) to create a Deep Geological Repository for storing all of Canada's nuclear spent fuel.

For more than 70 years, the Nuclear Industry has been developing plans on what to do with the highly radioactive spent fuel of the existing nuclear reactors and to-date have not been able to solve their issue. We are disappointed that once again, as was the case at the outset of the industry, the question of how to manage the vastly different forms of waste generated by the SMR reactors being considered in New Brunswick is being ignored.

On this basis, we offer our full support to CRED-NB's request for an impact assessment of the SMR demonstration project in New Brunswick.

Regards,

Bill Noll, Vice Chair
Protect our Waterways No Nuclear Waste

The Council of Canadians
Ottawa Chapter
c/o Gillian Walker
gillianottawa@gmail.com
(613) 298-9167

TO: The Honourable Steven Guilbeault, Minister of Environment and Climate Change

BY EMAIL
June 30, 2022

Letter of Support for the Request to Designate
New Brunswick SMR Demonstration Project as an Impact Assessment

Dear Minister Guilbeault,

The Council of Canadians – Ottawa Chapter offers its full support for the Coalition for Responsible Energy Development in New Brunswick's (CRED-NB) request for an impact assessment (IA) of the small modular reactor (SMR) demonstration project in New Brunswick.

The Council of Canadians – Ottawa Chapter strongly supports CRED-NB's request and asks that you designate the project as an IA for several reasons. First, the CNSC licensing process has been insufficient. In addition, there are concerns about how the project and its waste will affect the overall environment, as well as human, fish, and bird health. Indigenous rights are also at issue.

In the past year, the Council of Canadians – Ottawa Chapter has worked hard to upgrade its knowledge of nuclear waste issues. Early this year, members addressed Ottawa City Council and gained its support to speak to the federal government about concerns related to a Near Surface Disposal Facility (aka nuclear waste dump) at Chalk River. Individual members have also addressed hearings into the Near Surface Disposal Facility planned for Chalk River. Members from other chapters, including, but not limited to, the Kitchissippi-Ottawa Valley Chapter, the Kitchener-Waterloo Chapter, and the Northumberland Chapter, have also spoken out about the need to research how much waste SMRs produce per unit of energy.

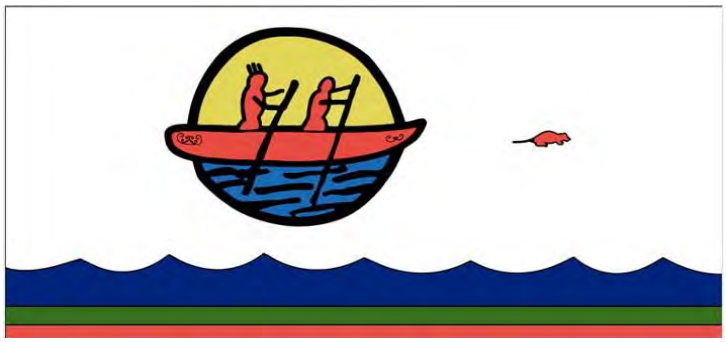
On this basis, we offer our full support to CRED-NB's request for an impact assessment of the SMR demonstration project in New Brunswick.

Regards,

Janet Graham
The Council of Canadians
Ottawa Chapter

APPENDIX C: RESOLUTION FROM THE WOLASTOQ GRAND COUNCIL

The Wolastoq Grand Council requested that their "Resolution on Nuclear energy developments and nuclear waste use and disposal on Wolastokuk" be included in its entirety in this document.



Wolastoq Grand Council Resolution

Nuclear energy developments and nuclear waste use and disposal on Wolastokuk

(Traditional Wolastoq Homeland)

March 10th, 2021

Whereas:

- Point Lepreau on the Bay of Fundy is located on the shared traditional and unceded homeland of Wolastoqey and Passamaquoddy Nations.

- Any developments affecting these lands and waters require approval by all Wolastoqewiyik (Wolastoq citizens).

- Article 29(1) of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) states that "Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their homelands and resources."

- Article 29(2) of the UNDRIP states that "States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the homelands of Indigenous peoples without their free, prior and informed consent."

- Article 32(1) of the UNDRIP states that "Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their homelands and other resources."

- Nuclear reactors, regardless of size, produce bi-products and radioactive waste material that must be contained and will be toxic and dangerous to human health for thousands of years.

- The step of providing prior informed consent was missing in both the development of the original Point Lepreau nuclear plant, the refurbishment of the Point Lepreau reactor, and the funding by the Government of New Brunswick in 2018 and 2021 of two new nuclear projects planned for Point Lepreau.

- The deadly radioactive poisonous waste materials from the Lepreau reactor sitting next to the Bay of Fundy are in temporary storage units and require more permanent and safe storage to protect the land, water, air and all life into the future.

- The nuclear industry plans to move the used (irradiated) nuclear fuel waste from Point Lepreau to Indigenous territory in Ontario.

- The Chiefs of Ontario, consisting of 132 Indigenous Communities across Ontario, recently passed Resolution 21/08 rejecting any further development of nuclear reactors and any transportation of deadly radioactive poisons across their traditional homelands and waterways.

- The Chiefs of the Assembly of First Nations in 2018 passed Resolution 62/2018 calling for the halt of any public funding for these proposed nuclear reactors

- The Joint Declaration between the Anishinabek Nation and the Iroquois Caucus on the Transport and Abandonment of Radioactive Waste asserts the duty that all Indigenous peoples share to preserve and protect Mother Earth. We cannot risk the long-term, irreversible destruction of our lands and waters, which are life-giving for all beings.

- The Joint Declaration five principles for radioactive waste are: no abandonment; better containment and more packaging; monitored and retrievable storage; away from major water bodies; and no imports or exports.

- The nuclear industry claims that the proposed nuclear reactors will “recycle” and reduce the nuclear waste from the Point Lepreau nuclear generating station. On the contrary, they will create new, dangerous radioactive waste streams that will be expensive to manage and will have to be kept out of the environment and away from people for thousands of years.

- Moving those wastes at Point Lepreau away from the Bay of Fundy to nearby secure and safe places so they can be properly monitored forever to keep them safe from all living things is required immediately in consultation with Indigenous peoples.

- Planning for the eventual shut down and decommissioning of the Point Lepreau nuclear reactor and its facilities requires immediate attention to ensure this work will be done properly and in consultation with all Indigenous peoples.

- Previous presentations and documents by Wolastoq and Passamaquoddy Nation leaders have called for the decommissioning planning work to begin as soon as possible.

- Nuclear power is not “green” or "clean." The nuclear fuel chain includes the mining of uranium, the refining of the mined material to extract the uranium, the processing and conversion/fabrication plants, the nuclear reactor/power generation and the ongoing waste management with each step in the fuel chain leaving a wasteland affecting Indigenous people worldwide.

- Deadly radioactive emissions are spreading the poison from the Point Lepreau reactor every day as documented in the industry’s environmental reports.

- Point Lepreau and the Bay of Fundy must be protected for future generations.

Therefore, be it resolved, Wolastoq Grand Council demands:

- That the Government of Canada and the Government of New Brunswick immediately halt any further funding for nuclear reactors at Point Lepreau.

- That the Governments of New Brunswick and Canada and the nuclear industry respect the desires of Indigenous Nations in Ontario stop the development of the Deep Geological Repository on Indigenous territory in Ontario, and to assume responsibility for the radioactive material created by nuclear reactors in Ontario and New Brunswick.

- That the Governments of New Brunswick and Canada invest in the necessary infrastructure to meet New Brunswick's energy needs and reduce greenhouse gas emissions by further investing in and supporting existing and potential Indigenous Nation alternative energy solutions, importing surplus power from Quebec in a timely manner, rapidly deploying renewable sources of energy and initiating comprehensive energy efficiency measures.

- That the Point Lepreau nuclear plant be phased out and renewable power generation and storage solutions alongside efficient energy transmission and distribution be utilized in place of nuclear energy.

- That the Governments of New Brunswick and Canada store all existing nuclear waste on the site of the Point Lepreau nuclear station in above-ground, attack-resistant, reinforced vaults, pulled back from the water's edge, until an acceptable, permanent and safe method to destroy or neutralize the waste is found.

Resolution signed by:

spasaqsit possesom - Ron Tremblay

Wolastoqewi Kci-Sakom spasaqsit possesom - Ron Tremblay
Wolastoq Grand Council

March 10th, 2021