

**SUBMISSION BY THE CANADIAN ENVIRONMENTAL LAW ASSOCIATION
TO THE CANADIAN NUCLEAR SAFETY COMMISSION REGARDING THE
PROJECT DESCRIPTION FOR GLOBAL FIRST POWER'S MICRO MODULAR REACTOR**

September 14, 2019

**Prepared by
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I. INTRODUCTION

The Canadian Environmental Law Association (CELA) submits this letter in response to the Canadian Nuclear Safety Commission's (CNSC) Updated Public Notice dated August 9, 2019, inviting comments on the Project Description of Global First Power's Micro Modular Reactor Project at Chalk River (herein, "small modular reactor" or "SMR").

While CELA requests the CNSC not proceed with the proposal nor expand Canada's fleet of nuclear reactors, in the event Global First Power's project description does advance within the environmental assessment (EA) process, we provide the following comments to the CNSC:

- A federal environmental assessment per the *Canadian Environmental Assessment Act, 2012* (*CEAA 2012*) must be conducted in this case;
- The CNSC, as an authority to conduct environmental assessment, should not conduct this review as it lacks the requisite independence and expertise;
- The project description is incomplete and fails to (1) meet the prescribed information requirements set out in Regulations pursuant to *CEAA 2012*; (2) consider proliferation risks accompanying SMRs; and (3) consider the environmental, social, intergenerational and ethical impact of creating new sources of radioactive wastes; and
- The proponent's review of the project's greenhouse gas emissions is premature without first conducting sustainability and alternative assessments.

II. ABOUT CELA

CELA is a non-profit, public interest law organization. CELA is funded by Legal Aid Ontario as a speciality legal clinic to provide equitable access to justice to those otherwise unable to afford

representation for environmental injustices. For nearly 50 years, CELA has used legal tools to advance the public interest, through advocacy and law reform, in order to increase environmental protection and safeguard communities across Canada. CELA has been involved in a number of nuclear facility licensing and regulatory matters before the CNSC and, has participated in various administrative and legal proceedings under *CEAA 2012* and its predecessors, *CEAA 1992* and the *Environmental Assessment and Review Process Guidelines Order*.

On the basis of our decades-long experience in assessment matters, CELA has carefully considered the project description provided by the proponent from a public interest perspective. Our recommendations below, build on CELA's related concerns about other environmental assessment law matters such as the *Impact Assessment Act* (IAA), as highlighted in recent submissions to Environment Climate Change Canada (ECCC) regarding the revised Projects List¹ and briefing notes for the purpose of public legal education.²

III. BACKGROUND

Global First Power is proposing a first-of-a-kind small modular reactor (SMR) at the Chalk River Laboratories (CRL) site in Deep River, Ontario. In addition to the project description pertaining to this federal environmental assessment, the proponent has submitted an application for a licence to prepare a site for a SMR at CRL, on lands owned by Atomic Energy of Canada Limited.³

According to the project description, Global First Power aims to be operational by 2023 for a period of approximately twenty years. According to the Canadian Nuclear Association's (CNA) vision for SMRs in Canada, as stated in its *A Call to Action: A Canadian Roadmap for Small Modular Reactors* ("SMR Roadmap") released in November 2018,⁴ this demonstration project at CRL could lead to the commercialization of SMRs by 2026.⁵

IV. RESPONSE TO GLOBAL FIRST POWER'S SMR PROJECT DESCRIPTION

1. A federal environmental assessment should be conducted

As a regulator vested with the authority to conduct environmental assessments per s. 15 of the *Canadian Environmental Assessment Act, 2012*, CELA urges the CNSC to conduct a fulsome environmental assessment for the Global First Power project. Given the severity of potential effects, proliferation risks and intergenerational burden that accompanies the operation and eventual decommissioning of SMRs, there is clear potential for it to cause adverse environmental impacts, as discussed below. This project

¹ Canadian Environmental Law Association, "Submissions to the Government of Canada Regarding *Discussion Paper on the Proposed Project List* and *Discussion Paper on Information Requirements and Time Management Regulatory Proposal*," (29 May 2019), online: <https://www.impactassessmentregulations.ca/8866/documents/16609/download>

² Canadian Environmental Law Association, "Briefing Note on Bill C-69: Overview of Canada's New *Impact Assessment Act*," (28 August 2019), online: <https://www.cela.ca/brief-new-impact-assessment-act>

³ Canadian Nuclear Safety Commission, "New reactor facilities – Current licensing activities" (March 20, 2019), online: <http://nuclearsafety.gc.ca/eng/reactors/power-plants/new-reactor-facilities/index.cfm>

⁴ Canadian Small Modular Reactor Roadmap Steering Committee (2018) *A Call to Action: A Canadian Roadmap for Small Modular Reactors*. Ottawa, Canada, p 9 [SMR Roadmap].

⁵ SMR Roadmap, p 22

proposal also meets the requirements of the *Regulations Designating Physical Activities*, SOR/2012-147, because it constitutes the construction of a new nuclear fission or fusion reactor.⁶

2. The CNSC, as an authority for conducting environmental assessment, lacks the independence and expertise to conduct this review

CELA submits that the CNSC's promotion of SMRs absent the completion of any licencing hearing per section 24 of the *Nuclear Safety and Control Act (NSCA)* or EA per *CEAA 2012*, has undermined the independence of this review process and it should not be permitted to proceed. CELA also objects to the CNSC's continued promotion of the nuclear industry, including SMRs, which is not part of its mandate under the *NSCA*. For instance, in a briefing note prepared for the CNSC's former President obtained through Access to Information, it was stated that "the future of the nuclear industry, especially for Canadian participants, is dependent on the success of SMRs."⁷

Furthermore, in June 2019, the CNSC's current President also remarked at the Office for Nuclear Regulation Annual Industry Conference in June 2019, that "opinion surveys show that the Canadian public is supportive of – or at least open to – these new [SMR] reactors. They like that nuclear technology provides reliable power and low emissions." However, it was confirmed through correspondence with the CNSC that the surveys relied upon were conducted by or on behalf of the Canadian Nuclear Association – the industry association whose express purpose is the promotion of the nuclear industry.⁸

Examples such as this, where the CNSC relies on industry-sourced data rather than peer reviewed, scientific literature, serves to undermine public trust in nuclear safety and the independence of the environmental assessment process. Indeed, as recognized by the Expert Panel for the Review of Environmental Assessment Processes report released in 2017, the CNSC "lacks independence and neutrality" because of its closeness with the industry it regulates.⁹ The Report also observed that a "frequently cited concern" among public submissions was the "perceived lack of independence and neutrality because of the close relationship the NEB [National Energy Board] and CNSC have with the industries they regulate".¹⁰ The Expert Panel also commented that participants were concerned that the CNSC, "promote[s] the projects they are tasked with regulating" and often used the term "regulatory capture" in describing their perception.

⁶ *Regulations Designating Physical Activities*, SOR/2012-147, s 35; Global First Power, "Project Description for the Micro Modular Reactor Project at Chalk River" (2019), p 6 [Project Description]

⁷ Natural Resources Canada (2018), Scenario Note and Annotated – NRCAN Portfolio Heads Meeting, Agenda April 12, 2018, obtained through ATI, EDOC# 5504411, # A-2018-00061, 3.

⁸ By email dated June 17, 2019, CELA was provided information from the CNSC: "The surveying used to support the statement 'In general terms, opinion surveys show that the Canadian public is supportive of – or at least open to – these new reactors. They like that nuclear technology provides reliable power and low emissions' included the following: <https://abacusdata.ca/climate-change-worries-open-minds-to-modern-nuclear-technology/> - This survey indicates support or openness to small modular reactors when context is provided about power reliability and low emissions. <https://cna.ca/wp-content/uploads/2018/06/Public-Attitudes-Toward-Extending-the-Life-of-the-Pickering-Power-Plant.pdf> - This survey indicates support for nuclear energy as important part of Ontario's climate changes goals."

⁹ As the CNSC is a federal authority vested with powers to conduct environmental assessment, in addition to licensing and regulation Canada's nuclear industry, it was subject to review by the Expert Panel; Expert Panel for the Review of Environmental Assessment Process, "Building Common Ground - A New Vision for Impact Assessment in Canada," (2017) p 49 - 52

¹⁰ Minister of Environment and Climate Change 2017.

As a regulator, the CNSC also lacks the relevant mandate or impartiality to undertake the sort of fair, public, planning-based process that good EA requires including the qualification of experts and weighing of evidence, and cross-examination.¹¹ For these reasons, CELA submits the CNSC lacks the requisite expertise and independence to proceed with this environmental assessment matter.

3. The proponent has not met the prescribed information requirements for a project description per *CEAA 2012* regulations

CELA submits that the proponent has not met the prescribed information requirements for the description of a project, as set out in the *Prescribed Information for the Description of a Designated Project Regulations*, SOR/2012-148 pursuant to *CEAA 2012*.

Per s 3 of the Regulation, the proponent is required to set out “a description of and the results of any consultations undertaken with any jurisdictions and other parties including Aboriginal peoples and the public.” According to the proponent, the submission of the project description “signaled the opportunity for GFP [Global First Power] to *begin* fulsome public and Indigenous engagement” (emphasis added).¹² CELA submits an intent to engage with the public is not sufficient in fulfilling s 3 of the Regulations, which requires the proponent set out the results of consultation.

Furthermore, s 10 of the Regulations requires the proponent set out “a description of any waste that is likely to be generated during any phase of the project and of a plan to manage that waste.” Accordingly, Global First Power has stated that “Low and Intermediate Level Waste will be packaged and stored on the Project’s site and/or periodically transported off-site to be managed at an appropriately licensed facility and, where required, would be transferred for long-term management and storage.”¹³ As Canada is yet to confirm a willing community or finalize its long-term radioactive waste management plan, CELA submits that the proponent’s intent to transfer waste to a long-term management and storage facility is too hypothetical to meet the Regulation’s threshold of a waste management “plan,” and is at best, a reflection of the proponent’s vision.

4. It is premature to classify the project’s impact on greenhouse gas mitigation without first conducting sustainability and alternative assessments

The project description makes repeated references to the benefit of the proposed SMR because of its ability to offset greenhouse gas emitting power sources currently employed at the CRL site. In our view, this classification is premature because the proponent has not yet conducted a sustainability nor alternatives assessment.

Furthermore, a key focus of *CEAA 2012* is “sustainable development” and yet, the project description fails to mention this principle in its review. As subsection 2(1) of the Act states:

¹¹ See Blaise K., McClenaghan T., Lindgren R. (2019) Nuclear Law, Oversight and Regulation: Seeking Public Dialogue and Democratic Transparency in Canada. In: Black-Branch J., Fleck D. (eds) Nuclear Non-Proliferation in International Law - Volume IV. T.M.C. Asser Press (The Hague).

¹² Project Description, p 14

¹³ Project Description, p 24

sustainable development means development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. (*développement durable*)

It is further relied upon as a purpose of the Act, as stated in subsection 4(1)(h):

4 (1) The purposes of this Act are

[...]

(h) to encourage federal authorities to take actions that promote sustainable development in order to achieve or maintain a healthy environment and a healthy economy;

As sustainable development figures as a key purpose of the *CEAA 2012*, CELA submits the lack of consideration to sustainability in the proponent's materials is a significant gap which must be remedied prior to advancing in the assessment process. CELA submits that a test of the project's overall positive contribution to sustainability and consideration of sustainable development, as required by the Act, should serve as a prerequisite to the review of any SMRs in Canada.¹⁴ Sustainability-based assessments recognize that ecological, social and economic objectives are interdependent and not accommodated through trade-offs, a balancing of considerations or compromise.¹⁵ While EAs aim to lessen a project's impacts, avoid or mitigate harm, sustainability assessments are distinct by design because they seek to *improve* social and ecological conditions.¹⁶

Lacking any consideration of sustainable development within the project's scope, the range of interrelated socio-economic and biophysical implications of the proposed SMR have not been addressed. It is crucial they be considered from the outset of the decision-making process.¹⁷

Furthermore, among the factors to consider in the review of the project according to *CEAA, 2012*, are "alternative means of carrying out the designated project that are technically and economically feasible and the environmental effects of any such alternative means."¹⁸ CELA has thoroughly reviewed the proponent's materials and there is no consideration of alternative means of replacing the "current greenhouse gas emitting hear sources currently employed on the CRL site."¹⁹ As a repeated purpose of this project, we submit this consideration be included in the project's alternatives assessment should it proceed for further review.

5. The project description fails to consider the proliferation risks of SMRs

Global First Power's project serves as a demonstration project for future SMR use and deployment and thus, CELA submits that before commencing further assessment of this project, it must be demonstrable that the proliferation risks posed by this new technology and obligations within international non-

¹⁴ Gibson et al (2008), An Analysis of the Ontario Power Authority's Consideration of Environmental Sustainability in Electricity System Planning, 15.

¹⁵ Gibson et al (2016) Fulfilling the Promise: Basic Components of Next Generation Environmental Assessment, 29 JELP 251; Gibson 2006, p 182.

¹⁶ Gibson 2006, p 178.

¹⁷ Noble B F (2010) Introduction to Environmental Impact Assessment: A Guide to Principles and Practice (2nd Ed), Oxford, Don Mills, p 5; World Commission on Environment and Development 1987, paras 59 - 60.

¹⁸ *CEAA 2012*, s 19(1)(g)

¹⁹ Project Description, p 16

proliferation treaty commitments have been publicly considered, and align with the public interest of all Canadians.

There is an inherent link between the civilian and military uses of nuclear energy. The risk posed by the development of this novel and yet-to-be-test technology has not been an issue of public debate and the development of this technology, absent from Canada's democratic, transparent decision-making process. While the project description states that its fuel is "highly proliferation resistant," the statement lacks any supporting explanation, studies or references. This is an oversight of the project description, and also the CNSC and Canada's consideration of SMRs to date. As all proposed SMR designs foresee operating on some form of enriched fuel, they also have the potential to produce significant quantities of plutonium attractive for weapon purposes.²⁰

Following the operational life of an SMR (approximately 20 – 30 years), the spent fuel will also have to be transported to a reprocessing facility. However, due to the potentially high number of deployed SMRs and their vast geographic range – as proposed in the SMR Roadmap - several reprocessing facilities across a similar geographic range may be necessary to reduce transportation distances.²¹ The greater the number of nuclear sites, the greater the proliferation risks due to difficulties in measuring and amounts of plutonium in spent fuel, and tracking amounts which may have been diverted from reprocessing facilities.²² Lastly, because SMR's are proposed for deployment in remote locations, site accessibility is a challenge for CNSC and IAEA inspectors. This remoteness also presents additional challenges for the transportation of preassembled and loaded nuclear cores.²³ CELA raises these concerns within the context of this project description as its critical they be addressed during the earliest of review stages, as this project serves as a demonstration project for future SMR use and deployment.

6. Consideration of new sources of waste and intergenerational risk is absent from the project description's consideration

CELA submits the project description has failed to consider the effect of expanded radioactive waste production alongside the current management approach for existing stockpiles of radioactive waste.

The passage of the *Nuclear Fuel Management Act* ("NFWA") in 2002 created the Nuclear Waste Management Organization ("NWMO"), which was vested with the mandate to develop and implement a plan for managing Canada's nuclear fuel waste. Per its statutory purpose, the NWMO undertook public consultations to develop a plan for the management of nuclear fuel waste. The fundamental assumption used when comparing the risks and benefits of a range of waste management approaches was that "the volume of used nuclear fuel which needs to be managed was *assumed to be limited* to the projected inventory from the existing fleet of reactors" (emphasis added).²⁴ Following the public consultation period, NWMO's recommended waste management approach was 'Adaptive Phased Management' (APM).

²⁰ Frieß F, Kutt M, and Englert, M (2015) Proliferation issues related to fast SMRs, 85 *Annals of Nuclear Energy*, p 725–731.

²¹ Frieß *et al.* 2015, p. 731.

²² *Ibid.*

²³ SMR Roadmap, Regulatory Working Group Report, p 27, 40.

²⁴ Nuclear Waste Management Organization (2004) *Assessing the Options - The NWMO Assessment Team Report* June 2004

The project description for this SMR, however, has assumed that the NWMO has the mandate to accept additional and new types of nuclear fuel waste. This has not been publicly discussed with either federal government or Canadians and should new SMR fuel wastes be permitted into the APM plan, it may arguably lessen public trust among the communities currently being engaged as potential hosts for the Deep Geological Repository.

CELA submits it is contrary to the NWMO's founding purpose to integrate SMR-produced radioactive wastes into its APM approach, absent consideration of the accompanying ethical, social, economic and intergenerational risks. An additional gap in Global First Power's project description is any discussion of the transference of risk and burden to future generations, accompanying the operation of its SMR. The use of nuclear power for power generation poses uniquely severe accident, security and weapons proliferations risks. Applying an intergenerational equity lens to nuclear projects also reveals the risk of proliferations on future generations, because of nuclear power generation's waste legacy.²⁵

V. CONCLUSION

For the foregoing reasons, we submit:

- A federal environmental assessment per the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) must be conducted in this case, given the severity of potential effects, proliferation risks and intergenerational burden that accompanies the operation and eventual decommissioning of SMRs;
- The CNSC, as an authority to conduct environmental assessment, should not conduct this review as it lacks the requisite independence and expertise;
- The project description is incomplete and fails to (1) meet the prescribed information requirements set out in Regulations pursuant to CEAA 2012; (2) consider proliferation risks accompanying SMRs; and (3) consider the environmental, social, intergenerational and ethical impact of creating new sources of radioactive wastes; and
- The proponent's review of the project's greenhouse gas emissions is premature without first conducting sustainability and alternative assessments.

We look forward to further engagement on this project and ask to be notified of any future steps in the environmental assessment process.

²⁵ Sovacool B K and Ramana M V (2015) Back to the Future: Small Modular Reactors, Nuclear Fantasies, and Symbolic Convergence, Science, Technology, & Human Values, 40(1), pp. 96-125

Sincerely,

A handwritten signature in black ink, appearing to read "Kerrie Blaise". The signature is written in a cursive, flowing style.

Kerrie Blaise, Counsel
CANADIAN ENVIRONMENTAL LAW ASSOCIATION