

**JOINT SUBMISSION BY INTER-CHURCH URANIUM COMMITTEE
EDUCATIONAL CO-OPERATIVE, COALITION FOR A CLEAN GREEN
SASKATCHEWAN, COMMITTEE FOR FUTURE GENERATIONS AND THE
CANADIAN ENVIRONMENTAL LAW ASSOCIATION
TO THE CANADIAN NUCLEAR SAFETY COMMISSION REGARDING CAMECO
CORPORATION'S APPLICATION TO RENEW THE URANIUM MILL LICENCE
AND THE URANIUM MINE LICENCE FOR ITS RABBIT LAKE OPERATION**

Hearing Reference: 2023-H-7

Prepared by:
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May 1, 2023

May 1, 2023

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

Sent by email interventions@cnsccsn.gc.ca

Dear Sir or Madam:

Re: Joint Submission of Inter-Church Uranium Committee Educational Co-Operative, Coalition for a Clean Green Saskatchewan, Committee for Future Generations, and the Canadian Environmental Law Association to the Canadian Nuclear Safety Commission Regarding Cameco Corporation's application to renew its uranium mine and mill licence for the Rabbit Lake Operation (Ref. 2023-H-7)

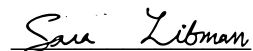
The Canadian Environmental Law Association ("CELA") has enclosed its comments, on behalf of Inter-Church Uranium Committee Educational Co-Operative, Coalition for a Clean Green Saskatchewan, and Committee for Future Generations, on Cameco Corporation's application to uranium mine and mill licence for the Rabbit Lake Operation.

Please find below our submission for your review.

By this letter, and pursuant to the CNSC's *Rules of Procedure*, CELA request status to participate as an intervenor in the public hearing and an opportunity to make a 30-minute oral presentation at the June 2023 hearing.

Sincerely,

CANADIAN ENVIRONMENTAL LAW ASSOCIATION



Sara Libman
Legal Counsel, CELA

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I. INTRODUCTION

The Inter-Church Uranium Committee Educational Co-Operative, the Coalition for a Clean Green Saskatchewan, and the Committee for Future Generations together with the Canadian Environmental Law Association (“CELA”) submit this intervention in response to the Canadian Nuclear Safety Commission’s (“CNSC”) Notice of Public Hearing dated September 20, 2022 requesting comments on the application by Cameco Corporation (“Cameco”) to renew its licence for the Rabbit Lake Operation (hereinafter “Rabbit Lake”) for a period of 20 years.¹ A public hearing with respect to this matter is scheduled for June 7-8, 2023.²

Inter-Church Uranium Committee Educational Co-Operative, the Coalition for a Clean Green Saskatchewan, the Committee for Future Generations and CELA’s (hereinafter “the intervenors”) intervention considers the CNSC’s jurisdiction pursuant to the *Nuclear Safety and Control Act* (“NSCA”), which requires that in making a licensing decision, the CNSC ensure the adequate protection of the environment and human health. In meeting this objective, per section 24(4) of the *NSCA*, the intervenors’ findings and concerns are itemized below. Our recommendations, including suggested licence conditions and licence condition revisions, are summarized in the section titled **Summary of Recommendations**.

II. INTEREST AND EXPERTISE OF THE INTERVENORS

i. Canadian Environmental Law Association

The Canadian Environmental Law Association (“CELA”) is a non-profit, public interest law organization. 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 is funded by Legal Aid Ontario as a specialty legal clinic, to provide equitable access to justice to those otherwise unable to afford representation.

CELA has engaged in detailed research and advocacy related to public safety and environmental protection by seeking improvements to nuclear emergency preparedness. We have also appeared before the CNSC on a number of licensing matters, as well as the federal environmental assessment proceedings for multiple nuclear power generating sites (“NPGS”), proposed uranium mines, and other proposed nuclear projects. CELA also has an extensive library of materials related to Canada’s nuclear sector which is publicly available on our website.³

¹ Canadian Nuclear Safety Commission, “Participant funding for the Cameco Corporation’s Rabbit Lake Operation Licence Renewal” (September 20, 2022), online: <http://nuclearsafety.gc.ca/eng/the-commission/participant-funding-program/opportunities/pfp-cameco-corporation-rabbit-lake.cfm>

² Canadian Nuclear Safety Commission, “Revised Notice of Public Hearing, Ref. 2023-H-7” (December 2, 2022), online: <http://nuclearsafety.gc.ca/eng/the-commission/pdf/NoticeRevision1-Cameco-RabbitLake-23-H7-e.pdf>

³ Canadian Environmental Law Association, online: www.cela.ca

Supporting this intervention is expert Dr. Tanya Markvart, who CELA has retained to provide advice on Cameco's licence renewal application and other relevant documents pertaining to Rabbit Lake.

ii. Inter-Church Uranium Committee Educational Co-operative

Inter-Church Uranium Committee Educational Co-Operative (ICUCEC) is an inter-church coalition that works to educate people about the nuclear industry in Saskatchewan and halt all nuclear development in the province, including mining uranium. ICUCEC's role is that of a nuclear "watchdog" in Saskatchewan and its members make submissions to panels and government regulatory agencies.

iii. Coalition for a Clean Green Saskatchewan

Coalition for a Clean Green Saskatchewan (CCGS) is a network of individuals across rural, northern and urban Saskatchewan that supports us quickly moving towards a sustainable society.

iv. Committee for Future Generations

Committee for Future Generations (CFG) is a group of Dene, Cree, Metis and settler people based in northern Saskatchewan. CFG joined forces to educate people and advocate for greater awareness of the long-term health and environmental consequences of the nuclear industry, inclusive of the uranium mining on Treaty Eight and Ten territory.

III. BACKGROUND/FACTS

A. Project

Cameco Corporation ("Cameco") is applying to the Canadian Nuclear Safety Commission ("CNSC") to renew the uranium mine and mill licence for its Rabbit Lake Operation ("Rabbit Lake"). Rabbit Lake is located in northern Saskatchewan on Treaty 10 territory (1906) and the Homeland of the Métis, and is within the traditional territories of the Denesų́liné, Cree, and Métis peoples. Rabbit Lake opened in 1975 and has produced over 203 million pounds of uranium concentrates.⁴

The current 10-year term licence, which is valid until October 31, 2023, authorizes Cameco to operate a uranium mine and mill site at Rabbit Lake. The licence authorizes Cameco prepare a site to construct, operate, modify and decommission a nuclear facility for the mining of uranium ore and the production of uranium concentrate; mine uranium ore; produce a uranium concentrate;

⁴ Cameco, "Rabbit Lake", online: <https://www.cameco.com/businesses/uranium-operations/suspended/rabbit-lake>

possess, transfer, import, use, store, and dispose of nuclear substances; and possess, transfer, import and use prescribed equipment required for activities associated with the licence (i.e., laboratory studies, field studies, fixed gauge usage and borehole logging devices).⁵

On April 21, 2016, Cameco announced that Rabbit Lake would be placed in a safe care and maintenance state, which would allow Cameco the option to resume production when market conditions improve (according to Cameco in 2016, there was an oversupply of uranium in the market).⁶ Since 2016, no exploration, development or production activities have been conducted at Rabbit Lake.⁷

Despite the operations at Rabbit Lake being ceased for seven out of the ten years under the current licence period (2016-2023), Cameco initially requested that the CNSC issue an indefinite licence term for Rabbit Lake. However after receiving negative feedback from Indigenous Nations and community groups regarding an indefinite licence term, Cameco amended its licence application to request a 20-year licence term for Rabbit Lake.⁸

CNSC staff are recommending that the Commission accept a 15-year licence term for Rabbit Lake, with Cameco being required to complete a mid-term licensing basis review and update the commission. This update would also require Cameco to "...provide a commissioning report if/when it is decided to restart operations at either the mine or mill or both, to describe in detail Cameco's work on ensuring sufficient human resources, the fitness for service, and engagement with Indigenous Nations and communities..."⁹

B. Scope of Review

The intervenors received participant funding to review Cameco's licence renewal application and related documentation, including CNSC Commission Member Documents ("CMDs"), with a focus on the environment and human health, public awareness and dissemination of information, sustainable development and relevant international guidance, in order to make recommendations aimed at improving licence and licence condition handbook ("LCH") parameters specific to environmental protection, public awareness and human health.

⁵ CNSC, "Cameco Corporation Rabbit Lake Operation: Commission Public Hearing", Commission Member Document 23-H7 (CMD 23-H7) at 9. [CMD 23-H7]

⁶ Cameco Corporation, "Cameco announces operation changes in Saskatchewan and the United States" (April 21, 2016), online: <https://www.cameco.com/media/news/cameco-announces-operational-changes-in-saskatchewan-and-the-united-states/>

⁷ CNSC, CMD 23-H7 at 6.

⁸ Cameco, "Licence Renewal for Cameco Corporation Key Lake, McArthur River and Rabbit Lake Operations" Application Letter dated November 4, 2022, online: <http://www.nuclearsafety.gc.ca/eng/the-commission/pdf/ApplicationLetter-Cameco-Mines-20-Year-RequestRenewal-6909009.pdf>

⁹ CNSC, CMD 23-H7 at 11.

The scope of this submission is to assess whether renewing the licence for Rabbit Lake’s operations would cause any undue risk to people and the environment; and to assess whether the applicant (Cameco) is qualified to carry out the licencing sought. In particular, this submission assesses how the CNSC has applied its principles of environmental protection to Cameco’s licensing renewal application. The CNSC is required to apply RegDoc-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* in licence renewal applications such as this one. RegDoc-2.9.1 notes that “...for each facility or activity that has direct interactions with the environment, the applicant or licensee must demonstrate that environmental protection measures are or will be in place... In all cases, the EA (either under *CEAA 2012* or under the *NSCA*), the environmental protection measures and the ERA (where required) are commensurate with the scale and complexity of the environmental risks associated with the nuclear facility or activity.”¹⁰ This submission utilizes RegDoc-2.9.1 in both the legal analysis and the expert report on sustainable development sections to determine whether the CNSC and Cameco are considering environmental protection measures in accordance with the *NSCA*.

Our recommendations to the CNSC, including suggested licence conditions and licence condition revisions, are summarized at **Summary of Recommendations**.

Pursuant to our Participant Funding Program application, CELA has engaged the professional services of Dr. Tanya Markvart, an expert in sustainability assessments. Dr. Markvart’s expert report titled: “Critical Deficiencies in Cameco Corporation’s Application for the Renewal of its Uranium Mine/Mill Licence for Rabbit Lake,” evaluates the project’s documentation and assessment of effects in compliance with relevant regulatory provisions and the principle of sustainable development (see **Expert Report** appended to this submission).

IV. PRELIMINARY MATTERS & PROCEDURAL CONCERNS

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

i. Environmental Justice and Public Disclosure

On March 21, 2023, the intervenors requested a PDF format version of the *Environmental Protection Review Report for the Rabbit Lake Operation* (“EPR Report”). The EPR Report, a 90 page document, is publicly available as a webpage,¹² but not as a PDF. Attempting to review the EPR Report’s information via the webpage proved to be inaccessible for both reading purposes and for offline reading.

¹⁰ CNSC, RegDoc-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* at s 2.1. [RegDoc-2.9.1]

¹² <https://www.nuclearsafety.gc.ca/eng/resources/publications/reports/eprrabbitlake23/index.cfm>

While the intervenors appreciate the efforts of CNSC staff to promptly provide a PDF version of the EPR Report (received March 22, 2023), the intervenors **submit** that key documents and materials associated with a licencing hearing ought to be publicly available in digestible, and offline-compatible formats, such as PDF versions. In doing so, it enables members of the public to access key materials in offline settings in the event they have an unstable internet connection, or to print out materials for accessible reading.

While the efforts of CNSC staff to promptly respond to information requests and questions leading up to this hearing is appreciated, unfortunately we submit that proactive disclosure of data is preferred to piecemeal, individual responses. Put another way, the documents relied upon in Cameco's and CNSC Staff's CMDs ought to be publicly available by default and not by request only.

In numerous prior submissions to the CNSC, CELA has requested that the CNSC direct the public release of studies and assessments relied upon by proponents in their licence application.¹³ We once again bring this concern to the attention of the CNSC and **request** that all studies referenced in the licence applications and CMDs by CNSC staff be available for public dissemination when these documents are publicly released.

Meaningful public participation is not possible without an informed public; therefore, easy access to relevant studies, data, records, etc., is critical. Meaningful participation in decision-making is also critical to advancing environmental justice as it ensures that no population suffers disproportionate adverse environmental or human health effects. A core principle of environmental justice is the public's right to information, or "right to know", which stands for a basic human entitlement to information when there may be direct impacts to health and bodily integrity.¹⁴

Recommendation No. 1: The CNSC should ensure that relevant documents and information is publicly available in accessible formats.

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

¹³ See for instance: Coalition for Responsible Energy Development in New Brunswick and CELA Submission to CNSC for Renewal of Point Lepreau Nuclear Generation Station Power Reactor Operating Licence (2022), online: <https://cela.ca/wp-content/uploads/2022/03/Submission-Point-Lepreau-Nuclear-Generating-Station.pdf> at 8; Durham Nuclear Awareness Submission to CNSC for the Application to Renew OPG's licence for the Darlington Nuclear Generating Station (CMD 15-H8.29) at 6; Durham Nuclear Awareness and CELA Submission to CNSC for the Site Preparation Licence for OPG's Darlington Site, online: <https://cela.ca/wp-content/uploads/2021/05/CELA-and-DNA-Submission-to-CNSC-OPG-Site-Licence-Renewal-Ref-2021-H-04.pdf> at 4-5; Citizens Against Radioactive Neighbourhoods Submission to CNSC for the Application to Renew BWXT's licence for its Peterborough and Toronto Facilities, online: <https://cela.ca/wp-content/uploads/2020/03/Submission-from-CELA-on-behalf-of-CARN-BWXT-Licence-Renewal-Ref.-2020-H-01.pdf> at 9-10.

¹⁴ Richard M Brown, 1982 "Canadian Occupational Health and Safety Legislation" (1982) 20:1 Osgoode Hall LJ.

ii. Public Dissemination of Information is a Purpose of the CNSC

On April 3, the intervenors requested the complete versions of a number of documents pertaining to Rabbit Lake to assist Dr. Tanya Markvart’s expert analysis for this submission, as these documents were only available as summaries on Cameco’s website:

- Rabbit Lake Preliminary Decommissioning Plan;
- Rabbit Lake Operation Human Health and Ecological Risk Assessment, 2015. e-Doc 5998656; and
- Rabbit Lake Operation Environmental Risk Assessment, 2020. e-Doc: 6740892.

On April 11, 2023, we were informed by CNSC staff that Cameco had filed a request for confidentiality regarding these documents. At the time of this submission being drafted, the intervenors have not gained access to any of these documents.

The lack of full, documentary disclosure remains a systemic barrier to meaningful participation before the CNSC and is contrary to one of its core statutory objectives, which is to “to disseminate objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects, on the environment and on the health and safety of persons.”¹⁵ Per RegDoc 3.6 *Glossary of Terms*, a ‘licensed activity’ is “[a]n activity described in any of paragraphs 26(a) to (f) of the Act the licence authorizes the licensee to carry on.” Section 26(e) of the *NSCA*, which relates to a licence to operate a nuclear facility, is applicable in this instance. Therefore, the *NSCA* clearly contemplates that licensing information, such as the documents the intervenors requested above, are among the “activities” which ought to be publicly disseminated, pursuant to the objects of the Act.

The *NSCA* also requires the CNSC to disseminate “objective” information”.¹⁶ Objective is defined as “expressing or dealing with facts or conditions as perceived without distortion by personal feelings, prejudices, or interpretations.”¹⁷ The intervenors submit that the CNSC has not fulfilled this obligation; when studies referenced in Cameco’s and CNSC Staff’s CMDs are not disclosed in full, the public can only rely upon either Cameco’s summary of the study or CNSC staff’s assessment of the study, its findings and conclusions. Furthermore, without the right to cross-examination as part of the hearing process, there is no ability for members of the public to question the authors, the methods, the scope, and findings. This means there is no ability for the public to view the full licensing record nor ability for experts, who may be retained by public interest intervenors, to provide peer review of the studies and subsequently make recommendations to the CNSC.

¹⁵ *NSCA* at s 9(b).

¹⁶ *Ibid.*

¹⁷ Merriam-Webster dictionary, online: <https://www.merriam-webster.com/dictionary/objective>.

Recommendation No. 3: References contained in CNSC staff's and Cameco's CMDs ought to be publicly available to that subject matter experts can provide peer review of the documents. This is necessary for the CNSC to uphold its obligations to disseminate "objective" information.

Recommendation No. 4: The right to cross-examination must be adopted as part of the hearing process so that members of the public have the ability to pose questions regarding, for instance, a study's methods, scope and findings.

V. LEGAL FINDINGS & ANALYSIS

The intervenors submit a 20-year licence (or even a 15-year licence) is patently unreasonable in the circumstance and should be denied for the following reasons, each detailed below:

- A. Cameco's request for a 20-year licence is contrary to the public interest;
- B. Cameco's request for a 20-year licence extends beyond the site's operating life;
- C. Cameco's licence application fails to consider the impact of new developments and market volatility;
- D. Cameco's licence application fails to consider the increased risk of environmental contamination; and
- E. Cameco's licence application fails to expressly consider climate change.

A. Cameco's request for a 20-year licence is contrary to the public interest

The intervenors are highly concerned by Cameco's request for a 20-year licence and by the CNSC's recommendation for a 15-year term licence for Rabbit Lake. We submit it is contrary to the public interest mandate of the CNSC for a number of interrelated reasons, including that it shields licensee activities from the public oversight and participation mechanism provided in section 40(1) of the *NSCA*; it would mean relying on more discretionary forms of public engagement like CNSC meetings which are not subject to the licensing framework of the *NSCA*; and it would be contrary to international guidance and precedents.

i. Public Oversight and Participation

The intervenors oppose Cameco's request for a 20-year licence for Rabbit Lake as it removes the opportunity for a public hearing under section 40(1) of the *NSCA* for two decades.¹⁸ Even granting

¹⁸ **40 (1)** Subject to subsection (2), the Commission shall provide an opportunity to be heard in accordance with the prescribed rules of procedure to

(a) the applicant, before refusing to issue a licence under section 24;

(a.1) the applicant, before refusing to authorize its transfer under section 24;

(b) the licensee, before renewing, suspending, amending, revoking or replacing a licence, or refusing to renew, suspend, amend, revoke or replace a licence, under section 25;

a 15-year licence—as CNSC staff recommend—would also deprive the public of opportunities to meaningfully participate in Rabbit Lake’s licencing developments. This approach is contrary to the public interest mandate of the CNSC, as a 15-year or 20-year licence would effectively shield Cameco’s activities and potential incidents at Rabbit Lake from a public hearing until either 2038 or 2043. While the CNSC also recommended that with a 15-year licence Cameco would be subjected to complete a mid-term licensing basis review and update to the Commission,¹⁹ the intervenors emphasize that a mid-term review would not occur for 7.5 years after the renewal was granted (and in the event a 20- year licence is granted, this would not occur for 10 years following the licence being renewed).

As CELA has previously submitted to the CNSC, the intervenors do not support the CNSC’s transition to longer licences, as they significantly reduce public scrutiny of licensee operations, access to information, and effectively eliminate meaningful public participation.²⁰ As we submit below, there are good reasons, including the aging facilities at Rabbit Lake, market volatility and the potential impacts of climate change, to evaluate projects and their impacts even more frequently in the future.

First, the International Atomic Energy Agency (“IAEA”) publication, *Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities*, notes that “public participation in decisions can promote a greater degree of understanding of the issues and can help to develop appreciation of the actual risks and benefits of nuclear energy.”²¹ As such, shorter-term licences provide more frequent opportunities to publicly reassess a licence in accordance with licensing purposes, including compliance with regulatory requirements, CNSC RegDocs and international guidance.²²

(c) any person named in or subject to the order, before confirming, amending, revoking or replacing an order of an inspector under subsection 35(3);

(d) any person named in or subject to the order, before confirming, amending, revoking or replacing an order of a designated officer under subsection 37(6);

(e) the applicant, before confirming a decision not to issue a licence or authorize its transfer — and the licensee, before confirming a decision not to renew, amend, revoke or replace a licence or authorize its transfer — under paragraph 43(4)(a); (f) the licensee, before confirming, varying or cancelling a term or condition of a licence under paragraph 43(4)(b);

(g) the licensee, before taking any measure under any of paragraphs 43(4)(c) to (f);

(h) any person named in or subject to the order, before taking any measure under any of paragraphs 43(4)(g) to (j); and

(i) any person named in or subject to the order, before making any other order under this Act.

¹⁹ CNSC, CMD 23-H7 at 11.

²⁰ See for example: Coalition for Responsible Energy Development in New Brunswick and CELA Submission to CNSC for Renewal of Point Lepreau Nuclear Generation Station Power Reactor Operating Licence (2022), online: <https://cela.ca/wp-content/uploads/2022/03/Submission-Point-Lepreau-Nuclear-Generating-Station.pdf>; and Submission from CELA on behalf of Citizens Against Radioactive Neighbourhoods in response to BWXT’s 10-year licence renewal for its Peterborough and Toronto facilities (2020), online: <https://cela.ca/wp-content/uploads/2020/03/Submission-from-CELA-on-behalf-of-CARN-BWXT-Licence-Renewal-Ref.-2020-H-01.pdf>

²¹ IAEA, *Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities* (2011), online: https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1520_web.pdf at 7. [IAEA Guidance on Stakeholder Involvement]

²² See S. Blake (2017) *Administrative Law in Canada* (6th Ed): Toronto: Lexis Nexis Canada at 138 [Admin Law in Canada]

Second, uranium mines and mills pose substantial risks to human health, safety and the environment. Our understanding of these dangers is continuously evolving, and legacies such as the decommissioned Beaverlodge uranium mine and mill in northern Saskatchewan reveal the very dire contamination risks that can flow from uranium mining operations.²³ Applications for licence renewal should, therefore, not just attract the highest level of procedural protections, but also build in rights for public intervention, including notice, awareness of the impacts, and regular opportunities to respond, interrogate industry claims, and offer independent expert advice. The intervenors submit that a 15- or 20-year licence would significantly reduce the level of procedural protections and rights for the public to participate in a public hearing process per section 40(1) of the *NSCA*.

Specifically, either a 15- or 20-year licence term would minimize public scrutiny of licensee operations and access to information because of the duration of time between hearings and the accompanying lack of meaningful ways for the public to engage with the Commission and licensee. The intervenors note that during a 15- to 20-year licence cycle for a site like Rabbit Lake, community groups may lose knowledge holders who are familiar with and are well-versed in the history and legacy uranium/nuclear activities within their communities. With long gaps in public engagement, the public's knowledge and awareness of ongoing concerns about a facility becomes fractured, and the ability for the public, the CNSC, and a licensee to meaningfully engage with one another is lost. There needs to be continuity in public engagement surrounding sites like Rabbit Lake, and the best way to prevent these gaps in knowledge sharing is to provide for frequent and meaningful public engagement opportunities.²⁴ Shorter licences and more frequent hearings, which are responsive to the operations being undertaken by licensees, would better serve the public interest.

²³ Saskatchewan Environmental Society, *The Legacy of Uranium Mining in Saskatchewan: The Unacceptable Environmental Impacts of Uranium Mining* (March 2015), online: <https://environmentalsociety.ca/wp-content/uploads/2015/08/The-Legacy-of-Uranium-Mining-in-Saskatchewan-FINAL.pdf> at 7-11. [Saskatchewan Environmental Society]

²⁴ See for instance, [Dr. Tanya Markvart's Expert Report](#) at sections 2.5, 3.2, and 3.3, which highlights the role of meaningful public participation in sustainability-based decision making for sites like Rabbit Lake.

Third, by limiting meaningful public participation and access to information for 15 to 20 years, a long licence term would also diminish public trust in the CNSC and the licensee. The intervenors were already in opposition to Cameco receiving a 10-year licence renewal for Rabbit Lake, and to extend the site's licence term for an even longer period of time would be of great detriment to public trust. IAEA guidance on stakeholder involvement provides that “[e]stablishing trust can be enhanced when an inclusive approach to stakeholder involvement is adopted [...] to help ensure that all those who wish to take part in the process have an opportunity to express their views and have access to information on how public comments and questions have been considered and addressed.”²⁵ Essentially, public confidence in the mining and processing of uranium concentrate can be enhanced by an authorization process that reflects a high degree of openness and transparency on the part of the authorities.²⁶ This is lost if there is only one chance every 15-20 years for the public to meaningfully engage in dialogue with the CNSC and the licensee about their concerns.

Fourth, a 15- to 20-year licence would limit the opportunity for the public and community groups to raise issues of timely and urgent importance. With Rabbit Lake not currently operating (and with there being no estimated time for the resumption of operations), it is not clear to the public as to how long it will be before Cameco makes the decision to wind-down and decommission Rabbit Lake. A short licence period would allow the public to weigh in more frequently on the advisability and timing for shutting down and decommissioning Rabbit Lake. An early shutdown carries the attendant benefit of ending the production of radioactive tailings and waste which is expensive to store and which has no proven-safe method of disposal.

Recommendation No. 5: Licence renewals should be subject to shorter licensing terms as it provides the opportunity for public hearings under section 40(1) of the *NSCA*, and enhances the openness and transparency of the CNSC, and its oversight of nuclear uses and technologies. These opportunities are critical to building the public's trust in the regulator and would be lost if there is only one chance every 15-20 years for the public to participate in a hearing and engage in dialogue with the CNSC and the licensee about their concerns.

ii. Regulatory Framework and Oversight

The intervenors submit that CNSC staff's recommendation that the Commission renew Rabbit Lake's licence for a period of 15 years is contrary to the public interest because CNSC staff erred in finding discretionary forms of public engagement, such as regulatory oversight meetings, are sufficient stand-ins for public hearings under the *NSCA*. Inter-Church Uranium Committee Educational Co-Operative, the Coalition for a Clean Green Saskatchewan, and the Committee for

²⁵ IAEA Guidance on Stakeholder Involvement at 6.

²⁶ Carlton Stoiber, Alec Baer, Norbert Pelzer & Wolfram Tonhauser (eds), *Handbook on Nuclear Law* (2003, IAEA: Austria), online: https://www-pub.iaea.org/mtcd/publications/pdf/pub1160_web.pdf at 36; see also: IAEA Guidance on Stakeholder Involvement at 6.

Future Generations and CELA do not accept CNSC staff's position that a 15-year term is justified based on improvements to the regulatory framework and oversight practices of the CNSC.

First, the intervenors do not agree that the annual Regulatory Oversight Report for Uranium Mines and Mills is an appropriate alternative to more regular, site specific licensing hearings. The intervenors submit that a public hearing before the CNSC provides greater procedural rights and protections than other CNSC forums, such as the annual Regulatory Oversight Reports ("ROR") and meetings. Furthermore, while licence renewal hearings are subject to the provisions of s 24(4) of the *NCSA* and the CNSC's *Rules of Procedure*, which provide some degree of procedural rights for the public, these statutory requirements do not apply to RORs.

It has been CELA's experience that the intent of RORs is not to change or amend licences or licence conditions, but rather to receive updates on licensee activity. Further, the public is generally excluded from oral interventions which provide an opportunity for interrogations and dialogue with the proponent and Commission members. As such, the ROR is ill suited to resolving the concerns being made by the intervenors in the context of this licence renewal.

Second, the intervenors submit that the mid-term reporting requirement for licence periods greater than 10-years and other regulatory control measures—such as status reports event initial reports, periodic safety reviews and environmental risk assessments—do not justify the issuance of a longer licence term. For example, CNSC staff recommend that if the CNSC issues a licence greater than 10 years for Rabbit Lake, Cameco would be required to provide a comprehensive performance update to the Commission at mid-term point of the licence period. This update "...would consist of a report documenting a thorough licensing basis review, that is, a report documenting Cameco's performance across all 14 SCAs as well as the submission of revised programs as needed for CNSC staff review and acceptance."²⁷ For this mid-term update, the performance update would be available for the public to review in advance of the Commission meeting, and "Cameco's presentation during a Commission meeting would provide an opportunity for Indigenous Nations and communities and the public to provide input and perspective to the Commission at a frequency in line with current norms."²⁸ It is unclear whether the public engagement element of the mid-term update would be limited to written submissions, or include oral submissions and the ability for stakeholders to ask questions to the licensee and the Commission.

Additionally, CNSC staff note that Cameco is required to update environmental risk assessments, preliminary decommissioning plans and financial guarantee on a minimum 5- year frequency.²⁹ Contrary to CNSC staff's suggestion, the 5-year frequency of these submissions provide yet another reason to not exceed this timeframe for licensing, so that the public can have the

²⁷ CNSC, CMD 23-H7 at 97-98.

²⁸ *Ibid.*

²⁹ *Ibid* at 95.

opportunity to review and comment on the most recent iterations of these licensing basis documents.

As well as complimenting the timeframes for environmental risk assessments, preliminary decommissioning plans and financial guarantee updates, a shorter licensing term would better align with the principle of adaptive management—an environmental projection measure the CNSC needs to respect in licensing application processes.³⁰ As this submission discusses in both [Part E](#) and in the [Expert Report](#), adaptive management becomes essential in reviewing how a licensee like Cameco is preparing and adapting its operations to the effects of climate change.

As a result of the above noted deficiencies, the intervenors submit that the CNSC should disregard CNSC staff's recommendation for a 15-year licensing term. To align with the 5-year cycle of updating environmental risk assessments, the preliminary decommissioning plans and financial guarantee for Rabbit Lake, the intervenors submit that a 5-year licensing term would be more suitable for Rabbit Lake. Regardless the length of the licence provided to Cameco, the intervenors further recommend there be a comprehensive performance update for Rabbit Lake subject to public hearings and review every three years, which would greatly enhance transparency and accountability with the public.

Recommendation No. 6: Regulatory Oversight Reports, mid-term performance updates and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings, nor used as a stand-in for public hearings.

Recommendation No. 7: The CNSC should disregard CNSC staff's recommendation for a 15-year licensing term. The licensing term for Rabbit Lake should not exceed 5-years, as this would not only align with the review cycles for updating the environmental risk assessments, the preliminary decommissioning plans and financial guarantee for Rabbit Lake, but would also enhance public engagement with Rabbit Lake's operations.

Recommendation No. 8: Regardless the length of the licence provided to Cameco, the intervenors further recommend there be a comprehensive performance update for Rabbit Lake subject to public hearings and review every three years, which would greatly enhance transparency and accountability with the public.

iii. International Precedents

The intervenors submit that it would be contrary to the public interest to accept CNSC staff's recommendation for a 15-year licensing term based on international precedents. In making their

³⁰ CNSC, RegDoc-2.9.1, at s 2.1.

recommendation, CNSC staff note that “internationally, nuclear fuel cycle facilities are issued licences for periods ranging from a few years to the entire lifecycle of the facility, supported by periodic, comprehensive assessments of facility safety.”³¹ However, in their brief analysis of international licence periods, CNSC staff have not provided sufficient information about what factors are considered by nuclear regulators in other jurisdictions during the licence application and renewal process.³²

Indeed, the intervenors submit that nuclear licencing procedures in other jurisdictions are quite prescriptive compared to Canada’s highly subjective approach. For example, CNSC staff note that in 2017, the United States Nuclear Regulatory Commission (“NRC”) changed the maximum licence terms for new applications and licence renewals for uranium recovery facilities from 10 years to 20 years in a new policy on licence terms.³³ However, the NRC sets very detailed regulatory requirements that a nuclear facility and operator must meet to be licenced. The licence renewal process requires that both a technical review of safety issues and an environmental review be performed for each application, and NRC regulations – 10 CFR Part 51 and 10 CFR Part 54 – contain very detailed requirements for each of these reviews, outlining their scope, content and technical basis.³⁴

In contrast, the CNSCs licencing scheme is so overly reliant on guidance principles and non-binding language that it is very difficult for an observer to tell what is sufficient under the Act and regulations. The few mandatory/prescriptive provisions in the *NSCA* and accompanying regulations generally only require the license applicant to address several topics or areas of concern but offer nearly no concrete provisions for how they should be addressed or what would constitute sufficient planning and analysis under them.³⁵ Further, while RegDocs give license applicants and the general public some insight into what the CNSC would like to see in an application, the use of non-binding language (e.g. “should” or “may” instead of “shall” or “must”) in these documents makes it difficult to discern the threshold of information the CNSC would consider to be sufficient to address a listed area of concern.³⁶

Another jurisdiction referred to by CNSC staff is Kazakhstan, in which the new Subsoil Use Code came into effect on June 29, 2022. Under this new Code, the maximum term for a production licence which covers uranium mining, mineral processing and operational exploration is 25 years

³¹ CNSC, CMD 23-H7, at 95.

³² *Ibid.*

³³ *Ibid.*

³⁴ United States Nuclear Regulatory Commission, Part 51, online: <https://www.nrc.gov/reading-rm/doc-collections/cfr/part051/index.html>; Part 54, online: <https://www.nrc.gov/reading-rm/doc-collections/cfr/part054/index.html>

³⁵ See for example: NSCA at s 24(4); General Nuclear Safety and Control Regulations, SOR/2000-202 at ss 3(1), 5.

³⁶ See for example: CNSC RegDoc 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1*; CNSC RegDoc 2.4.1, *Deterministic Safety Analysis*; CNSC RegDoc 2.3.3., *Periodic Safety Reviews*; CNSC RegDoc-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills*.

with a possible extension for the same period, which may be granted several times.³⁷ What is notable about the citation relied upon by CNSC staff to discuss this licence change is that the news release states: “the mining legal framework, at least on paper, looks more straightforward and investor-friendly now (of course, with a few reservations).”³⁸ The intervenors submit that when setting licence terms for nuclear facilities, the priority of the CNSC should not be making licencing more investor-friendly; rather, the focus of the CNSC should be centred around ensuring the protection of human health and safety and the environment. As such, the intervenors submit that longer licencing terms are act against the obligations of the Commission under the *NSCA*.

As such, CNSC staff’s recommendation for a 15-year licence based on international precedent cannot be relied upon by the CNSC as a basis for granting the licence.

Recommendation No. 9: Without a more thorough review of legislation and licensing procedures in other jurisdictions, international precedence and benchmarking do not justify longer term licences in Canada.

B. Cameco’s request for a 20-year licence extends beyond the site’s operating life

i) Decommissioning Plans

The intervenors submit a request for a 20-year licence is incongruous with the current life of Rabbit Lake’s mine and mill operations and, contrary to statements made by CNSC staff, does not align with end-of-life decisions for Rabbit Lake. As a result, a closer review of Cameco’s preliminary decommissioning plan is necessitated.

As noted in Cameco’s licence renewal application, Rabbit Lake has been operating since 1975, producing over 78 million kilograms of uranium up until 2016. Since 2016, Rabbit Lake’s operations were suspended and the site has been placed into a “safe state of care and maintenance.”³⁹ Despite the site being non-operational for the past 7 years, there is no estimated timeline for the resumption of operations at Rabbit Lake, as Cameco is awaiting the conditions of the uranium market to improve.⁴⁰

The intervenors are concerned that a 20-year licence would take Rabbit Lake beyond the timeframe in which Rabbit Lake will be a productive facility. As Rabbit Lake has been as a mine and mill

³⁷ CNSC, CMD 23-H7; Mining Metals Central Asia, *Kazakhstan’s New Legal Regime for Mining*, online: <https://mining-metals.kz/en/media-centre/news/news-blog/572-kazakhstan-s-new-legal-regime-for-mining> [Kazakhstan’s New Legal Regime for Mining]

³⁸ Kazakhstan’s New Legal Regime for Mining.

³⁹ Cameco, *Application for the renewal of uranium mine/mill licence for Rabbit Lake*, Written Submission from Cameco Corporation, CMD 23-H7.1 at 1. [CMD 23-H7.1]

⁴⁰ Ibid.

site on and off for almost 50 years (there have been several periods in which operations have ceased due to market volatility),⁴¹ there has been a substantial amount of radioactive waste and tailings produced. For example, the Rabbit Lake in-pit tailings management facility (“RLITMF”) has been used as a tailings repository for ore since 1985, and has a total tailings capacity of approximately 9.0 million m³.⁴² Between 1985 and 2015, the RLITMF has had 7.95 million tonnes of radioactive tailings deposited into it.⁴³ The intervenors are concerned about the radioactive legacy of the tailings from Rabbit Lake upon the site’s decommissioning, and whether the decommissioning plans are truly sufficient to protect the environment after Cameco is no longer responsible for monitoring Rabbit Lake:

The real test of these facilities is not while the Eagle Point mine and Rabbit Lake mill are operating, since leakage from the tailings facilities is promptly piped to the water treatment facility. Instead, the real test will come once the Rabbit Lake site has been decommissioned, natural water levels on site have been restored, and several decades have passed. The question will be whether the contaminants in the radioactive tailings begin to move beyond the tailings facility itself, and out into the larger environment.⁴⁴

As further discussed in [Part D](#) below, there have been a number of troubling environmental releases at Rabbit Lake since the site entered into a “safe” state of care and maintenance. The intervenors submit that with the aging equipment and infrastructure associated with Rabbit Lake’s operations, decommissioning considerations and accompanying risks to human health and the environment must be considered more thoroughly within the context of this licence renewal hearing, per section 3 of the *Uranium Mines and Mills Regulations* which states:

3 An application for a licence in respect of a uranium mine or mill, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the General Nuclear Safety and Control Regulations:

[...]

(C) In relation to the plan and description of the mine or mill,

(viii) the proposed plan for the decommissioning of the mine or mill;⁴⁵

As section 3 is part of the application requirements for a licence to operate, it is clear that decommissioning planning is meant to be included in discussions, even when a mine/mill is still operational. The intervenors submit that the brief mention of decommissioning plans provided in the CNSC staff’s CMD for this licensing application is not sufficient in canvassing the

⁴¹ Cameco, CMD 23-H7.1 at 4-5.

⁴² CNSC, CMD 23-H7 at 66.

⁴³ Saskatchewan Environmental Society at 13.

⁴⁴ Ibid.

⁴⁵ Uranium Mines and Mills Regulations, SOR/2000-206 at s 3(a).

effectiveness of the decommissioning plans for Rabbit Lake. In the CNSC staff's CMD, it was merely determined "that the decommissioning activities, which will take place in a staged manner over years, and the cost estimate, which includes contingency funds, are robust."⁴⁶ The intervenors were denied access to the preliminary decommissioning plan for Rabbit Lake, and were limited to the very high level "Preliminary Decommissioning Plan and Cost Estimate" summary available on Cameco's website.⁴⁷ This summary does not provide any indication of a timeline for Rabbit Lake's estimated decommissioning phase (i.e., when the mine/mill operations will fully shutdown, and how long the decommissioning phase will take to complete). As further discussed within [Dr. Markvart's expert report](#), robust decommissioning plans play a key role in sustainable development—a principle which falls within the CNSC's guiding principles for protection of the environment.⁴⁸

With the uncertainty surrounding the life expectancy and viability of Rabbit Lake's operations, the intervenors submit that for the licencing renewal process, there should be a clear review of Cameco's proposed decommissioning strategy, and the public should have access to the proposed decommissioning plan to ensure that there are adequate measures in place to protect human health and the environment from substantial harm.

Because the preliminary decommissioning plan is not available for a robust review by the public, the intervenors are concerned about the long term plans for the Rabbit Lake site. The Inter-Church Uranium Committee Educational Co-Operative, the Coalition for a Clean Green Saskatchewan, and the Committee for Future Generations share a collective concern about the manner in which future radioactive waste from other nuclear facilities in the region will interact with Rabbit Lake. As the issue of long-term radioactive waste storage persists in the nuclear industry, the siting of deep geologic repositories for radioactive waste is an ongoing concern for various remote communities across Canada.⁴⁹ Remote Saskatchewan communities have previously opposed being considered by the Nuclear Waste Management Organization for the siting of a deep geologic repository.⁵⁰

The intervenors want to ensure that northern Saskatchewan is not reconsidered to be a storage area for nuclear waste, which is why the siting of a low- or medium- level radioactive waste facility at

⁴⁶ CNSC, CMD 23-H7 at 5.

⁴⁷ Cameco, *Preliminary Decommissioning Plan and Cost Estimate-Public Summary*, online: https://www.cameco.com/uploads/downloads/relicensing_rabbit_lake/Rabbit_Lake_PDP_Summary.pdf [Decommissioning Summary]

⁴⁸ CNSC, RegDoc-2.9.1, at s 2.1.

⁴⁹ *See for example*: Emma McIntosh, "Holding in the deep: what Canada wants to do with its decades-old pileup of nuclear waste," *The Narwhal* (January 19, 2022), online: <https://thenarwhal.ca/nuclear-waste-ignace-bruce/>; Vi Bui, "Radioactive Waste and Indigenous consent," *The Council of Canadians* (March 14, 2022), online: <https://canadians.org/analysis/radioactive-waste-and-indigenous-consent/>

⁵⁰ Sandra Cuffe, "Victory! Saskatchewan to remain nuclear waste free" *IntercontinentalCry.org* (March 26, 2015), online: <https://intercontinentalcry.org/victory-saskatchewan-to-remain-nuclear-waste-free/>

Rabbit Lake following decommissioning is a concern for the intervenors who live, work, and play within northern Saskatchewan. To allow the storage of additional radioactive waste from other nuclear activities to take place at the Rabbit Lake site would unduly bring about environmental risk to present and future generations within the region. Pursuant to the CNSC’s RegDoc-2.11.2, *Decommissioning*, a licensee “shall prepare a waste management strategy that identifies the categories and estimated quantities of all waste streams that will be generated and managed during decommissioning, and the planned disposition path.”⁵¹ The *Decommissioning Summary* that is publicly available lacks detail on the plans for long-term radioactive waste storage at Rabbit Lake.⁵² The intervenors **request** a written confirmation from the CNSC and Cameco which guarantees that the Rabbit Lake site will not be turned into a disposal site for low- or medium-level radioactive waste.

In addition to the decommissioning plans themselves, the intervenors have concerns surrounding the financial guarantee for Rabbit Lake, and whether it adequately reflects the cost for decommissioning the site. In accordance with RegDoc-2.11.2, *Decommissioning*, the financial guarantee for Rabbit Lake must be reviewed and updated every 5 years, or if there are material changes to the licensee’s operational activities.⁵³ On March 9, 2021, the CNSC approved a proposed revision to the value of Cameco’s financial guarantee from \$202.7 million to \$213.4 million, with the CNSC having deemed that the proposed financial guarantee “remains sufficient to cover the decommissioning liabilities.”⁵⁴

The hearing for Cameco’s application to revise the financial guarantee was conducted as a public hearing in writing, with the decision being a mere 10 pages long.⁵⁵ The decision noted that that “the decommissioning activities, which will take place in a staged manner over years, and the cost estimate, which includes contingency funds, are robust and added that the proposed financial instrument remains constant and is not dependent on the stock market fluctuation.”⁵⁶ The intervenors note that for this hearing, the public was limited to the “Decommissioning Summary” prepared by Cameco, which lacks any form of substance on assessing the decommissioning strategy and the associated decommissioning costs.⁵⁷

⁵¹ CNSC, RegDoc-2.11.2, *Decommissioning*, at s 6.2.

⁵² Decommissioning Summary

⁵³ CNSC, CMD 23-H7, at 67.

⁵⁴ *Ibid*, at 68.

⁵⁵ CNSC, Record of Decision: Application for Acceptance of a Revised Financial Guarantee and Licence Modernization Amendment for Cameco Corporation’s Rabbit Lake Operation (March 9, 2021): DEC 20-H107, online: <https://www.nuclearsafety.gc.ca/eng/the-commission/pdf/Decision-CamecoCorporation-RabbitLake-CMD20-H107-e-Final.pdf> [DEC 20-H107]

⁵⁶ CNSC, DEC 20-H107 at para 22.

⁵⁷ Cameco, Written submission from Cameco – Rabbit Lake Operation: Application for the Financial Guarantee Review and Licence Modernization Amendments, (December 2020), CMD 20-H107.1, online: <https://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/CMD20/CMD20-H107-1.pdf>

The intervenors submit that given the legacy of uranium mining clean-up in Saskatchewan, there are concerns that the true cost of cleaning up the Rabbit Lake operations are underestimated. Should Cameco be granted a licence to operate Rabbit Lake for another 15-20 years, the costs to remediate this aging site will continue to climb, and not just because of inflation. The intervenors' concerns surrounding Rabbit Lake's remediation costs spring from the true costs of remediating former uranium mine sites like that of the Gunnar and Beaverlodge sites. For example, for the Gunnar mine site, remediation costs were initially valued at \$24.6 million, which was to be split equally between the Government of Canada and the Government of Saskatchewan. However, this initial cost estimate was far too low, resulting in the Government of Saskatchewan posting a \$208.5 million liability on the provincial ledger to cover Gunnar's remediation and monitoring/maintenance costs.⁵⁸ As of 2018, the remediation cost estimate ballooned to \$280 million.⁵⁹ Meanwhile, the Beaverlodge mine site, for which Cameco currently holds a waste facility operating licence for this site that is valid until May 31, 2023, was decommissioned in 1985 and has been in a monitoring and maintenance phase ever since.⁶⁰ The remediation work for Beaverlodge is being led by Cameco, and is being funded by the Government of Canada.⁶¹ This remediation work is likely to cost more than \$200 million, and this remediation work is limited, as it does not encompass remediating Beaverlodge Lake, Martin Lake or other downstream waterbodies.⁶²

The intervenors express their concerns that the total decommissioning and remediation costs provided for Rabbit Lake are insufficient, taking into consideration the age of the mine and mill operations, the environmental releases that have occurred during both operational states and care and maintenance states, as well as the uncertainty of when operations will resume at Rabbit Lake, if at all. If the decommissioning and remediation costs are inadequate, the issues are two-fold: first, the environment is inadequately cleaned up and protected, threatening the health and well-being of future generations; and the cost burden may shift to the public, relying on tax dollars to clean up radioactive waste, heavy metals, and other hazardous materials for an uncertain amount of time.

The intervenors submit there must be more transparency surrounding financial guarantees for decommissioning, and that during licencing hearings, a deeper review of these costs ought to occur, regardless of how recently a hearing to review a financial guarantee was conducted. The intervenors submit that the cost estimate for decommissioning and remediating Rabbit Lake be reviewed in a transparent manner during the licence hearing to ensure that the costs to clean up this aging mine are not grossly underestimated, as has been the case with other uranium mines in

⁵⁸ Adam Hunter, "Saskatchewan sues federal government over cost to clean up abandoned uranium mine" (November 28, 2018) CBC News, online: <https://www.cbc.ca/news/canada/saskatchewan/sask-sue-federal-government-cost-abandoned-uranium-mine-1.4923849>

⁵⁹ Saskatchewan Environmental Society at 6.

⁶⁰ CNSC, <http://www.nuclearsafety.gc.ca/eng/waste/uranium-mines-and-millswaste/index.cfm#Closed>

⁶¹ Saskatchewan Environmental Society at 5.

⁶² *Ibid.*, at 10-11.

Saskatchewan. A discussion during the hearing surrounding the project schedule and the uncertainty analysis, as described within RegDoc-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*, would particularly be beneficial for the public's understanding of how Cameco came to its financial guarantee.⁶³

Recommendation No. 10: There should be a clear review of Cameco's proposed decommissioning strategy, and the public should have access to the proposed decommissioning plan to ensure that there are adequate measures in place to protect human health and the environment from substantial harm.

Recommendation No. 11: The intervenors request a written confirmation from the CNSC and Cameco which guarantees that the Rabbit Lake site will not be turned into a disposal site for low- or medium-level radioactive waste.

Recommendation No. 12: There must be more transparency surrounding financial guarantees for decommissioning, and that during licencing hearings, a deeper review of these costs ought to occur, regardless of how recently a hearing to review a financial guarantee was conducted.

Recommendation No. 13: The cost estimate for decommissioning and remediating Rabbit Lake must be reviewed in a transparent manner during the licence hearing to ensure that the costs to clean up this aging mine are not grossly underestimated, as has been the case with other uranium mines in Saskatchewan.

ii) Remediation Concerns

Rabbit Lake's long legacy of processing uranium and producing radioactive waste and other hazardous tailings brings concerns about the remediation approach anticipated for this site. With the potential for Rabbit Lake to be licenced for another 15-20 years—despite the uncertainty of the site's viability and productivity in the foreseeable future—the intervenors submit that a review of remediation measures anticipated for Rabbit Lake is relevant to this licensing hearing.

Rabbit Lake has a history of total contaminant loading to the environment being high. For instance, during the early years of the mine's operations, there was no effluent treatment system in place, and between 2003-2005, annual loadings at the final point of effluent discharge averaged over 50kg of arsenic per year, 100kg of nickel per year, 1200 kg of uranium per year and 22,000 kg of molybdenum per year.⁶⁴ While Cameco has made improvements to its effluent treatment systems in recent years, the intervenors highlight these historic effluent discharges to emphasize that there is no true baseline for the remediation of Rabbit Lake to its pre-extraction, natural state. The intervenors are concerned that the shifting baseline being relied upon for remediation plans will

⁶³ CNSC, RegDoc-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*, at ss 13.4 and 13.5.

⁶⁴ Saskatchewan Environmental Society at 12.

leave significant clean-up efforts for future generations, long after Cameco is no longer responsible for the site's care and maintenance.

In terms of the environmental monitoring for Rabbit Lake, following active decommissioning, there will be a 10-year transitional monitoring period.⁶⁵ The *Environmental Protection Review Report* noted that following the grading, contouring, scarification, and vegetation to integrate the site with the surrounding environment, "Cameco intends for the decommissioned Rabbit Lake Operation site to be transferred into the Province of Saskatchewan's Institutional Control Program once it has been confirmed that decommissioning objectives and criteria have been met and that the site is in a stable or improving condition."⁶⁶ Furthermore, Cameco "expects that the site will be suitable for certain traditional land uses following acceptance into the provincial Institutional Control Program."⁶⁷

The intervenors are concerned about the adequacy of the reclamation planned for the Rabbit Lake site, with the site being expected to be suitable for *certain* traditional land uses. The intervenors submit that in the spirit of sustainable development, the precautionary principle, and the "polluter pays" principle, the CNSC has an obligation to ensure the environment is adequately protected for present and future generations.⁶⁸ Due to the age of Rabbit Lake, there were no baseline studies of the local environment and biota conducted prior to mining and milling operations. As a result, reclamation plans for Rabbit Lake are based on studies of the landscape and waterscape since operations have occurred. As Rabbit Lake is a site where "total contaminant loading has been high,"⁶⁹ the intervenors are concerned that the baseline studies being relied upon to shape reclamation plans are not robust enough to minimize the contamination footprint of Rabbit Lake's operations over the course of several decades. Therefore, the intervenors submit that it is paramount to the licencing renewal process that there is careful consideration of the site's remediation and reclamation plans, and how a shifting baseline within the environmental studies of the Rabbit Lake site are influencing the future plans of how the former mining and milling area of Rabbit Lake will integrate into the surrounding environment.

The intervenors further submit that there must be an assessment of how long Cameco will maintain control of the decommissioned site, as Cameco should be held accountable beyond a 20-mark of remediation activities, and certainly should be held accountable beyond the 10-year transitional monitoring period. As previously discussed, the history of environmental releases at Rabbit Lake are a cause for concern for the manner in which the site is remediated and handled before this radioactive site becomes the problem of the Province of Saskatchewan. The intervenors submit that the CNSC needs to hold Cameco accountable for the long term care of Rabbit Lake, which

⁶⁵ CNSC, Environmental Protection Review Report: Rabbit Lake Operation (January 2023) at 19. [EPR Report]

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ CNSC, RegDoc-2.9.1 at s 2.1.

⁶⁹ Saskatchewan Environmental Society at 12.

includes frequent, and transparent monitoring of the site during remediation.⁷⁰ Taking into consideration that Rabbit Lake has been operating intermittently since 1975, the intervenors recommend that Cameco should be held accountable for at least a 50-year period following decommissioning (with the potential to extend this duration contingent on the results of remediation activities during that period of time), as this would reduce possible financial burden on the Province of Saskatchewan and also enhance public trust in Cameco investing in robust environmental monitoring and maintenance measures.

Recommendation No. 14: It is paramount to the licencing renewal process that there is careful consideration of the site’s remediation and reclamation plans, and how a shifting baseline within the environmental studies of the Rabbit Lake site are influencing the future plans of how the former mining and milling area of Rabbit Lake will integrate into the surrounding environment.

Recommendation No. 15: There must be an assessment of how long Cameco will maintain control of the decommissioned site, as Cameco should be held accountable beyond a 20-mark of remediation activities, and certainly should be held accountable beyond the 10-year transitional monitoring period. Taking into consideration that Rabbit Lake has been operating intermittently since 1975, the intervenors recommend that Cameco should be held accountable for at least a 50-year period following decommissioning (with the potential to extend this duration contingent on the results of remediation activities during that period of time), as this would reduce possible financial burden on the Province of Saskatchewan and also enhance public trust in Cameco investing in robust environmental monitoring and maintenance measures.

C. Cameco’s licence application fails to consider the impact of new developments and market volatility

The intervenors submit Cameco’s request for a 20-year licence fails to account for the previous, current, and future states of operation at Rabbit Lake. As detailed in this section, the intervenors submit a shorter licence is more favourable to ensure that the licensing basis is responsive to site changes.

As previously mentioned throughout this submission, Rabbit Lake is not currently producing or processing uranium, and has not done so since 2016. The reasoning for entering a safe state of care and maintenance is due to market conditions. This is not the first time Cameco has paused operations at Rabbit Lake due to “market conditions”:

⁷⁰ In March 2022, Nuclear Waste Watch’s Radioactive Waste Review Group released a policy statement in response to the draft policy issued by Natural Resources Canada on February 1, 2022, titled “An Alternative Policy for Canada on Radioactive Waste Management”, online: <https://cela.ca/wp-content/uploads/2023/03/Alternative-nuclear-waste-policy-for-Canada-NWW-Statement.pdf>. The intervenors note that the proposed policies for waste producers and owners, and facility operators are helpful in guiding the consideration of Rabbit Lake’s remediation on page 7.

Market conditions resulted in a temporary shutdown of the Rabbit Lake mill in June 1989. Mining of B-Zone continued during this period, with the remaining ore stockpiled until August 1991 when mill operations resumed. The D-Zone and A-Zone deposits were subsequently mined utilizing the same mining techniques applied at B-Zone, with mining completed in 1996 and 1997 respectively.

Mining of the Eagle Point orebody started in 1993. In March 1999, market conditions resulted in the mine being placed into a safe state of care and maintenance. Milling was temporarily suspended in June 2001 when stockpiled ore was depleted. The mill resumed operation the next year when improved market conditions led to the restart of mining at Eagle Point. Mining at Eagle Point [...] continued until 2016 when, once again, market conditions led Cameco to make the decision to place the mine and mill in a safe state of care and maintenance that continues to present day.⁷¹

Rabbit Lake's current status of safe state of care and maintenance is the longest shutdown period thus far, and the mine and mill has spent most of this 10-year licencing cycle not operating.

The recently released annual Lazard Report on Costs of Energy reveals that renewable energy sources like wind and solar, are becoming increasingly cost effective compared to conventional sources of power, like coal, gas and nuclear.⁷² This data reveals that the cost effectiveness of renewable energy sources over that of nuclear greatly reduces the optimism portrayed by Cameco for higher prices of uranium, and instead increases the volatility of the uranium market.

As renewable energy and low-carbon power sources becoming more reliable and more affordable, nuclear has failed to hit the mark on being an affordable source of energy, as seen in the United States where nuclear plants are over-budget, resulting in unprofitable reactors being taken offline.⁷³ With instability in the nuclear power generation market, the price of uranium is not as profitable. As seen in **Figure 1** below, the price of uranium since Rabbit Lake ceased its operations has not seen a drastic increase in price. Furthermore, **Figure 2** below shows how the price of uranium peaked in 2007, and has not returned to that degree of value at any other point in the last 15 years.

⁷¹ Cameco, CMD 23-H7.1 at 5.

⁷² See generally Lazard, "2023 Levelized Cost of Energy+" (April 2023), online: <https://www.lazard.com/research-insights/2023-levelized-cost-of-energyplus/>

⁷³ Brian Mann, "Unable to compete on price, nuclear power on the decline in the U.S." NPR (April 7, 2016), online: <https://www.npr.org/2016/04/07/473379564/unable-to-compete-on-price-nuclear-power-on-the-decline-in-the-u-s>

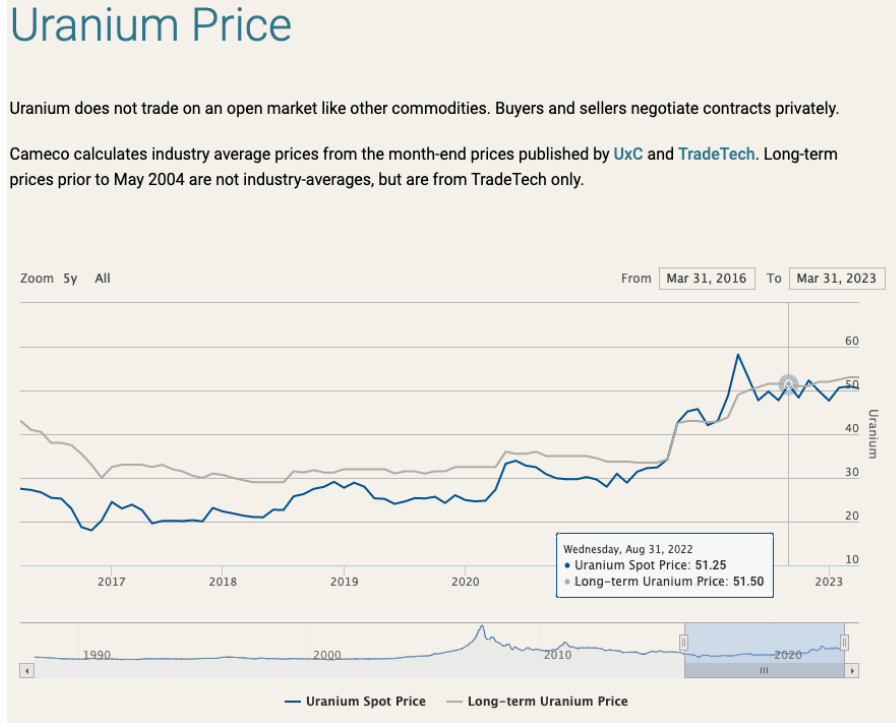


Figure 1: Price of Uranium from 2016-2023 (Cameco Corporation)⁷⁴

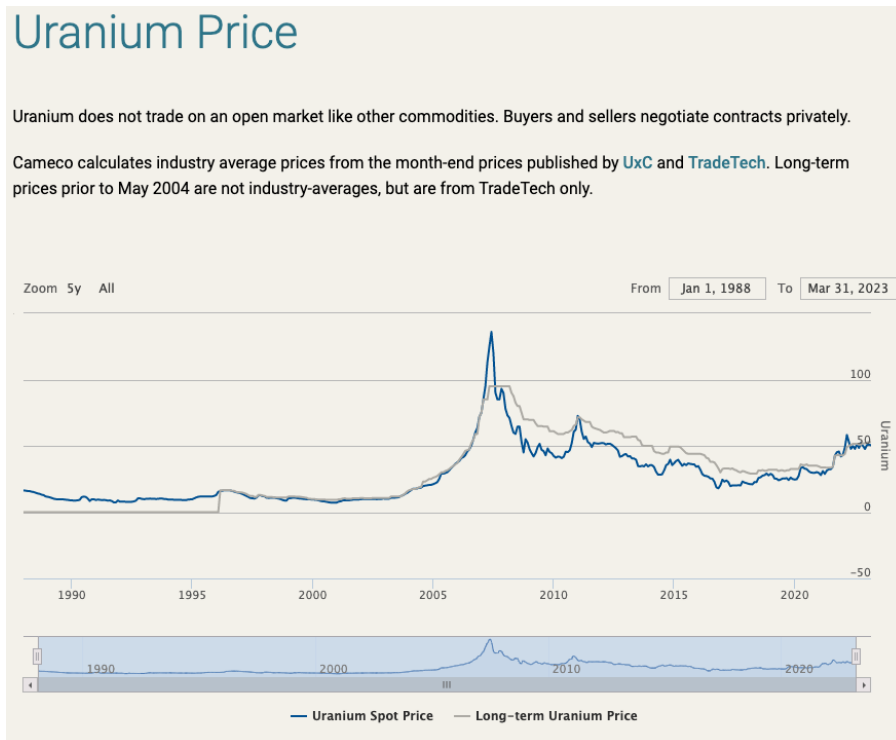


Figure 2: Price of Uranium from 1988-2023 (Cameco Corporation)⁷⁵

⁷⁴ Figure 1: Cameco Corporation, “Uranium Price”, online: <https://www.cameco.com/invest/markets/uranium-price>

⁷⁵ Figure 2: Cameco Corporation, “Uranium Price”, online: <https://www.cameco.com/invest/markets/uranium-price> Note: long-term prices prior to May 2004 are not industry-averages, but are from TradeTech only.

Despite the market volatility for uranium, Cameco had initially sought a licence renewal for an indefinite period of time. Cameco only revised their licence renewal for a 20-year term due to negative feedback received from Indigenous communities and members of the public.⁷⁶ With no plans in place to resume mining and milling operations at Rabbit Lake, the intervenors submit that granting a long-term licence (and especially an indefinite term licence) for Rabbit Lake would be contrary to the objects of the CNSC, namely to “...prevent unreasonable risk, to the environment and to the health and safety of persons, associated with that development, production, possession or use.”⁷⁷

Due to the present safe state of care and maintenance that Rabbit Lake has been subjected to for the past 7 years, the intervenors submit that a shorter-term licence, such as a 5-year licence term, focused on the maintenance occurring at Rabbit Lake would better reflect the obligations of the CNSC to protect human health and the environment. It may be years before Rabbit Lake resumes its operations—if ever—and when it does, the CNSC must ensure that Cameco has made sufficient repairs and maintenance to the site before emitting environmental discharges once again from production and processing activities.

According to CNSC staff, “...although a return to production for either the mine or the mill at [Rabbit Lake] has not been identified by Cameco, CNSC staff interpret Cameco’s request for a renewed operating licence as indication that Cameco may still choose to restart production at some point in the future,” and that CNSC staff are “...proposing to require the submission of commissioning reports prior to any operations restart, as described in the LCH.”⁷⁸

The intervenors emphasize that due to the lengthy period of Rabbit Lake being in a state of care and maintenance, to restart production would be a significant change at the site. Therefore, the intervenors submit that merely submitting commission report prior to restarting operations is insufficient to determine whether or not Cameco is fit to commence mining and/or milling operations. Should the CNSC issue a licence at the hearing in June 2023, it should be to resume the state of care and maintenance, requiring Cameco to continue repairs and clean-up efforts at Rabbit Lake. Furthermore, the intervenors submit that in order to restart operations at Rabbit Lake, Cameco should be required to apply for a licence to do so. This ensures that the Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance are satisfactory to ensure safe operations at Rabbit Lake.

⁷⁶ CNSC, CMD 23-H7 at 90.

⁷⁷ *NCSA* at s 9(a)(i).

⁷⁸ CNSC, CMD 23-H7 at 89.

Recommendation No. 16: Should the CNSC issue a licence at the hearing in June 2023, it should be to resume the state of care and maintenance, requiring Cameco to continue repairs and clean-up efforts at Rabbit Lake.

Recommendation No. 17: In order to restart operations at Rabbit Lake, Cameco should be required to apply for a new licence to do so. This ensures that the Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance are satisfactory to ensure safe operations at Rabbit Lake.

D. Cameco’s licence application fails to consider the increased risk of environmental contamination

i. Environmental Releases since entering “Safe State of Care and Maintenance”

Despite Rabbit Lake being placed in a state of care and maintenance since the end of 2016, the intervenors express their concerns about the number of environmental releases occurring across the Rabbit Lake site since mining and milling have paused. Between 2017 and 2021, Rabbit Lake has had 8 reported events, which include action level exceedances, injuries, spills, and releases of hazardous substances into the environment.⁷⁹

For example, in August 2016, the CNSC was notified by Cameco that an underground pipe connecting the north drainage ditch pond with the RLITMF broke during decommissioning operations. This resulted in a leak of low-level radium and uranium within the capture area of the RLITMF. The pipe flow was stopped and repairs were initiated.⁸⁰ While the CNSC noted that no impact to the environment is expected from this release, this is not the only event to occur at Rabbit Lake in 2016.

In September 2016, the CNSC was informed of a release of propane. According to the CNSC, the source of the leak was stopped, a full inspection of the pump farm was conducted after the incident, and an investigation was underway to determine the cause of the propane pump failure.⁸¹ To find more information about the incident, CNSC’s website prompts the reader to visit Cameco’s environmental monitoring webpage for Rabbit Lake. However, when reviewing Cameco’s website, the website only provides reporting on environmental incidents and other events dating back to May 11, 2021.⁸² The intervenors submit that the licensee should be required to keep a

⁷⁹ CNSC, CMD 23-H7, Table 3.1 at 21. See also: CNSC, “CNSC Staff Submission: Correction of Errors in CMD 23-H7, Licence Renewal, Cameco Corporation Rabbit Lake Operation”, CMD 23-H7.A, Table 3.1 at 1.

⁸⁰ CNSC, “Events Reporting: Uranium Mines and Mills” CNSC website, online: <http://www.nuclearsafety.gc.ca/eng/acts-and-regulations/event-reports-for-major-nuclear-facilities/event-reporting/uranium-mines-mills.cfm> [Event Reporting]

⁸¹ Ibid.

⁸² Cameco, “Rabbit Lake: Environment & Safety”, online: <https://www.cameco.com/businesses/uranium-operations/suspended/rabbit-lake/environment-safety#environmental-monitoring> [Environment & Safety]

publicly accessible record of *all* environmental incidents and events that have occurred at a licenced site. In doing so, there is a clear record of trends on the types of releases and events occurring at sites like Rabbit Lake, and how these events are being corrected and monitored. While such events are highlighted annual in the Commission's Regulatory Oversight Reports, the intervenors submit these annual reports provide a very high level overview of mining activities, and lack sufficient depth of monitoring and assessment of environmental events occurring at sites. The public should be made aware of these events and their corrective measures in a timely manner, and have an understanding of how these events will be prevented in the future.

According to the CNSC staff's report for Rabbit Lake's licence renewal hearing, there were 4 spills at Rabbit Lake in 2021, which were classified as low risk:

- May 11, 2021: A breach in the B-Zone ore pad drainage ditch resulted in the release of an estimated 10.3 m³ of spring melt water from the perimeter ditch of the ore pad onto the perimeter road and into the surrounding area. The eroded section was rebuilt, a vacuum truck was dispatched to remove water from the ditch to draw down the elevated water level. A pump was placed at the culvert location to transfer water from upgradient to downgradient of the culvert while the culvert was cleared. Impacted soil and roadbed material was removed, and a follow up gamma survey was conducted which verified that impacted material had been effectively removed. The licensee recommended including additional inspections to monitor the berm and assess stability.
- May 26, 2021: It was discovered at the Warehouse Pad 3 Laydown Area that a tote of new engine oil had a cracked drain valve, resulting in a leak of approximately 1.2 m³ of new oil. The licensee established an earthen berm around the perimeter of the area of downgradient water ponding to prevent any further migration of the released material. Both a vacuum truck and spill pads were deployed to recover as much oil mixed with melted water as possible. Oil was identified at a low point (trench) and recovery in this area involved the use of clean water to flush the oil along and then recovered using the vacuum truck. The area was backfilled after clean-up activities to reduce erosion concerns. The remaining hazardous materials, which were stored outside, have been moved to an area with approved secondary containment.
- May 28, 2021: A separation in the barge line at a fused butt weld at the AGTMF North Pond surface water causing a release of an estimated 2.75 m³ of melt water. Clean-up activities were completed, and contaminated soil was excavated. Follow-up scanning confirmed that the release area remained similar to background conditions and backfill with clean material was completed.
- August 25, 2021: A release of approximately 583 kg of propane at the Eagle Point Sand Dryer. Upon discovery, the licensee's Emergency Response Team (ERT) was dispatched, the area was evacuated, and roadblocks were established to restrict access to the area. The

power was shut down to the propane pump and the main propane supply valve was closed, stopping the flow of propane from the tank to the pump. The leaking section of piping was then isolated, thereby stopping further release and the remaining propane was allowed to disperse. The licensee's investigation into this event noted that a failure of the pressure gauge was the cause of the release. A number of corrective actions were identified and assigned, including replacement of the gauge with a higher quality substitute.⁸³

Furthermore, 2021 has seen fluctuations in molybdenum concentrations at Rabbit Lake:

At times in 2021, molybdenum concentrations were above the historical mean; however, the mean annual concentration (0.184 mg/L) remained relatively consistent with the 3-year historical mean (0.174 mg/l) and was stable most of the year. Molybdenum concentrations did not exceed action levels at any time in 2021.⁸⁴

Currently, there are no *Metal and Diamond Mining Effluent Regulations*⁸⁵ limits for molybdenum, nor are there provincial or federal licence limits for molybdenum, which means there are no limits in the CNSC licence issued for Rabbit Lake.⁸⁶ So, in the absence of a licence limit, uranium mine and mill licensees have implemented administrative limits and ALs (action levels) to effectively manage and control molybdenum.⁸⁷

The intervenors highlight these environmental releases—even though the CNSC has deemed their significance to be of low concern and not exceeding actions levels—as all of these above mentioned incidents have occurred since Rabbit Lake has entered at state of care and maintenance. The intervenors are concerned that as this aging mining site remains in a state of care and maintenance, environmental releases will continue occur while equipment and infrastructure continue to degrade, and there are particular concerns surrounding the length of the licence being sought by Cameco. With a 20- year licence (or even a 15-year licence as recommended by CNSC staff), the ability for the public to regularly comment and engage with information surrounding environmental releases is greatly diminished, and therefore there is less accountability surrounding the monitoring, management, and preventative measures taking place to prevent these releases that will cumulatively impact human health and the environment over time.

The intervenors submit that shorter licencing terms, with a careful review of environmental release incidents will ensure that the precautionary principle is being applied to Rabbit Lake's activities. The precautionary principle, one of the CNSC's guiding principle for protection of the

⁸³ CNSC, CMD 23-H7 at 47-48; *see also* Cameco, Environment & Safety.

⁸⁴ CNSC, "Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2021" (September 8, 2022), at 74. [ROR 2021]

⁸⁵ Metal and Diamond Mining Effluent Regulations, under Fisheries Act, SOR/2002-222.

⁸⁶ CNSC, EPR Report at 30.

⁸⁷ *Ibid.*

environment,⁸⁸ requires a cautionary approach, whereby if there is sufficient evidence that an activity is likely to cause irreversible harm to the environment, the decision maker is obliged to prevent or terminate the activity.⁸⁹ This principle of international environmental law has also been adopted into Canada's application of environmental law, as held by the Supreme Court of Canada in its seminal 2001 decision in *Spray-Tech*:

The interpretation of By-law 270 contained in these reasons respects international law's "precautionary principle", which is defined as follows at para. 7 of the Bergen Ministerial Declaration on Sustainable Development (1990):

In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.⁹⁰

As such, there is a positive duty on the CNSC to ensure the activities it licences do not cause unacceptable harm to the environment.⁹¹ The precautionary principle becomes an important tool in the event that Cameco decides to restart mining and milling activities at Rabbit Lake, when taking into consideration that there continues to be various environmental releases during the site's state of care and maintenance.

Recommendation No. 18: The licensee should be required to keep a publicly accessible record of *all* environmental incidents and events that have occurred at a licenced site. In doing so, there is a clear record of trends on the types of releases and events occurring at sites like Rabbit Lake, and how these events are being corrected and monitored.

Recommendation No. 19: A shorter licencing term, with a careful review of environmental release incidents will ensure that the precautionary principle is being applied to Rabbit Lake's activities. The precautionary principle must be applied before Cameco restarts any mining or milling activities at Rabbit Lake to ensure that the environmental releases that have occurred will not worsen or become more prevalent during mining and milling activities.

⁸⁸ CNSC, RegDoc-2.9.1 at s 2.1.

⁸⁹ Cameron J and Abouchar J (1990), "The precautionary principle: a fundamental principle of law and policy for the protection of the global environment", *Boston College International and Comparative Law Review*, 14(1), at 3. [**Cameron & Abouchar**]

⁹⁰ 114957 Canada Ltee (*Spray-Tech*) v Hudson (Ville), 2001 SCC 40 (CanLII) at para 31.

⁹¹ Cameron & Abouchar at 22.

ii. Inspections of Rabbit Lake

The intervenors are concerned about the frequency and type of inspections occurring at Rabbit Lake during its state of care and maintenance. For instance, in 2021, all inspections for Rabbit Lake were conducted remotely.⁹² The intervenors note that since 2017, the number of inspections at Rabbit Lake have greatly diminished. **Table 1** below provides a list of the types of inspections that have occurred at Rabbit Lake between 2017-2021, according to data provided in the Regulatory Oversight Reports for these years.⁹³

Table 1: List of Inspections at Rabbit Lake between 2017-2021

Year	Inspection Conducted
2017	<ul style="list-style-type: none"> • March 2017: Safety Analysis • July 2017: Management system, human performance management • August 2017: Radiation protection, operating performance, fitness for service, emergency management and fire protection • September 2017: Waste management, environmental protection
2018	<ul style="list-style-type: none"> • January 2018: Physical design, operating performance, radiation protection, conventional health and safety, packaging and transport • January 2018: Radiation protection, environmental protection, conventional health and safety • April 2018: Environmental protection, conventional health and safety, radiation protection • August 2018: Management system • October 2018: Environmental protection, conventional health and safety, radiation protection, operating performance
2019	<ul style="list-style-type: none"> • February 2019: Operating performance, Radiation protection, Conventional health and safety, Environmental protection • April 2019: Fitness for service • May 2019: Management system, fitness for service, safety analysis, radiation protection, conventional health and safety, emergency management and fire protection • August 2019: Environmental protection, Waste management
2020	<ul style="list-style-type: none"> • March 2020: postponed to March 2021 • September 2020: fitness for service (remote)
2021	<ul style="list-style-type: none"> • August 2021: General (remote) • September 2021: General, Management Systems, Fitness for Service, Radiation Protection, and Conventional Health & Safety

The intervenors note that the inspection data for 2022 is not yet available. While the COVID-19 pandemic has certainly had an impact on the ability for the CNSC to conduct its inspections while

⁹² ROR 2021 at Appendix B, p 122.

⁹³ See CNSC, Appendix B: List of Inspections in the *Regulatory Oversight Report for Uranium Mines and Mills* for 2017, 2018, 2019, 2020, and 2021.

adhering to public health and safety guidelines, the downward trend in the frequency of inspections is troubling in the eyes of the intervenors.

In particular, the intervenors are concerned about the lack of physical design inspections: the last physical design inspection of Rabbit Lake occurred in January 2018. Despite the CNSC noting that all “non-compliances identified were of low safety significance and have been adequately addressed,”⁹⁴ the number of environmental releases that have occurred at Rabbit Lake due to equipment or infrastructure failing is of concern for the Intervenors. Additionally, a waste management inspection has not occurred since 2019.

The intervenors submit that there should be more frequent inspections of Rabbit Lake, with more frequent inspections for all relevant SCAs. SCAs like physical design and waste management, for example, should be regularly inspected at this aging mining and milling site.

The intervenors request that the inspection of Rabbit Lake should primarily be conducted on-site, rather than remotely/via desktop. Frequent on-site inspections are useful in the sense that they may indicate areas requiring immediate attention for maintenance that may be otherwise missed by the licensee.

The intervenors request clarification on how the CNSC arranges its inspections of Rabbit Lake, i.e., how much notice does Cameco receive prior to an inspection, or how does the CNSC decide when certain SCA inspections will take place.

Taking the recent environmental releases (as discussed in *section i*) above) that have occurred during Rabbit Lake’s state of care and maintenance, the intervenors request that the CNSC’s inspections for physical design and fitness for service also capture the standards within the National Building Code of Canada to ensure that substandard materials are not being used in maintenance and repairs at Rabbit Lake. To do so, the intervenors recommend that the CNSC enter into an arrangement with the National Research Council of Canada to help create a framework to shape the building standards for uranium mines and mills.⁹⁵

Recommendation No. 20: More frequent on-site inspections of Rabbit Lake, with more frequent inspections for all relevant SCAs are required to ensure the protection of human and environmental health. SCAs like physical design and waste management, for example, should be regularly inspected at aging mining and milling sites like Rabbit Lake.

⁹⁴ CNSC, CMD 23-H7 at 27.

⁹⁵ *Note:* Section 21(1)(a) of the *NCSA* empowers the CNSC to enter into arrangements with any regulatory agency or department of a government or any international agency. The National Research Council is the body which released the *National Building Code of Canada, 2020*.

Recommendation No. 21: The intervenors request clarification on how the CNSC arranges its inspections of Rabbit Lake, i.e., how much notice does Cameco receive prior to an inspection, or how does the CNSC decide when certain SCA inspections will take place.

Recommendation No. 22: The CNSC should enter into an arrangement with the National Research Council of Canada to help create a framework to shape the building standards for uranium mines and mills.

iii. Cumulative Effects of Uranium Mining

When considering the renewal of a licence to operate a mine or mill, the CNSC should be taking into consideration what possible cumulative effects may result from a renewed licence. The intervenors submit that the CNSC should not just consider the licenced site, but any other projects in the region, and regional issues caused by climate change (e.g., fire risks and flooding). For instance, there are numerous uranium mining and milling operations in Northern Saskatchewan, with more proposed activities undergoing assessment, like NexGen's Rook I Project (a uranium mine), for example.⁹⁶ As more mining projects emerge across the local landscape, it is imperative that any new stressors on the air, aquatic, and terrestrial environments will not cumulative effect the outputs from a licenced operation's activities.

Cumulative effect assessments occur during environmental assessments and impact assessments prior to projects being approved,⁹⁷ but the intervenors suggest that this type of assessment has value beyond the approval process for a mine, and should be revisited throughout the entire life stage of the mine. The intervenors submit that conducting a cumulative effects assessment during licence renewal hearings can ensure that there are no environmental effects occurring or that may occur in the future that would interact with the environmental outputs from Rabbit Lake and result in undue harm to human health and the environment. The intervenors request that Cameco address the interconnectivity of current and proposed mines in the region.

Shorter licensing terms would enable more frequent reviews of cumulative effects for licenced projects, and would help ensure that a licensee continues to adequately provide for the protection of the environment as recent developments in the region may emerge.⁹⁸ This cumulative effects assessment during a licence renewal hearing may help a licensee determine areas to focus adaptation and maintenance efforts on in order to reduce radiological and other environmental releases from happening.

⁹⁶ Rook I Project: <https://www.ceaa-acee.gc.ca/050/evaluations/proj/80171?culture=en-CA>

⁹⁷ CNSC, RegDoc-2.9.1 at Appendix A.3: Specific CEAA 2012 environmental assessment requirements.

⁹⁸ Which aligns with the CNSC's guiding principles for protection of the environment, per RegDoc-2.9.1.

Recommendation No. 23: A cumulative effects analysis should be required for the licence renewal hearing at Rabbit Lake to ensure that there are no environmental effects occurring or that may occur in the future that would interact with the environmental outputs from Rabbit Lake and result in undue harm to human health and the environment.

Recommendation No. 24: A shorter licensing term will enable a more frequent review of potential cumulative effects that may be caused by Rabbit Lake or impact Rabbit Lake.

E. Cameco’s licence application fails to expressly consider climate change

The intervenors are also strongly oppose a request for a 20-year licence when Cameco has failed to consider the likely impacts of climate change on the site and its surroundings in their application, written studies, and associated studies. The intervenors submit climate considerations are a necessary component of the licence application if the CNSC is to find, pursuant to section 24(4) of the *NSCA*, that the licensee will make adequate protection for human health and the environment.

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

Second, mining operations and associated facilities are particularly vulnerable to climate change effects, with infrastructure being vulnerable to changes in extreme weather events causing flooding, droughts, erosion, and flash temperature changes. Mining infrastructure, transportation infrastructure, waste management, and even mine closure are all susceptible to intensity and frequency of extreme weather events caused by climate change.⁹⁹ With climate change creating conditions for more frequent and intense wildfires, Cameco’s various mining and milling sites in Saskatchewan are being increasingly exposed to wildfire threats.¹⁰⁰

Cameco does not mention how Rabbit Lake will adapt to the impacts of climate change, and how climate resiliency is being implemented during the state of care and maintenance activities at the site. Being prepared to adapt to climate change’s impacts within the region is crucial for water source protection efforts, which ensure both humans and environmental components are protected

⁹⁹ Ontario Centre for Climate Impacts and Adaptation Resources, “Mining: in a changing climate” (2010), online: <https://climateontario.ca/doc/factsheets/Mining%20Factsheet%20--%20Final.pdf>

¹⁰⁰ See Cameco, Event Reporting, which indicates forest fires and wildfires having impacts on mining operations in 2015, 2018 and 2021.

from hazardous releases into the environment that may arise from extreme flooding events, for example.¹⁰¹

Third, to meet the requirements under section 24 (4) of the *NSCA*, it is critical that detailed climate analysis be presented within the licence application and considered at the hearing. Currently, Cameco’s analysis of environmental impacts only reflect present-day circumstances at Rabbit Lake. Given that climate impacts are becoming more frequent and pronounced, these documents are outdated and insufficient to support CNSC staff’s conclusion that Cameco will make adequate provisions for the protection of the environment and human health for the duration of the 15- or 20- year licence.

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

Fourth, the only consideration of climate change which Cameco alludes to within its licensing application is within the discussion of its business plan to capture “full-cycle value”:

Exploring other emerging and non-traditional opportunities within the fuel cycle, which align with our commitment to responsibly and sustainably manage our business, contribute to the mitigation of global climate change, and help to provide energy security and solutions.¹⁰²

The intervenors take issue with Cameco centring its business model as being a solution to climate change while operations like Rabbit Lake contribute to the exacerbation of climate change to be misleading to the public. For example, Cameco notes:

Cameco’s vision – “Energizing a clean-air world” – recognizes that we have an important role to play in enabling the vast reductions in global greenhouse gas emissions required to achieve a resilient net-zero carbon economy. We are invested across the nuclear fuel cycle. Our uranium and fuel services products are used around the world in the generation of safe, carbon-free, affordable, base-load nuclear energy.¹⁰³

Pursuant to section 9(b) of the *NSCA*, one of the objectives of the CNSC is to “disseminate objective scientific, technical and regulatory information to the public concerning the activities of

¹⁰¹ See: Expert Report on Source Water Protection by Dr. Robert Patrick for CELA’s Submission to the CNSC on the Draft EIS for NexGen Energy Ltd.’s Proposed Rook I Project (October 12, 2022), online: <https://cela.ca/wp-content/uploads/2022/10/1499-CELA-Submission-for-Rook-I-Project-Draft-EIS.pdf>

¹⁰² Cameco, CMD 23-H7.1 at 12.

¹⁰³ Ibid.

the Commission and the effects, on the environment and on the health and safety of persons, of the development, production, possession and use referred to in paragraph (a).”¹⁰⁴ Furthermore, RegDoc-3.2.1, *Public Information and Disclosure*, stipulates that “the primary goal of the public information program, as it relates to the licensed activities, is to ensure that information related to the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities are effectively communicated to the public.”¹⁰⁵

The information being disseminated to the public, especially regarding environmental concerns like climate change (and climate change mitigation), should be objective, truthful, and accurate. This obligation for accurate and transparent information sharing with the public extends to both the Commission and to licensees.

By framing the nuclear industry as “carbon-free” and as being central to establishing “a resilient net-zero carbon economy”, the licensee is suggesting to the public and to stakeholders living in close proximity to sites like Rabbit Lake that there are no carbon emissions from uranium mining and milling practices, which is false.

In Europe, there is recognition by certain states that labelling nuclear power as an “environmentally sustainable economic activity” to be problematic and an act of greenwashing the nuclear power sector’s full life cycle, which includes mining. Austria, several NGOs and a member of European parliament are challenging the decision to label nuclear power as a sustainable activity as a *Complementary Climate Delegated Act* (a non-legislative supplement to EU taxonomy).¹⁰⁶

Typically, the “clean” narrative of nuclear refers to point of generating energy, and not the activities like mining uranium ore:

Nuclear energy’s “upstream” activities that are necessary for operation, such as mining uranium, as well as transporting fuel, building and then decommissioning a power plant, and managing the radioactive waste that is a by-product of the process – are all linked to CO₂ emissions. Thus, the carbon footprint of nuclear energy generation is considerable, and according to some estimates, considerably higher than that of renewables.¹⁰⁷

The intervenors submit that Cameco has an obligation to be transparent with the public regarding the carbon-emissions tied to mining and milling operations, and that Rabbit Lake is not immune to contributing to the climate crisis. The intervenors note that under the *Canadian Environmental Protection Act, 1999*, Cameco is required to monitor greenhouse gas emissions (GHGe) to

¹⁰⁴ NSCA at s 9(b).

¹⁰⁵ CNSC, RegDoc-3.2.1, Public Information and Disclosure, at s 2.1

¹⁰⁶ Christiana Mauro & Kacper Szulecki, “World’s most promising anti-greenwashing tool scuttled” Aljazeera (March 8, 2023), online: <https://www.aljazeera.com/opinions/2023/3/8/how-the-eus-most-promising-anti-greenwashing-tool-was-scuttled>

¹⁰⁷ Ibid.

Environment and Climate Change Canada. With Rabbit Lake not actively mining and milling, there has been a decrease in emissions in recent years, with the site being below the reporting threshold of 10,000 tonnes of CO₂ equivalent in 2019 and 2020.¹⁰⁸ Despite these reductions in GHGe, there needs to be transparency with the public that the mining and milling operations at Rabbit Lake are not zero-carbon activities. The intervenors submit that transparency about climate change and uranium mining—both in terms of the impact of mining on climate change, and the impact of climate change on mining operations—ought to be considered when assessing the licence application for Rabbit Lake.

Recommendation No. 25: The CNSC should review the licence renewal application with express consideration given to climate impacts and climate resiliency, including in the context of site suitability and impacts on safety and the environment.

Recommendation No. 26: The criteria by which climate change impacts and natural external events have been assessed and evaluated against the 20-year licence application must be clearly set out.

Recommendation No. 27: Detailed climate analysis must be presented in a public forum as part of the CNSC’s licensing process.

VII. ORDER REQUESTED

For the foregoing reasons provided in this intervention, CELA seeks an order:

- (1) Granting CELA, on behalf of Inter-Church Uranium Committee Educational Co-Operative, the Coalition for a Clean Green Saskatchewan, and the Committee for Future Generations the status of intervenor;
- (2) Granting CELA the opportunity to make an oral presentation at the June 2023 hearing;
- (3) Denying Cameco’s request for a 20-year licence on the basis that:
 - a. A 5-year licence term would be better suited for aligning the licensing cycle with the review cycles for updating the environmental risk assessments, the preliminary decommissioning plans and financial guarantee for Rabbit Lake, while also enhancing public engagement with Rabbit Lake’s operations;
 - b. A 20-year licence would remove the right for a public hearing for two decades, compromise meaningful public participation in nuclear matters and erode public confidence in both the Commission and the licensee;

¹⁰⁸ EPR Report at 25.

- c. A 20-year licence would exceed the viability and life span of the Rabbit Lake site's operations and does not reflect the current activities presently occurring at Rabbit Lake;
 - d. Climate change, which will result in increasingly dire weather events, has not been expressly considered in the licence application nor impacts modelled; and
 - e. The risk for environmental contamination increases with every year that Rabbit Lake continues to operate;
- (4) Denying CNSC staff's recommendation for a 15-year licence;
- (5) Requiring Cameco to apply for a licence to resume operations at Rabbit Lake should Cameco decide to bring the site out of a state of care and maintenance; and
- (6) Directing Cameco to revise its licence renewal application, considering all of the deficiencies and recommendations herein.

Sincerely,

CANADIAN ENVIRONMENTAL LAW ASSOCIATION

on behalf of

INTER-CHURCH URANIUM COMMITTEE EDUCATIONAL CO-OPERATIVE

COALITION FOR A CLEAN GREEN SASKATCHEWAN

COMMITTEE FOR FUTURE GENERATIONS

 _____

Sara Libman

Legal Counsel, CELA

SUMMARY OF RECOMMENDATIONS

Recommendation No. 1: The CNSC should ensure that relevant documents and information is publicly available in accessible formats.

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

Recommendation No. 3: References contained in CNSC staff's and Cameco's CMDs ought to be publicly available to that subject matter experts can provide peer review of the documents. This is necessary for the CNSC to uphold its obligations to disseminate "objective" information.

Recommendation No. 4: The right to cross-examination must be adopted as part of the hearing process so that members of the public have the ability to pose questions regarding, for instance, a study's methods, scope and findings.

Recommendation No. 5: Licence renewals should be subject to shorter licensing terms as it provides the opportunity for public hearings under section 40(1) of the *NSCA*, and enhances the openness and transparency of the CNSC, and its oversight of nuclear uses and technologies. These opportunities are critical to building the public's trust in the regulator and would be lost if there is only one chance every 15-20 years for the public to participate in a hearing and engage in dialogue with the CNSC and the licensee about their concerns.

Recommendation No. 6: Regulatory Oversight Reports, mid-term performance updates and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings, nor used as a stand-in for public hearings.

Recommendation No. 7: The CNSC should disregard CNSC staff's recommendation for a 15-year licensing term. The licensing term for Rabbit Lake should not exceed 5-years, as this would not only align with the review cycles for updating the environmental risk assessments, the preliminary decommissioning plans and financial guarantee for Rabbit Lake, but would also enhance public engagement with Rabbit Lake's operations.

Recommendation No. 8: Regardless the length of the licence provided to Cameco, the intervenors further recommend there be a comprehensive performance update for Rabbit Lake subject to public hearings and review every three years, which would greatly enhance transparency and accountability with the public.

Recommendation No. 9: Without a more thorough review of legislation and licensing procedures in other jurisdictions, international precedence and benchmarking do not justify longer term licences in Canada.

Recommendation No. 10: There should be a clear review of Cameco's proposed decommissioning strategy, and the public should have access to the proposed decommissioning

plan to ensure that there are adequate measures in place to protect human health and the environment from substantial harm.

Recommendation No. 11: The intervenors request a written confirmation from the CNSC and Cameco which guarantees that the Rabbit Lake site will not be turned into a disposal site for low- or medium-level radioactive waste.

Recommendation No. 12: There must be more transparency surrounding financial guarantees for decommissioning, and that during licencing hearings, a deeper review of these costs ought to occur, regardless of how recently a hearing to review a financial guarantee was conducted.

Recommendation No. 13: The cost estimate for decommissioning and remediating Rabbit Lake be must reviewed in a transparent manner during the licence hearing to ensure that the costs to clean up this aging mine are not grossly underestimated, as has been the case with other uranium mines in Saskatchewan.

Recommendation No. 14: It is paramount to the licencing renewal process that there is careful consideration of the site's remediation and reclamation plans, and how a shifting baseline within the environmental studies of the Rabbit Lake site are influencing the future plans of how the former mining and milling area of Rabbit Lake will integrate into the surrounding environment.

Recommendation No. 15: There must be an assessment of how long Cameco will maintain control of the decommissioned site, as Cameco should be held accountable beyond a 20-mark of remediation activities, and certainly should be held accountable beyond the 10-year transitional monitoring period. Taking into consideration that Rabbit Lake has been operating intermittently since 1975, the intervenors recommend that Cameco should be held accountable for at least a 50-year period following decommissioning (with the potential to extend this duration contingent on the results of remediation activities during that period of time), as this would reduce possible financial burden on the Province of Saskatchewan and also enhance public trust in Cameco investing in robust environmental monitoring and maintenance measures.

Recommendation No. 16: Should the CNSC issue a licence at the hearing in June 2023, it should be to resume the state of care and maintenance, requiring Cameco to continue repairs and clean-up efforts at Rabbit Lake.

Recommendation No. 17: In order to restart operations at Rabbit Lake, Cameco should be required to apply for a new licence to do so. This ensures that the Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance are satisfactory to ensure safe operations at Rabbit Lake.

Recommendation No. 18: The licensee should be required to keep a publicly accessible record of *all* environmental incidents and events that have occurred at a licenced site. In doing so, there is a clear record of trends on the types of releases and events occurring at sites like Rabbit Lake, and how these events are being corrected and monitored.

Recommendation No. 19: A shorter licencing term, with a careful review of environmental release incidents will ensure that the precautionary principle is being applied to Rabbit Lake's activities. The precautionary principle must be applied before Cameco restarts any mining or milling activities at Rabbit Lake to ensure that the environmental releases that have occurred will not worsen or become more prevalent during mining and milling activities.

Recommendation No. 20: More frequent on-site inspections of Rabbit Lake, with more frequent inspections for all relevant SCAs are required to ensure the protection of human and environmental health. SCAs like physical design and waste management, for example, should be regularly inspected at aging mining and milling sites like Rabbit Lake.

Recommendation No. 21: The intervenors request clarification on how the CNSC arranges its inspections of Rabbit Lake, i.e., how much notice does Cameco receive prior to an inspection, or how does the CNSC decide when certain SCA inspections will take place.

Recommendation No. 22: The CNSC should enter into an arrangement with the National Research Council of Canada to help create a framework to shape the building standards for uranium mines and mills.

Recommendation No. 23: A cumulative effects analysis should be required for the licence renewal hearing at Rabbit Lake to ensure that there are no environmental effects occurring or that may occur in the future that would interact with the environmental outputs from Rabbit Lake and result in undue harm to human health and the environment.

Recommendation No. 24: A shorter licensing term will enable a more frequent review of potential cumulative effects that may be caused by Rabbit Lake or impact Rabbit Lake.

Recommendation No. 25: The CNSC should review the licence renewal application with express consideration given to climate impacts and climate resiliency, including in the context of site suitability and impacts on safety and the environment.

Recommendation No. 26: The criteria by which climate change impacts and natural external events have been assessed and evaluated against the 20-year licence application must be clearly set out.

Recommendation No. 27: Detailed climate analysis must be presented in a public forum as part of the CNSC's licensing process.

EXPERT REPORT: Critical Deficiencies in Cameco Corporation's Application for the Renewal of its Uranium Mine/Mill Licence for Rabbit Lake

Written by Tanya Markvart

for the Canadian Environmental Law Association April 2023

1. Introduction

This report discusses critical deficiencies in Cameco Corporation's application for the renewal of its uranium mine/mill licence for the Rabbit Lake Operation in northern Saskatchewan. These critical deficiencies were identified through an analysis of CNSC's associated 2023 Environmental Protection Review Report (EPR) as well as studies/reports submitted by Cameco to the Canadian Nuclear Safety Commission (CNSC).

The following legislation, regulations, and best practices provide a framework for the examination:

- The Nuclear Safety and Control Act (S.C. 1997, c. 9);
- Canadian Nuclear Safety Commission REGDOC-2.9.1;
- Canadian Nuclear Safety Commission REGDOC-3.2.1; and
- Best practices in sustainability-based planning and decision making.

Section 2 summarizes the following best practices in sustainability-based decision making:

- Justification of an undertaking,
- Generic sustainability decision-making criteria, including precaution and adaptation,
- Specification of sustainability decision criteria for the case and context, and
- Application in planning and analysis.

Section 3 provides the findings of our analysis with respect to the following:

- Justification of the proposed 20-year licence,
- Consideration of sustainability, precaution, and adaptation, and
- Consideration of rolling stewardship in preliminary decommissioning plans.

Finally, Section 4 provides recommendations for the CNSC panel to consider in its final decision on Cameco's licence renewal application.

2. Sustainability-Based Decision Making

Section 2 of CNSC REGDOC-2.9.1 provides guiding principles for the protection of the environment. These principles form a framework for analysis and decision making in the CNSC's environmental review process under the NSCA. Before a licence can be granted or renewed, the CNSC must be satisfied that an applicant will make adequate provisions for the protection of the environment and the health and safety of the public.

Our review of Cameco's application rests, in part, on the CNSC's guiding principles of sustainable development, precaution, and adaptive management. It is important to note that REGDOC-2.9.1 is insufficiently helpful on the key matter of how to apply these concepts in analysis. Three key expansions and revisions are needed to clarify the obligations of the licensee and guide CNSC staff in their evaluations and decisions:

- An obligation to justify the proposed undertaking;
- Elaboration of the main generic concerns that define sustainability, and the implications of these generic concerns for analysis; and
- Requirements for specifying generic sustainability concerns to recognize the context for each project for which an application is prepared.

Some clarification of the implications of incorporating sustainability, precaution and adaptation in analysis has been provided in previous panel review processes under the previous Canadian Environmental Assessment Act. Of particular importance have been the following documents:

- Voisey's Bay Mine and Mill Environmental Assessment Panel, "Environmental Impact Statement Guidelines for the Review of the Voisey's Bay Mine and Mill Undertaking" (20 June 1997), and *Environmental Assessment Panel Report on the Proposed Voisey's Bay Mine and Mill Project* (March 1999);
- Mackenzie Gas Project Joint Review Panel, "Joint Review Panel Determination on Sufficiency," (18 July 2005), and the panel's final report, "Mackenzie Gas Joint Review Panel, *Foundations for a Sustainable Northern Future: Report of the Joint Review Panel for the Mackenzie Gas Project*, CEAA 2009";
- Kemess North Copper-Gold Mine Project Joint Review Panel, *Joint Review Panel Report* (September 17, 2007), especially pages 233-241 on the panel's sustainability framework and its application; and
- White's Point Quarry and Marine Terminal Project Joint Review Panel, "Environmental Impact Statement Guidelines" (March 2005) and *Joint Review Panel Report* (October 2007).

Gibson (2005, Gibson 2006, 2017) and other experts in the field of sustainability-based EA provide further elaboration, including on specification of sustainability criteria for the case and context in

particular applications (see also Pope et al., 2004; Morrison-Saunders & Pope, 2013; Dalal-Clayton and Sadler, 2014). In addition, Markvart (2014, 2015), Gaudreau et al., (2013), Gibson and Markvart (2008), and Gibson et al., (2008) illustrate how the concept of sustainable development should be incorporated in assessments of energy projects.

2.1 Justification

At the outset of planning and analysis, a clear explanation of the purpose of an undertaking, and a transparent demonstration of the need for an undertaking, are required to establish part of the basis for determining the most appropriate option from a range of options with respect to net sustainability contributions for all aspects of a project over its lifetime. Appropriate, early consideration of purpose and need provides part of the framework for the public and responsible authorities to evaluate the extent to which a proponent's proposed undertaking is justified.

When CNSC responsible authorities consider the purpose of and need for Cameco's licence renewal, it will be important to devote attention to current and anticipated needs, including long term sustainability implications within the project area as well as at regional, national, and global scales. The public must be confident that Cameco's application for renewal of its uranium mine/mill licence for the Rabbit Lake Operation is appropriately justified and provides a sound basis for choosing through comparative analysis the best option for delivery of lasting wellbeing.

2.2 Generic Sustainability Criteria

The generic requirements of sustainability have been defined in many ways. For the purposes of analysis, Gibson's (2005, 2006, 2017) generic sustainability assessment criteria are used. Gibson's criteria are based on a synthesis of insights from the sustainability literature and applied sustainability experiences (see Appendix A). Briefly, Gibson's generic sustainability criteria devote attention to:

- the capacity of natural systems to maintain their structure and functions and to support biological diversity and productivity;
- the capacity of social and economic systems to deliver opportunities and livelihood sufficiency;
- the capacity of human environments, including local and regional institutions, to respond to and manage externally induced change;
- the attainment and distribution of lasting and equitable social and economic benefits and openings to participate meaningfully in decision making;
- respect for uncertainty, planning for learning, designing for surprise, and managing for adaptation;
- the rights of future generations to the sustainable use of renewable resources; and

- the protection and conservation of wildlife and the environment for present and future generations.

Gibson’s sustainability criteria elucidate what the concept of sustainability means. They constitute a package in that it is necessary to fulfill all criteria in decision making for progress towards sustainability. The aim of sustainability-based decision making is to integrate and pursue the criteria jointly, aiming for multiple, mutually reinforcing gains.

2.3 Specification of Generic Sustainability Evaluation Criteria

It is necessary to specify the generic sustainability evaluation criteria to recognize the particular concerns raised by context-specific factors. This specification step ensures proper sensitivity to the factors that may affect how the generic requirements for sustainability can be pursued over the long term. These factors may include community and/or organizational conditions and trends, resources, capacities and other assets, opportunities and barriers, stresses, and vulnerabilities. All of these vary among different cultures, ecosystems, jurisdictions and sectors, etc.

Table 1 below provides an example of how Gibson’s generic sustainability criteria would be specified for the context of Cameco’s licence renewal application. Note that the table is not comprehensive of all concerns that should be considered in analyses.

Table 1. Specified Sustainability Criteria for Cameco’s Licence Renewal Application

Sustainability Criteria	Cameco Application-Specific Sustainability Concerns
<p>Socio-Ecological System Integrity</p> <p>Resource Maintenance and Efficiency</p>	<ul style="list-style-type: none"> • Long term, cumulative impacts from radioactive and toxic pollutants (air, water, soil, vegetation, animals): The impacts of uranium mining have been so severe, that many jurisdictions around the world have adopted bans on the establishment of new uranium mines (see Pembina Institute, 2007). • Uranium tailings management facilities have been associated with severe pollution of surface and ground water from radionuclides (principally uranium), heavy metals and conventional pollutants. In addition, dust from tailings facilities contains radionuclides, heavy metals and particulate matter. Uranium mining operations can also be significant sources of radon gas (Pembina Institute, 2007). • Insufficiently low standards for cancer risk arising from radiological hazards, with greatest risks to women and young children. • Occupational health and safety risks associated with plant operations: Major failures of tailings management facilities have occurred in Canada (Rabbit Lake, Key Lake and Elliot Lake) and around the world (the United States, Australia, Germany, Hungary, Bulgaria, Kyrgyzstan, Kazakhstan) (Pembina Institute, 2007)

	<ul style="list-style-type: none"> • Community-scale exposure to routine and accidental releases of toxic and radiological contaminants.
Livelihood Sufficiency and Opportunity Intragenerational Equity	<ul style="list-style-type: none"> • Costs of health and environmental impacts of operations for individuals, families, and communities • Operational performance and maintenance costs • Costs of decommissioning, decontamination, and restoration of uranium mines • Costs of long-term monitoring and remediation of contaminated sites • Costs to public of accidents, malfunctions, malevolent acts
Intergenerational Equity	<ul style="list-style-type: none"> • Boom and bust effects of uranium mining/milling and associated undertakings (loss of jobs and livelihoods over the course of different phases of nuclear energy generation)
Socio-Ecological Civility and Democratic Governance	<ul style="list-style-type: none"> • Capacity for long-term environmental management and monitoring. • Decommissioned mines must be managed essentially forever to prevent the release of contaminants from tailings and waste rock to the surrounding ecosystem and community. • Capacity for long-term “rolling stewardship”: the institutional capacity to manage, safely store, and pass along vital information to future generations. • Capacity to deal with accidents and malfunctions over the long term. • Capacity for emergency planning and response over the long term. • Capacity to implement open, inclusive, transparent public decision-making processes over the long term. • Capacity to provide easily accessible, relevant information to the public over the long term. • Capacity to educate public on emergency planning over the long term.
Precaution and Adaptation	<ul style="list-style-type: none"> • Need for comprehensive, long-term emergency planning (e.g., forest fires). • Need for long-term precautionary management of facilities. • Need for adaptive management in response to surprises, new learning, changing circumstances, new technologies, public opinion, etc.

Once the generic sustainability requirements have been recognized and the context-specific concerns have been identified, the next step is to consolidate them into one comprehensive set of criteria for application in planning and analysis.

2.4 Application in Planning and Analysis

The sustainability objective and specified criteria should inform all steps in the planning process, including but not limited to the following:

- how interested stakeholders should be engaged in the planning process, including how different perspectives should be accommodated;
- what operational options and components (methods, technologies, monitoring programs, etc.) should be examined, and how alternative system options should be elaborated and subjected to comparative evaluation;
- what possible effects (direct, indirect, cumulative effects) deserve detailed attention;
- which effects are likely to be most significant, given sustainability objectives;
- what important opportunities or perils need attention;
- how anticipated positive effects could be enhanced and how adverse effects and risks could be mitigated;
- the strengths and limitations of each system component, including interconnections;
- what specifics are needed in the plan, and/or what arrangements are needed for subsidiary and subsequent deliberations and decisions to ensure proper consideration of purposes, alternatives, effects, mitigation and enhancement options, trade-offs, etc. in light of the sustainability objective and criteria;
- whether and under what terms and conditions the proposed plan should be approved;
- what monitoring and adaptive response requirements are imposed; and
- what preparations by various parties are necessary and desirable to ensure that negative effects are avoided or mitigated, that unanticipated effects are identified and addressed quickly, that subsidiary planning and project development proceeds appropriately, that the plan is reviewed and revised regularly, that maximum mutually reinforcing gains are achieved and that significant adverse effects are avoided.

With respect to Cameco's application documentation and the CNSC staff's Environmental Protection Review Report, the CNSC should consider whether a comprehensive sustainability framework was applied throughout the five basic stages of sustainability-based decision making:

- establishment and delineation of the public interest purpose of and need for an undertaking;
- comparative evaluation of the options for meeting the need and purpose (the "alternatives to"), leading to selection of the preferred alternative as the proposed undertaking;
- the design of the preferred alternative, including a comparative evaluation of alternative means;
- plans for all monitoring, and decommissioning; and
- plans to respond to new and unexpected outcomes and understanding.

The CNSC must be convinced that Cameco's application demonstrates that the preferred alternatives pose the least likelihood and potential severity of risk while providing the greatest capacity to adapt to new information and conditions, and monitoring and response programs aim to address unanticipated events and new information and conditions.

2.5 Precaution and Adaptation

The concept of precaution, or the precautionary principle, has been defined in many ways, and it is beyond the scope of this report to provide a comprehensive review. For the purposes of analysis, CELA's understanding of the precautionary principle and how it should be applied in decision making was adopted.

Applying precaution in planning, analysis, and decision making requires a proactive versus a reactive approach in that the precautionary principle should be invoked when there are reasonable grounds for concern so that measures can be truly precautionary. CELA supports the following core elements of the precautionary principle (see CELA, 2002):

- A recognition of scientific uncertainty and fallibility;
- Favour of erring on the side of wrongly assuming risk versus wrongly assuming safety;
- Burden of proof rests on the proponent to establish that evidence does not support the potential for serious risk;
- Upholding the basic right of each individual (and future generations) to a healthy, life-sustaining environment as called for in the United Nations Declaration on Human Rights;
- Action on early warnings, when there is credible evidence that harm is occurring or likely to occur, even if the exact nature and magnitude of the harm are not fully understood;
- Identification, evaluation and implementation of the safest feasible approaches to meeting social needs;
- Placing responsibility on originators of potentially dangerous activities to thoroughly study and minimize risks, and to evaluate and choose the safest alternatives to meet a particular need, with independent review;
- Application of transparent and inclusive decision-making processes that increase the participation of all stakeholders and communities, particularly those potentially affected by a policy choice;

One overarching concept central to a precautionary approach is 'adaptive management capacity', which has been widely adopted in natural resource management sectors as an iterative approach to management in the face of

- scientific uncertainty and human error;
- technological innovations and/or advances in scientific understanding;
- new technical or scientific information regarding the design and operation of a project;

- changes in social and political opinion;
- changes in policy and regulatory frameworks, including safety standards; and
- unforeseen events (including natural disasters, malfunctions, accidents and malevolent acts) (see Walker & Salt, 2006).

Associated design concepts that may increase the level of adaptive management capacity in uranium mining and milling facilities include reversibility, retrievability, diversity and redundancy.

Reversibility is the possibility of reversing one or a series of decisions taken during the lifetime of a project. Reversal is the actual action of changing a previous decision. The associated implication for design include making provisions for reversal should it be required. Retrievability denotes the action of recovery of toxic wastes, which enhances the reversibility of decisions by providing an additional degree of flexibility.

Diversity and redundancy are major sources of adaptive management capacity (see Walker & Salt, 2006). The diversity requirement seeks to ensure that decision makers evaluate and compare a range of different alternatives that could achieve the same objective. If the preferred option fails there should be sufficient knowledge about other options to make adaptation feasible. The concept of redundancy is central to enhancing the safety and reliability of complex technologies. An element of a system is redundant if there are backups to do its work if it fails.

The public and the CNSC must be satisfied that Cameco has adequately considered the precautionary principle and adaptive management throughout planning and analysis.

3. Findings

Cameco's application documentation and the CNSC staff's Environmental Protection Review Report are fundamentally flawed in the following ways that are critical to the CNSC's decision:

- Justification of the proposed 20-year licence,
- Consideration of sustainability, precaution, and adaptation, and
- Consideration of rolling stewardship in preliminary decommissioning plans.

3.1 Justification of the Proposed Licence

In its application documentation, Cameco emphasizes the role of uranium market conditions in the historic, current, and future state of production at the Rabbit Lake mine and mill. For example, Cameco rests its proposed 20-year licence term partly on that basis that it would allow Cameco to take advantage of the long-term growth in the industry, while maintaining the ability to respond to market conditions as they evolve. Cameco would not resume production at Rabbit Lake until market conditions improve.

The key issue of uranium market conditions is ignored throughout Cameco's application, and it requires elaboration with appropriate data and transparent analyses. Indeed, Cameco seems to situate its understanding of uranium market conditions within an assumed context of uranium demand fluctuations trending towards a future of increased demand that would provide the basis for resumption of production. But Cameco does not support this assumption with evidence.

The uranium supply and demand relationship is complex and it is beyond the scope of this report to provide a comprehensive explanation. Some important factors that affect the market conditions for uranium products include, to name a few,

- increasing public recognition of the severe environmental impacts of uranium mining in the context of Canada's Sustainable Development goals, specifically to generate 100% of electricity from clean, renewable resources by 2030;
- widespread concerns about the safety of nuclear energy generation, especially in the context of the Fukushima Daiichi accident;
- Canada's ties to the foreign market for uranium products, and
- increasing negative public perception of the potential for Canadian uranium products to contribute to the proliferation of nuclear weapons.

Considering these and other factors that affect market conditions for uranium products, the lack of discussion and evidence around Cameco's assumption is a fundamental weakness in its application. Firstly, it raises critical, unanswered questions about precisely which market(s) it is referring to, the precise projected demand scenario(s), and the subsequent implications of the answers to these questions for the natural environment, human health and safety, precaution, adaptive management, and inter- and intragenerational equity.

Indeed, Cameco's lack of discussion and evidence of market conditions fails to provide a sound rationale for its proposed 20-year licence renewal. Cameco must appropriately situate its application within the larger context of a demonstrated demand for uranium production, so the public can review and comment.

Finally, Cameco's proposed 20-year licence timeframe may accommodate a prolonged period of care and maintenance during which time key functions would continue, e.g., maintenance of critical infrastructure, treating contaminated water, etc., until market conditions provide the case for resumption of production. Associated, critical concerns that require explicit consideration include (i) an explanation of the public participation processes for public review of Cameco's operations once Cameco decides to resume production, and (ii) an explanation of the public participation processes for public review of periodic reporting as per CNSC regulations. The public must understand the processes by which its concerns would be heard and addressed throughout a prolonged licence period.

3.2 Consideration of Sustainability, Precaution, and Adaptation

The CNSC's EPR and Cameco's application documentation incorporate some important concerns related to sustainability, precaution, and adaptation, e.g., they consider the impacts of uranium production on the environment and human health, and adaptive management is embedded in monitoring programs. But neither the CNSC nor Cameco give explicit attention to sustainability, including precaution and adaptation, in a framework that is applied in a systematic way throughout analysis and decision making.

The CNSC and Cameco must clearly demonstrate to the public how sustainability, precaution, and adaptation were incorporated in analysis and decision making, including an explicit explanation of the following:

- An explanation of the sustainability criteria adopted to evaluate the impacts of the Rabbit Lake operation, including a comparative evaluation of options related to all mine and mill components and operational stages, from state of care and maintenance through to decommissioning.
- An explanation of the process by which sustainability criteria, including precaution and adaptation, were incorporated throughout analysis, including a comparative evaluation of options related to all components and stages.
- An explanation of how the associated concepts of reversibility, retrievability, diversity and redundancy were considered in the design and operational aspects of the mine and mill, from state of care and maintenance through to operational, decommissioning, and post-decommissioning phases.

3.3 Consideration of Rolling Stewardship

In addition to precaution and adaptation, a foundational principle of sustainability is a long-term planning, decision-making, and monitoring lens, especially with respect uranium mining and milling facilities, which require monitoring and management in perpetuity.

At this juncture in the licence application process, the CNSC and Cameco have an opportunity to incorporate the concept of 'rolling stewardship' in preliminary decommissioning planning for the Rabbit Lake mine and mill operation. Rolling stewardship represents an alternative to abandonment, and it requires the following:

- Plans for the accurate transmission of information from one generation to the next;
- Plans for the transfer of responsibility from one generation to the next, e.g., a 'changing of the guard' every 20 years;
- Plans for the recharacterization of waste;
- Plans to rapidly detect and correct any leakages or other problems;

- Plans for the retrieval of waste; and
- Plans for continual adaptive management and monitoring (see Canadian Coalition for Nuclear Responsibility, 2022)

Because of their hazardous nature, uranium mine tailings and waste rock require perpetual care. Operating and now-closed uranium operation facilities have been associated with severe pollution, e.g., contamination of surface and ground water with radionuclides, heavy metals, and conventional pollutants. In addition, decommissioned mines must be managed forever to prevent the release of contaminants from tailings and waste rock to the surrounding ecosystem and community, and major failures of tailings management facilities have occurred in Canada, including Rabbit Lake (see Pembina, 2007).

Since 1984, the Rabbit Lake In-Pit Tailings Management Facility has had more than 8 million tonnes of radioactive tailings deposited in it (see Saskatchewan Environmental Society, 2015). The Rabbit Lake Above Ground Tailings Management Facility has had over 7 million tonnes of radioactive tailings spread over 53 hectares. This radioactive legacy will extend tens of thousands of years into the future and must be contained over that period of time.

Indeed, the real test of sustainability will come once the Rabbit Lake site has been decommissioned, once natural water levels on site have been restored, and after several decades have passed. During and beyond this timeframe, the contaminants in the radioactive tailings may begin to move beyond the tailings facilities and out into the larger environment (see Saskatchewan Environmental Society, 2015).

Given these and other serious, long-term social-ecological impacts, the public must be reassured that the CNSC and Cameco have incorporated a rolling stewardship approach in the preliminary decommissioning plan by devoting attention to the above-listed considerations.

4. Recommendations

4.1 Justification of Proposed Licence

In its application documentation, Cameco emphasizes the role of uranium market conditions in the historic, current, and future state of production at the Rabbit Lake mine and mill. The key issue of uranium market conditions requires elaboration with appropriate data and transparent analyses. Cameco's lack of evidence and discussion of market conditions represents a critical failure in its application in that Cameco does not provide a sound rationale for its proposed 20-year licence. Cameco must provide evidence for its assumption of future market conditions as part of its justification for a 20-year licence.

Associated, critical concerns that require explicit consideration include (i) an explanation of the public participation processes for public review of Cameco's operations once Cameco decides to resume production, and (ii) an explanation of the public participation processes for public review of periodic reporting as per CNSC regulations. The CNSC and Cameco must ensure the public that its concerns will be heard and addressed throughout a prolonged licence period.

4.2 Consideration of Sustainability, Precaution, and Adaptation

The CNSC and Cameco must clearly demonstrate to the public how sustainability, precaution, and adaptation were incorporated in analysis and decision making, including an explicit explanation of the following:

- An explanation of the sustainability criteria adopted to evaluate the impacts of the Rabbit Lake operation, including a comparative analysis of options for all mine and mill components and operational stages, from state of care and maintenance through to decommissioning.
- An explanation of the process by which sustainability criteria, including precaution and adaptation, were incorporated throughout analysis, including a comparative evaluation of options for all mine and mill components and stages.
- An explanation of how the associated concepts of reversibility, retrievability, diversity and redundancy were considered in the design and operational aspects of the mine and mill, from state of care and maintenance through to operational, decommissioning, and post-decommissioning phases.

4.3 Consideration of Rolling Stewardship

Given the serious, long-term social-ecological impacts of the Rabbit Lake mine and mill, the CNSC and Cameco must incorporate a rolling stewardship approach in the preliminary decommissioning plans by explicitly devoting attention to the following:

- Plans for the accurate transmission of information from one generation to the next;
- Plans for the transfer of responsibility from one generation to the next, e.g., a 'changing of the guard' every 20 years;
- Plans for the recharacterization of waste;
- Plans to rapidly detect and correct any leakages or other problems;
- Plans for the retrieval of waste; and
- Plans for continual adaptive management and monitoring (see Canadian Coalition for Nuclear Responsibility, 2022)

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Appendix A - Gibson's (2012, 2017) generic sustainability assessment criteria.

Socio-ecological system integrity

Build human-ecological relations to establish and maintain the long term integrity of sociobiophysical systems and protect the irreplaceable life support functions upon which human as well as ecological well-being depends.

Livelihood sufficiency and opportunity

Ensure that everyone and every community has enough for a decent life and that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity.

Intragenerational equity

Ensure that sufficiency and effective choices for all are pursued in ways that reduce dangerous gaps in sufficiency and opportunity (and health, security, social recognition, political influence, etc) between the rich and the poor.

Intergenerational equity

Favour present options and actions that are most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably.

Resource maintenance and efficiency

Provide a larger base for ensuring sustainable livelihoods for all while reducing threats to the long term integrity of socio-ecological systems by reducing extractive damage, avoiding waste and cutting overall material and energy use per unit of benefit.

Socio-ecological civility and democratic governance

Build the capacity, motivation and habitual inclination of individuals, communities and other collective decision-making bodies to apply sustainability requirements through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary and personal decision-making practices.

Precaution and adaptation

Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise, and manage for adaptation.

Immediate and long term integration

Apply all principles of sustainability at once, seeking mutually supportive benefits and multiple gains.