Minister
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Ottawa, Canada K1A 0E4

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The Honourable Kirsty Duncan, P.C., M.P.
Chair, Standing Committee on Science and Research
131 Queen Street
House of Commons
Ottawa, Ontario K1A 0A6

Dear Colleague:

On behalf of the Government of Canada, I would like to thank the Standing Committee on Science and Research and its staff for their work in preparing the report entitled: "Small Modular Nuclear Reactors." I would also like to express my appreciation to the numerous witnesses who shared their valuable insights during the Committee's study.

The Government welcomes the Standing Committee's recommendations. Small modular reactors represent a new field of nuclear innovation and a potential tool to reduce emissions, create long-lasting quality jobs, enable clean economic growth, and strengthen energy security, both domestically and globally. Several provincial governments as well as some Indigenous Peoples and organizations have expressed a clear interest in using small modular reactor technologies to achieve deep decarbonization, spur economic development, and provide social and regional benefits.

To meet our climate objective, Canada will need to act boldly, including by deliberately transitioning towards non-emitting energy throughout the country. Nuclear energy, and small modular reactors in particular, can be part of a thoughtful, collaborative, and "all-options" approach.

With a strong regulatory framework and decades of nuclear energy research and development founded on the best available science, Canada has a unique opportunity to play a leadership role in the deployment of small modular reactor technology to support domestic and global decarbonization, while working with allies to improve energy security at home and abroad.

I am pleased to provide the Committee with the Government Response to your timely report.

Yours sincerely,

The Honourable Jonathan Wilkinson, P.C., M.P.
(he/him/il)

Enclosure: (1)

Enclosure 1

Government Response to the Third Report of the Standing Committee on Science and Research (SRSR) entitled "Small Modular Nuclear Reactors"

The Government of Canada thanks the members of the Standing Committee as well as all the witnesses who appeared before it for sharing their perspectives. The Government of Canada welcomes the Committee's study of Small Modular Reactors (SMRs), and concurs with, or supports the general intent of, the eight (8) recommendations presented by the Committee in its Third Report.

The Government Response addresses the Committee's recommendations below, grouped in three themes:

THEME 1: FUNDING SUPPORT TOWARDS SMALL MODULAR NUCLEAR REACTORS (RECOMMENDATIONS 1, 2, AND 5): The Government of Canada agrees with and is currently taking actions that address the recommendations under Theme 1.

Supporting development of SMRs

The federal government acknowledges that it has a role to play in supporting innovative technologies where there is a benefit to Canada and, as such, has provided financial support and investment incentives towards the development and deployment of SMRs across the country.

Through Innovation, Science and Economic Development Canada's (ISED) Strategic Innovation Fund (SIF), the federal government has invested $94.7 million towards the development of three SMR projects. As SMR technology continues to advance towards deployment, the federal government has created an attractive space to help nudge the technology. In Budget 2022, the Canada Infrastructure Bank (CIB) was given an expanded role to invest in clean technologies, which enabled the CIB's commitment of $970 million towards Ontario Power Generation's Darlington New Nuclear Project—its largest investment in clean power to date—that will see the deployment of GE Hitachi's SMR design. The Canada Growth Fund, first announced in Budget 2022, could also be a potential source of support for the deployment of SMRs in Canada.

Budget 2022 also provided SMR-specific funding to Natural Resources Canada (NRCan) to enable the development and deployment of this technology and to the Canadian Nuclear Safety Commission (CNSC) to support effective regulation. More specifically, NRCan was allocated $69.9 million to support SMR initiatives, including the launch of an NRCan-Natural Sciences and Engineering Research Council of Canada (NSERC) partnership and NRCan's Enabling SMRs Program. Both initiatives support research to minimize waste generated from these reactors as well as develop and anchor SMR supply chains in Canada. The CSNC was also allocated $50.7 million to build the capacity to regulate SMR projects in Canada and work with international partners on global regulatory harmonization. Budget 2022 also allotted $250 million to NRCan to support pre-development activities of clean electricity projects of national significance such as SMRs.

The federal government also introduced several investment tax credits for which SMRs and large nuclear are eligible, including tax credits for clean technology adoption, clean technology manufacturing and clean electricity. All of the credits will support the nuclear sector to put Canada on the path towards a net-zero electricity system by 2035 and a net-zero economy by 2050.

Science-based decision-making to guide SMR research and development (R&D)

The Government of Canada acknowledges the importance of thorough scientific reviews to make informed funding decisions in support of SMR R&D**.** As such, the federal government ensures that due diligence assessments are based on full evaluations performed by subject matter experts.

For example, to administer its Enabling SMR Program, NRCan will establish a Review Committee composed of representatives with relevant expertise to evaluate projects and make funding recommendations. Evaluations will be supported by technical assessments based on complete and detailed project information, as well as third-party reviews as necessary.

Similarly, funding decisions for the NSERC-NRCan partnership to support research on SMRs will follow NSERC's Alliance grant review process. When NSERC receives an Alliance application, it first undertakes an administrative assessment to ensure the application is complete and complies with all requirements. Once the administrative assessment is satisfactorily completed, NSERC proceeds with the merit assessment of the application, using a variety of tools and merit assessment mechanisms, including existing NSERC peer review, external reviewers, and/or ad hoc committee of external reviewers with expertise directly related to the proposal.

SMRs as green energy

Including nuclear technology and SMRs in green energy and net-zero programs

The Government of Canada's commitment to nuclear energy as part of its approach to addressing climate change is underlined by recent CIB and SIF announcements, and the inclusion of nuclear technology projects in net-zero initiatives such as the SIF's Net Zero Accelerator, alongside initiatives announced in recent federal budgets and broader federal strategic plans such as the Emissions Reduction Plan. The federal Budget 2023 further highlights the Government's commitment to include nuclear technology, including SMRs, in green energy and net-zero programs.

The Government of Canada also acknowledges that the international green bond market is growing and requirements for green investments continues to evolve. The Government of Canada is continually monitoring developments pertaining to the inclusion of nuclear energy within sustainable finance frameworks. International standards and best practices regarding sustainable finance will also be monitored to ensure Canada's Green Bond Framework aligns with investor expectations, and the federal government remains committed to reviewing and updating the Green Bond Framework as necessary to maintain this alignment.

THEME 2: NUCLEAR RESEARCH AND DEVELOPMENT FOR SMALL MODULAR NUCLEAR REACTORS, INCLUDING WASTE MANAGEMENT (RECOMMENDATIONS 3 AND 4).

Waste management and non-proliferation

The Government of Canada concurs with and supports Recommendation 3 through its SMR Action Plan commitments, the release of the modernized Policy for Radioactive Waste and Decommissioning, and its involvement in international fora such as the Organisation for Economic Co-operation and Development (OECD) Nuclear Energy Agency (NEA) and the International Atomic Energy Agency (IAEA).

The Government of Canada acknowledges that nuclear reprocessing is a sensitive technology and remains committed to ensure that such technologies would not negatively affect nuclear non-proliferation priorities of Canada and its allies. While reprocessing is not presently employed in Canada, the Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act* as well as safeguards verification by the IAEA. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

The federal government is committed to the safe, effective, and environmentally sound management of radioactive waste. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of the recently modernized Policy for Radioactive Waste and Decommissioning for Canada. This policy sets out the framework to ensure that long-term management and disposal solutions are in place for all of Canada's existing and future waste, including those from new technologies such as SMRs. In the 2022 federal budget, the Government of Canada also allocated funding to NRCan to undertake research to minimize waste generated from SMRs and enhance domestic safety and security policies and practices.

The Government of Canada's policy on nuclear non-proliferation and disarmament is based on the NPT and reinforced by related initiatives. The CNSC is responsible for implementing Canada's nuclear non-proliferation policy and works bilaterally and multilaterally with partners around the globe to strengthen nuclear security and non-proliferation at home and abroad. The CNSC cooperates with the IAEA in developing new safeguards approaches for Canadian facilities and contributes to efforts to strengthen safeguards internationally. Furthermore, the CNSC works with international and scientific partners in various multilateral nuclear fora to ensure the safe, secure, and peaceful use of nuclear materials and technology and address issues such as, but not limited to, nuclear safety, radioactive waste management and nuclear safeguards. The CNSC will continue to ensure that Canada's nuclear regulatory framework is ready and appropriate for any proposed nuclear project.

As a member of the OECD NEA, the Government of Canada engages with other member countries on nuclear R&D initiatives, including those focused on SMRs and waste management. The Government of Canada also participates in the Generation IV International Forum (GIF), which fosters multilateral collaborations among eleven nations and Euratom for the development of the next generation of nuclear energy systems. Among other core objectives, GIF members work to optimize the level of proliferation resistance and physical protection of a nuclear energy system.

Research and development

The government acknowledges and agrees with the principle of Recommendation 4 and understands the importance of working with partners to undertake SMR R&D. For example, the 2018 Canadian Roadmap for Small Modular Reactors recommended that the federal government establish an SMR development program that brings together government, industry, and academia to carry out focused research, linked to SMR demonstration projects. In Canada's SMR Action plan, the Government of Canada has acknowledged the roadmap recommendation for a national SMR R&D program and has made investments to build SMR R&D capacity in Canada, including support to AECL, industry, universities, CANMET labs, and other research organizations. The networks and programs established through these investments have created multi-sectoral bridges that support SMR R&D in Canada.

Notably, Atomic Energy of Canada Limited (AECL) has played a key role in coordinating the R&D needs of the federal government through its work in managing the Federal Nuclear Science and Technology (FNST) Work Plan. The federal government is investing $76 million per year into AECL's FNST Work Plan to perform nuclear-related science and technology research, including on SMRs. This has built knowledge, expertise, and capabilities at Canadian Nuclear Laboratories (CNL) to position Canada as a global player in SMRs and advance reactors deployment. Leveraging these expertise and capabilities, AECL oversees other programs that have been put in place to enable collaborative research projects with third-party proponents in Canada. AECL has also been leveraging its assets at the Chalk River Laboratories, as well as the expertise and capabilities at CNL to carry out R&D and advance Canada's interests in SMRs.

Recognizing AECL's research and innovation mandate, the Government of Canada made a $1.3-billion investment over ten years (starting in 2016) to revitalize AECL's Chalk River Laboratories. The objective is to transform it into a world-class nuclear science and technology campus and enable CNL to continue collaborating with stakeholders from industry and academia, including on SMR R&D. This includes the construction of the Advanced Nuclear Materials Research Centre, a state-of-the-art research complex to support Canada's clean energy goals by providing services and capabilities critical to supporting SMRs and next-generation nuclear fuels.

The Government of Canada also supports nuclear research and development through the University Network of Excellence in Nuclear Engineering (UNENE), which is a network of domestic and international institutions dedicated to excellence in nuclear science, technology, and engineering. UNENE serves as a bridge between universities, industry,

and government, as well as governmental organizations and their representatives. NRCan and the CNSC both work with UNENE to identify trends and areas of national interest in nuclear science and technology. As Canada's main nuclear research organizations, AECL and CNL work closely with UNENE, providing both guidance and funding, including participation on UNENE's Board of Directors and Research Advisory Committee.

As indicated above, NRCan is also seeking to fund R&D to support provinces and territories as they work to develop and deploy SMRs as part of their respective decarbonization and economic development plans. The Enabling Small Modular Reactors contribution program targets SMR R&D projects and seeks to support eligible industry, academic and government organizations in their research plans to support the conditions and enabling frameworks necessary for SMRs to displace fossil fuels and contribute to climate change mitigation. The program aims to support applicants in their efforts to address waste generated from SMRs, as well as develop SMR supply chains (including fuel supply). In addition, the NSERC-NRCan partnership seeks to co-fund research on SMR projects through NSERC's Alliance grants program. The partnership is intended to support activities that will enhance the capabilities of Canadian universities to undertake research related to SMRs. Partners from industry, government and not-for-profit organizations are encouraged to participate as per NSERC's Alliance grants program.

THEME 3: ENGAGEMENT WITH PROVINCES AND INDIGENOUS PEOPLES (RECOMMENDATIONS 6, 7, AND 8).

The Government supports Recommendation 6 through the interim Sustainable Jobs Plan and range of initiatives from NRCan, the CNSC, and AECL to provide educational opportunities and materials, as well as support for higher education programs and resources. The Government of Canada agrees with Recommendation 7 and Recommendation 8 and, through this Response, highlights initiatives that align with the spirit of those recommendations.

<u>Developing an SMR workforce</u>

SMRs have the potential to create and sustain jobs and support the growth of an inclusive and resilient workforce. The Government of Canada recognizes that transitioning and retooling towards the emergence of a new nuclear subsector require strategies to ensure the SMR workforce of the future is diverse and representative—including women, youth, minorities, and Indigenous persons. The Government of Canada is committed to taking action to help develop the future SMR workforce. With its partners, the Government of Canada has put forward several initiatives aimed at increasing the participation of Canadians—notably those from under-represented groups—in science, technology, engineering and math (STEM) fields from childhood to high school to post-secondary to the workforce. Canada's SMR Action Plan outlines actions and commitments by key enablers to maintain and develop the workforce that will contribute to SMR development in Canada.

The Government of Canada's interim Sustainable Jobs Plan 2023–2025 supports the creation of well-paying, high-quality jobs and presents a commitment to grow a strong, inclusive net-zero and resilient economy. The Plan recognizes the economic opportunities that developing more clean energy technologies brings to Canada and Canadians. As a zero-emission technology, SMRs and their workforce falls under this Plan. Additionally,

the Government of Canada has launched the Regional Energy and Resource Tables. The Regional Tables are a collaborative initiative with the provinces and territories to identify, prioritize and pursue opportunities for sustainable job creation and economic growth for a low-carbon future in the energy, electricity, mining, forestry, and clean technology sectors across all of Canada's regions. With input from all levels of government, Indigenous governments, industry, labour and others, the Regional Tables aim to identify the highest potential clean growth opportunities in each region, such as nuclear technologies, to create joint plans towards supporting that development.

To create opportunities to engage youth and develop the next generation of leaders in the nuclear sector, Canada is a founding member and active participant of the Nuclear Education, Skills, and Technology (NEST) initiative endorsed by the OECD. The NEST framework helps support nuclear skills capacity building, knowledge transfer and technical innovation in an international context.

Supporting the participation of Indigenous Peoples

The Government of Canada has other initiatives that can support Indigenous Peoples in exploring the potential of SMRs to provide non-emitting energy alternatives in a wide range of applications, including electricity generation in remote communities. NRCan facilitates meaningful Indigenous participation in natural resources projects and net-zero transition. It delivers Indigenous engagement, program support and policy leadership on economic reconciliation and regulatory coordination while bringing together Indigenous partners, provinces, territories, and industry in project development. To deliver key NRCan initiatives in partnership with Indigenous Peoples, Nòkwewashk, a sector within NRCan, actively works to identify opportunities to strengthen Indigenous inclusion in the natural resource sectors while maintaining respectful relationships.

The CNSC is also committed to continuous improvement and transforming its approach to consulting and engaging with Indigenous Peoples in anticipation of increased nuclear activity in Canada from proposed SMR projects. The CNSC has established multiple programs to support Indigenous engagement, such as its Participant Funding Program and Indigenous and Stakeholder Capacity Fund. The CNSC also acknowledges the importance of working with and including Indigenous Knowledge, alongside regulatory information, in project assessments and regulatory processes. Lastly, the CNSC requires that license applicants engage and consult with all Indigenous Peoples potentially impacted by a proposed nuclear project, and strongly encourages early, continuous, and sincere engagement to build or strengthen relationships and to work to build trust and respect.

The Government of Canada is committed to engaging Indigenous Peoples in decision-making on SMRs, based on the recognition of rights, respect, cooperation, and partnership as the foundation for transformative change.

Engaging with Indigenous Peoples and the public

The Government of Canada is also committed to better understanding the views of the public on nuclear energy. The Government of Canada and its partners have important roles to play to convene public discussions among Canadians. Under Canada's SMR Action

Plan, the Government of Canada committed to convene a forum for senior leaders to meet and discuss the advancement of SMR development and commercialization in Canada with respect to shared roles, responsibilities, and jurisdictions, in a way that leverages benefits to Canada and supports strategic partnerships.

The Leadership Table for the SMR Action Plan is composed of the federal government, interested provincial and territorial governments, utilities, Indigenous representatives, including First Nations, Métis, and Inuit members from the Indigenous Advisory Council, industry (nuclear and high-emitting sectors), laboratories and academia, and civil society. Its mandate is to review progress and discuss strategic priorities as they relate to the development and deployment of SMRs. Among other priorities and discussion areas, the importance of building and retaining a diverse and representative workforce has been identified as a topic for a future discussion at this Leadership Table.

Engagement with Indigenous Peoples: The Government of Canada recognizes that building genuine, meaningful partnerships with Indigenous Peoples is critical to ensure that Indigenous views on SMRs are not only heard and understood, but that SMR development provide lasting opportunities for benefits-sharing. The Indigenous Advisory Council for the SMR Action Plan (IACSMRAP) is an existing initiative that supports engagement with Indigenous Peoples. Funded by NRCan, the IACSMRAP was established in October 2021 to bring a coordinated, national Indigenous lens to SMR policies, programs, and decisions.

Conclusion

The Government of Canada extends its gratitude to the members of the Standing Committee for their work that identifies ways to further support the development and deployment of SMRs.

The Report highlights the importance of continuing R&D into SMR technology, in consultations with the public, and engagement with Indigenous Peoples, for their safe deployment so that nuclear can continue to play a role in Canada's low-carbon energy transition.

Through initiatives such as the SMR Action Plan and the Leadership Table, NRCan's Enabling SMRs Program and net-zero funding programs, Canada strives to support new SMR technologies in partnership with diverse stakeholders. Our government is committed to enabling sustainable economic growth as Canada transitions to a net-zero economy and believes that SMRs can play a role in this endeavour. In particular, we will continue to work with Indigenous Peoples to explore the potential of SMRs as a tool for economic inclusion.

As we advance on this path, the Government will continue to prioritize the health and safety of Canadians. Our strengths in science, research, development, and education will help maintain Canada's global leadership in the safe and secure use of nuclear technologies for decades to come.