Atlantic Canada Opportunities Agency
Agence de promotion économique du Canada atlantique

Head Office
P.O. Box 6051
Moncton, N.B.

Siège social
C.P. 6051
Moncton (N.-B.)

PROTECTED

Our File Notre référence
A-2025-00002

March 25, 2026

Ms. Susan O'Donnell

Dear Ms. O'Donnell:

This is further to your request made under the *Access to Information Act* for all communications received with respect to HALEU fuel or enriched uranium fuel or the "recycling" or "reprocessing" or re-use of nuclear fuel waste for any purpose received between January 1, 2018 and April 30, 2025.

Attached are copies of the records that can be disclosed. Severance has been applied in accordance with section 25 of the Act. The severed portions are withheld from disclosure pursuant to sections 14, 16(2), 16(2)(c), 19(1), 20(1)(a), 20(1)(b), 20(1)(c), 20(1)(d), 21(1)(a), 21(1)(b), 21(1)(c), 23, 69(1) of the Act, copy attached.

Please be advised that you are entitled to complain to the Information Commissioner of Canada on matters relating to the administration of the Act, with in 60 days of the receipt of this notice. Additional information regarding this matter is available at https://www.oic-ci.gc.ca/en/submitting-complaint or by calling 613-995-2410 or 1-800-267-0441 (toll-free).

If you have further questions regarding this request, please do not hesitate to contact Louise Doucet, the Agency's Director/Coordinator, Access to Information and Privacy, at 506-871-2806 or by email at louise.doucet@acoa-apeca.gc.ca.

Sincerely,

Jobin, Francis

Digitally signed by Jobin, Francis
Date: 2026.03.25 10:32:42 -03'00'

Francis Jobin
Executive Director

Attachments

25 SEVERABILITY

25. Notwithstanding any other provision of this Act, where a request is made to a government institution for access to a record that the head of the institution is authorized to refuse to disclose under this Act by reason of information or other material contained in the record, the head of the institution shall disclose any part of the record that does not contain, and can reasonably be severed from any part that contains, any such information or material.

14 FEDERAL-PROVINCIAL AFFAIRS

14. The head of a government institution may refuse to disclose any record requested under this Act that contains information the disclosure of which could reasonably be expected to be injurious to the conduct by the Government of Canada of federal-provincial affairs, including, without restricting the generality of the foregoing, any such information

(a) on federal-provincial consultations or deliberations; or
(b) on strategy or tactics adopted or to be adopted by the Government of Canada relating to the conduct of federal-provincial affairs.

16(1) LAW ENFORCEMENT AND INVESTIGATIONS

16. (2) The head of a government institution may refuse to disclose any record requested under this Act that contains information that could reasonably be expected to facilitate the commission of an offence, including, without restricting the generality of the foregoing, any such information

(a) on criminal methods or techniques;
(b) that is technical information relating to weapons or potential weapons; or
(c) on the vulnerability of particular buildings or other structures or systems, including computer or communication systems, or methods employed to protect such buildings or other structures or systems.

19(1) PERSONAL INFORMATION

19. (1) Subject to subsection (2), the head of a government institution shall refuse to disclose any record requested under this Act that contains personal information as defined in section 3 of the Privacy Act.

20(1) THIRD PARTY INFORMATION

20. (1) Subject to this section, the head of a government institution shall refuse to disclose any record requested under this Act that contains

(a) trade secrets of a third party;
(b) financial, commercial, scientific or technical information that is confidential information supplied to a government institution by a third party and is treated consistently in a confidential manner by the third party;
(b.1) information that is supplied in confidence to a government institution by a third party for the preparation, maintenance, testing or implementation by the government institution of emergency management plans within the meaning of section 2 of the Emergency Management Act and that concerns the vulnerability of the third party's buildings or other structures, its networks or systems, including its computer or communications networks or systems, or the methods used to protect any of those buildings, structures, networks or systems;
(c) information the disclosure of which could reasonably be expected to result in material financial loss or gain to, or could reasonably be expected to prejudice the competitive position of, a third party; or
(d) information the disclosure of which could reasonably be expected to interfere with contractual or other negotiations of a third party.

21(1) OPERATIONS OF GOVERNMENT

21. (1) The head of a government institution may refuse to disclose any record requested under this Act that contains

(a) advice or recommendations developed by or for a government institution or a minister of the Crown,
(b) an account of consultations or deliberations in which directors, officers or employees of a government institution, a minister of the Crown or the staff of a minister participate,
(c) positions or plans developed for the purpose of negotiations carried on or to be carried on by or on behalf of the Government of Canada and considerations relating thereto, or
(d) plans relating to the management of personnel or the administration of a government institution that have not yet been put into operation,

if the records came into existence less than twenty years prior to the request.

23 SOLICITOR-CLIENT PRIVILEGE INFORMATION

23. The head of a government institution may refuse to disclose any record requested under this Act that contains information that is subject to solicitor-client privilege.

69(1) CONFIDENCES OF THE QUEEN'S PRIVY COUNCIL FOR CANADA

69. (1) This Act does not apply to confidences of the Queen's Privy Council for Canada, including, without restricting the generality of the foregoing,

(a) memoranda the purpose of which is to present proposals or recommendations to Council;
(b) discussion papers the purpose of which is to present background explanations, analyses of problems or policy options to Council for consideration by Council in making decisions;
(c) agenda of Council or records recording deliberations or decisions of Council;
(d) records used for or reflecting communications or discussions between ministers of the Crown on matters relating to the making of government decisions or the formulation of government policy;
(e) records the purpose of which is to brief ministers of the Crown in relation to matters that are before, or are proposed to be brought before, Council or that are the subject of communications or discussions referred to in paragraph (d);
(f) draft legislation; and
(g) records that contain information about the contents of any record within a class of records referred to in paragraphs (a) to (f).

From:	Bill Labbe
To:	Kalie Hatt-Kilburn
Cc:	Francis McGuire;
Subject:	ACOA - ARC & PPT (8/25)
Attachments:	ACOA Aug 25 2021.pdf
Sent:	8/27/2021 5:29:44 PM

s.19(1)

s.20(1)(c)

s.20(1)(d)

Kalie,

Good afternoon

I have attached the PPT used during the discussion for you files

A couple of items of follow-up were mentioned during this meeting time:

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-
- HALEU Fuel Supply – An opportunity to create security of Fuel Supply in Canada should be considered; to this end, ARC has initiated discussions with Canadian firms and will continue this effort in the weeks ahead (Labbe)

Thank you for your time and looking forward to our next conversation

Bill

ARC CLEAN ENERGY

William Labbe
President & Chief Executive Officer
ARC Clean Energy Canada
Brunswick Square, Suite 900
1 Germain St, Saint John, NB E2L 4V1
(207) 751-4605
www.arcenergy.co

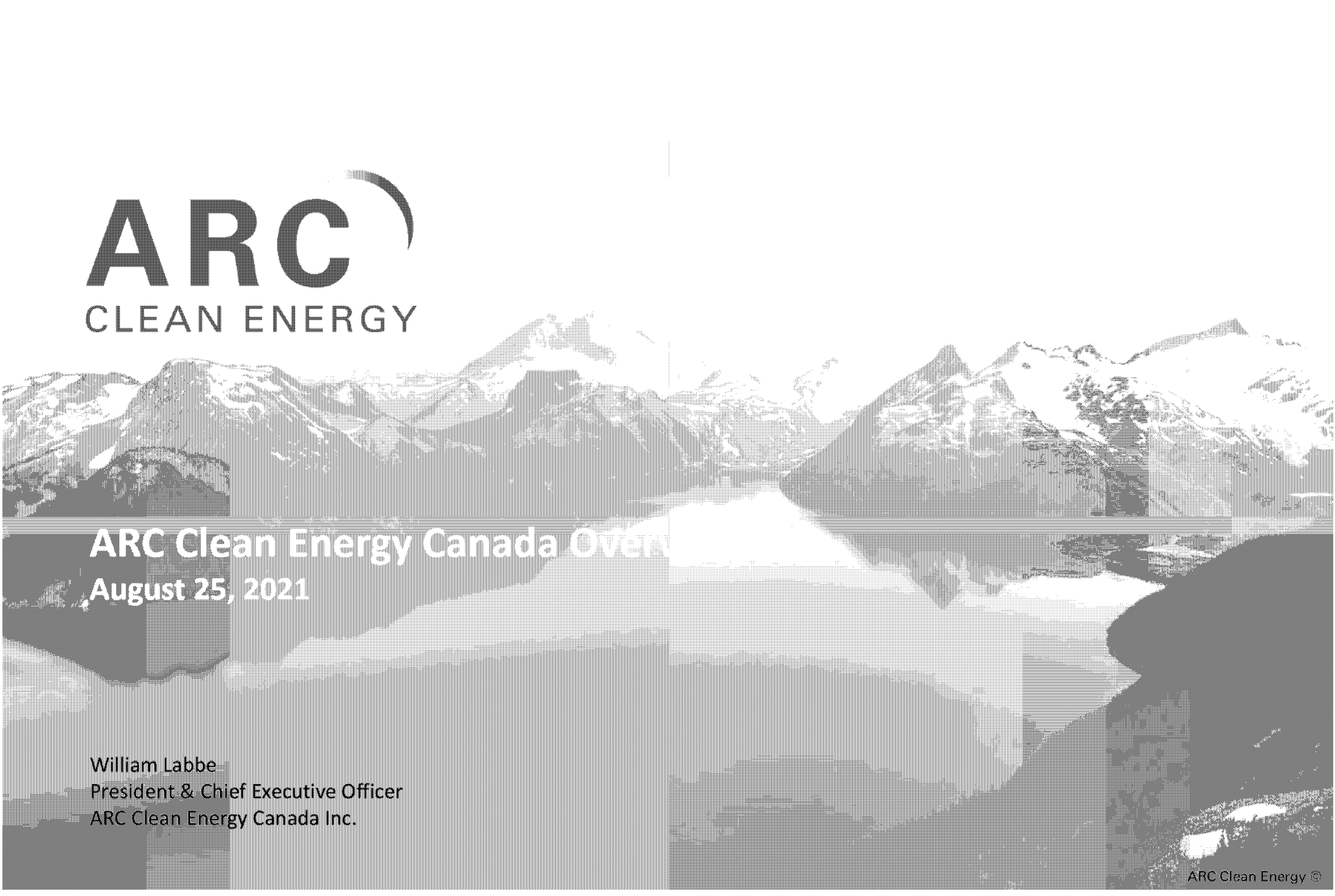
s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

s.21(1)(c)



ARC Clean Energy Canada Overv

August 25, 2021

William Labbe
President & Chief Executive Officer
ARC Clean Energy Canada Inc.

Pages 4 to / à 6

are withheld pursuant to sections

sont retenues en vertu des articles

20(1)(b), 20(1)(c), 20(1)(d)

of the Access to Information Act

de la Loi sur l'accès à l'information

TECHNOLOGY

THE ARC ADVANTAGE

Proven – Safe

- US government operated a prototype (the EBR-II) successfully for 30 years
- Metallic fuel and sodium cooling self regulates with automatic shutdown
- IP enhancements in Canada

Versatile- Market Demand

- Suitable for clean base load power for the grid, industrial heat and hydrogen
- Modularization makes units scalable to the market
- Size and technology differentiates ARC from the competition

GHG Reduction

- Up to 6 MT GHG reduction per unit
- Enables renewables – clean base load for solar, wind and storage
- Enables alternative energy such as Hydrogen, efuel and Ammonia
- Enables carbon capture

Sustainable – Clean Energy

- Consumes its own waste
- Metallic Fuel is recycled over and over
- 20-year refueling cycle more environmentally sustainable
- Removes geopolitical supply risk
- Uses less natural resources in uranium and construction

Affordable Energy

- Price competitive with fossil fuels
- Modular design reduces manufacturing costs
- Highly efficient operation with 99% fuel utilization drastically reduces fuel waste and storage expenses

Economic Growth

- Energy workforce transition focus from carbon based employment
- Global market demand
- Material player in NB industry sector creation of
  - » 11,000 jobs, $1B GDP impact
  - » $120m in provincial tax revenue

Pages 8 to / à 21

are withheld pursuant to sections

sont retenues en vertu des articles

20(1)(b), 20(1)(c), 20(1)(d)

of the Access to Information Act

de la Loi sur l'accès à l'information

Small Modular Reactors

Topic

- Development of small modular reactors (SMR) in New Brunswick.

Background

- Small Modular Reactors (SMRs) are proposed to be a smaller and less expensive alternative to conventional nuclear fission reactors.
- In August 2018, the provincial government of New Brunswick created a Nuclear Research Cluster and signed MOU's with two companies developing advanced Small Modular Reactor (SMR) technology, ARC and Moltex. Through the New Brunswick Energy Solutions Corporation (NBESC), the government of New Brunswick (GNB) invested $10 million ($5M for ARC / $5M for Moltex) to foster research and development in these two SMR designs.
- The Province of New Brunswick hopes that this provincial investment in SMR technology development will lead to a demonstration SMR unit being constructed at Point Lepreau - after completion of all Vendor Design Review (VDR) stages, regulatory requirements and adequate consultation.

Significance of SMR Development to Atlantic Canada

- SMRs are of particular interest to New Brunswick as a source of safe, clean and reliable baseload energy, which is of concern once the Belledune coal-fired generating station comes offline in 2030 and the Point Lepreau nuclear facility reaches its end of life in 2040.
- Currently, all four Atlantic provincial governments and utilities are collaborating along with Quebec on an Atlantic Clean Power Roadmap. SMRs are included among the future generation options being considered to supply the future clean energy needs of an interconnected regional grid. Because of the intermittence of renewables like wind and solar, SMRs are seen as particularly important in helping to address concerns with sourcing a supply of a clean, reliable baseload power.

SIF Program Requests

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s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

s.21(1)(c)

- Given the degree of technical sophistication involved in assessing proposals for the nuclear industry, NRCan has been engaged to provide advice to ISED in consideration of these and other SMR-related asks.

ACOA Involvement

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

June 3, 2020

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

s.21(1)(c)

From:	Marc LeBlanc
To:	Francis McGuire
Subject:	FOR APPROVAL - ARC Small Modular Reactors (DT603807)
Attachments:	FW: For action: BN - ARC SMR;Briefing Note to the Minister- ARC SMR.docx;Annex A - English.docx;Annex B - English.docx;
Sent:	12/10/2021 2:50:49 PM

Francis, for your approval.

Merci

From: Angele Bastarache <Angele.Bastarache@ACOA-APECA.GC.CA>
Sent: Friday, December 10, 2021 2:50 PM
To: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Subject: FOR APPROVAL - ARC Small Modular Reactors (DT603807)
Importance: High

Bonjour Marc,

For President's approval. Attached is the briefing note to the Minister re ARC SMR along with Annexes A & B requested by MLO. Available in both languages for the Minister.

The file was reviewed by Min Pres and approved by VP NB.

Deadline: ASAP today

Angèle Bastarache
Administrative Assistant to the President, President's Office
(She/Her/Elle)
Atlantic Canada Opportunities Agency / Government of Canada
angele.bastarache@acoa-apeca.ca / Telephone : 506-961-3299

Adjointe administrative au président, Cabinet du président
(Elle/She/Her)
Agence de promotion économique du Canada atlantique / Gouvernement du Canada
angele.bastarache@acoa-apeca.gc.ca / Téléphone : 506-961-3299

Government of Canada / Gouvernement du Canada

Atlantic Canada Opportunities Agency
Agence de promotion économique du Canada atlantique

Security classification
N/A
Reference No.
DT603807

President

Head Office
P.O. Box 6051
Moncton, N.B.
Canada E1C 9J8

BRIEFING NOTE

TO: The Honourable Ginette Petitpas Taylor
Minister of Official Languages and Minister responsible for ACOA

FROM: Francis P. McGuire

SUBJECT: ARC Clean Energy Canada

PURPOSE:

To provide you with an update on ARC Clean Energy's development of an advanced small modular reactor.

SUMMARY

- The development of a small modular reactor is a New Brunswick-based initiative, slated for deployment by NB Power beginning in the late 2020s, and represents an opportunity to support the country's move toward its vision for net-zero emissions.
- The Government released Canada's Small Modular Reactor Action Plan in December 2020.
- The magnitude of the investments required necessitates coordination with and funding from other federal departments to achieve the development and deployment of small modular reactors across Canada.

ACTION REQUIRED:

For your information only.

.../2

Canada

BACKGROUND:

- The Government of Canada released Canada's Small Modular Reactor (SMR) Action Plan in December 2020, which indicates that "innovation in the nuclear sector plays a critical role in reducing greenhouse gas emissions and delivering good, middle-class jobs as Canada moves toward a low-carbon future."
- The release of the SMR Action Plan heightened expectations for federal funding to support SMR development among provincial and territorial governments, Indigenous people, organized labour, utilities, industry, innovators, academia and civil society.
- While the release of the SMR Action Plan recommended the provision of federal and provincial funding for SMR development, there was no funding allocated for SMRs in Budget 2021, leaving the Strategic Innovation Fund (SIF) as the only likely funding source.
- To date, ISED has approved two significant SMR investments under the SIF: one for Moltex ($47.5 million), and one for Terrestrial Energy ($20 million).
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Recent developments:

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s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

.../3

- In November 2021, ARC made a presentation to Global Affairs Canada and Natural Resources Canada concerning the secure supply of high assay, low enriched uranium (HALEU) fuel. Most North American reactor designs will require access to this fuel, including ARC's.
- At present, the only available source of HALEU fuel is through imports from Russia and further conversion at U.S.-based labs. While there is potential for a made-in-Canada supply in the long term, initial supply will need to come internationally to meet industry deployment timelines.
- The fuel source issue was highlighted in the SMR Action Plan as an area for development for federal departments and industry.

RECOMMENDATION:

The Agency continues to advocate that federal departments should consult industry in determining their position on which SMR technologies should be supported. Since utilities will be the first market for these technologies, they are best positioned to speak to the market appeal of the various designs being proposed. Please see Annex A for background information on SMR development in Canada.

This position would appear to align with Minister Guilbeault's public comments regarding nuclear energy at the UN Climate Change Summit last month when he indicated, "[as for] which forms of energy will be part of tomorrow's energy mix, it's not up to government to decide which of these technologies will drive" the transition. "It's going to be up to the market."

NB Power is actively talking with other Canadian utilities on this matter and has expressed their willingness to meet with any federal representatives who would like to understand their perspective. ACOA is well positioned to facilitate any introductions that may be helpful. Please see Annex B for information regarding ACOA investments in SMR technology in New Brunswick.

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(a)
s.21(1)(b)
s.21(1)(c)
s.69(1)(d)

Francis P. McGuire

Attachments

ANNEX A

Background information on SMR development in Canada

Role of SMRs in clean energy supply:

- SMRs are small in both size and power output compared to conventional power reactors, producing one to 300 megawatts (MW) of electricity, as opposed to the 700 to 900 MW produced by traditional reactors. They are manufactured in factories and transported to sites for lower capital costs as well as ease of installation, operation and removal.
- SMRs use nuclear power, which is a non-emitting and efficient way to generate electricity and designed for simplified safety and proliferation resistance.
- The development of SMR technology offers a solution to New Brunswick's clean, base-load power generation needs and enables the Province to play a central role in the advancement of the Clean Power Roadmap for Atlantic Canada.
- Potential economic and research expertise spin-offs in the development of SMR technology could be significant, as could the supply chain opportunities for New Brunswick and Canadian companies.

New Brunswick-based developments in SMRs:

- New Brunswick is currently home to the development of two reactor designs undertaken by ARC and Moltex. Both are considered "generation 4" reactors, which are attractive to the market because they are safer than earlier versions, effectively mitigating the risk of a thermal nuclear incident.
- According to NB Power, utilities in Ontario, Saskatchewan and Alberta are closely following the development of the ARC unit in New Brunswick. These reactors represent the most advanced units currently under development in Canada, and they have the potential to meet future clean energy needs in those provinces.
- In the State of the Province address in January 2021, Premier Higgs underscored his commitment to non-emitting sources of energy and announced:
    - a $20 million investment in ARC (with $30 million in matching private funds);
    - a continued partnership with the federal government to support Moltex; and
    - activating an under-utilized supply chain to participate in a worldwide SMR market.
- ACOA has also made significant investments in the SMR technology cluster in New Brunswick. (See Annex B.)

Global context:

- Countries around the world, notably the United States, the United Kingdom and

France, are taking steps to support SMR development.

- U.S. – the Department of Energy announced a $600 million matched-funding package (over seven years) from the Department of Energy's Advanced Reactor Demonstration Program.
- U.K. – a $294 million spending package for SMRs has been announced, to be matched by private-sector investment and delivered by the government agency UK Research and Innovation.
- France – President Macron recently unveiled a five-year €30 billion investment plan for developing innovative technology and industrial activity, including building SMRs, electric cars and greener airplanes.

ANNEX B

ACOA investments in the SMR technology cluster in New Brunswick

$3 million – Moltex (conditionally repayable)

- This project will help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low cost.

$5 million – NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site in New Brunswick. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will also be engaging with First Nations and the public as part of this project.

$561,750 – University of New Brunswick's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is intended to boost the centre's capacity to partner with private industry in research and development.

$13,750 – North Shore Micmac District Council (NSMDC) (non-repayable)

- This project is supporting strategic planning for Indigenous involvement in SMR development in New Brunswick.

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

BACKGROUNDER

Security classification N/A
Reference No. DT611803
Prepared by Luke Bulmer
Date submitted September 2, 2022

Subject: ARC Clean Energy and Moltex (Small Modular Reactor Vendors)

Purpose:

- To provide an update on recent developments with respect to Small Modular Reactor (SMR) vendors ARC Clean Energy and Moltex.

Background:

- After reviewing over 50 technologies, in July 2018, New Brunswick Power (NB Power) selected ARC Clean Energy and Moltex as its two vendors for SMR technology development and use in the province.
    - The ARC design, ARC-100, offers 100 megawatts of electricity generation.
    - Moltex Energy's 300 MWe Stable Salt Reactor, SSR-W 300, offers 300 megawatts of electricity generation.
- Slated for deployment by NB Power beginning in the late 2020s to the mid 2030s, SMRs represent an opportunity to support Canada's vision for net-zero emissions.
- The Government of Canada released *Canada's SMR Action Plan* in December 2020; however, the magnitude of investment required needs coordination and funding across federal departments to develop and deploy SMRs across Canada.

Recent Developments:

ARC Clean Energy Canada (ARC):

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s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)

- In November 2021, ARC made a presentation to Global Affairs Canada and Natural Resources Canada concerning the secure supply of high-assay, low-enriched uranium (HALEU) fuel. Most North American reactor designs will require access to this fuel, including ARC's.
    - At present, the only available source of HALEU fuel is through imports from Russia and further conversion at U.S.-based labs. While there is potential for a made-in-Canada supply in the long term, initial supply will need to come internationally to meet industry deployment timelines. This is an issue of serious concern.
    - The fuel source issue was highlighted in the SMR Action Plan as an area for development for federal departments and industry.
-

- In June 2022, ARC announced a collaboration with engineering, procurement, and construction management and strategic services firm Hatch for the deployment of their advanced SMR technology in New Brunswick. Hatch will use its engineering technology and capabilities to design ARC's power plants in a fully digital format, with a focus on modular design to maximise factory production and scalability. Hatch will play a key role in the integration of ARC's advanced technology for heavy industry using high-quality process heat which includes optimisation of the technology for clean hydrogen and ammonia production.
- In July 2022, Canadian Nuclear Laboratories (CNL), announced it had entered into a collaborative agreement with ARC. Funded through CNL's Canadian Nuclear Research Initiative (CNRI), the agreement will include work to advance the fuel development and manufacturing processes to produce fuel for ARC's aSMR technology.

Moltex Energy Canada:

- The Moltex SMR design under development in New Brunswick has a novel use of recycled nuclear fuel as its fuel source.
-

- In March 2021, the federal government provided $51 million in funding to Moltex for its SSR-W 300 SMR development. The Strategic Innovation Fund (SIF) provided $48 million, and the Atlantic Canada Opportunities Agency (the Agency) provided $3 million, which will be matched by Moltex.
- Moltex has completed Phase 1 of the Canadian Nuclear Safety Commission's pre-licensing vendor design review for its 300-MW stable salt reactor-waste burner (SSR-W). The CNSC concluded that Moltex has a clear understanding of the Canadian regulatory requirements and expectations.

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)

- In April 2022, SNC-Lavalin and Moltex announced their partnership to advance the development and deployment of SMR technology in Canada.

Position of ACOA

- The Agency continues to advocate for federal departments to consult with industry in determining their position on which SMR technologies should be supported. Since utilities will be the first market for these technologies, they are best positioned to speak to the market appeal of the various proposed designs.

-

- Please see:
    - Appendix A - SMR Development in Canada.
    - Appendix B - Agency investments in SMR technology cluster in New Brunswick.

s.20(1)(b)

s.20(1)(d)

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

APPENDIX A

Small Modular Reactor (SMR) Development in Canada

Role of SMRs in clean energy supply

- SMRs are small in size and power output compared to conventional power reactors, producing one to 300 megawatts (MW) of electricity, as opposed to the 700-900 MW produced by traditional reactors. They are manufactured in factories and transported on-site afterward for lower capital costs as well as ease of installation, operation and removal.
- SMRs use nuclear power, which is a non-emitting and efficient way to generate electricity and designed for simplified safety and proliferation resistance.
- The development of SMR technology offers a solution to solve New Brunswick's clean, baseload power-generation needs and enable the province to play a central role in the advancement of the Clean Power Roadmap for Atlantic Canada.
- Potential economic and research expertise spin-offs in the development of SMR technology could be significant, as could supply-chain opportunities for New Brunswick and Canadian companies.

New Brunswick-based developments in SMRs

- New Brunswick is currently home to the development of two reactor designs undertaken by ARC and Moltex. Both are considered "Generation IV" reactors, attractive to the market because they are safer reactor versions, mitigating the risk of a thermal nuclear incident.
- In the State of the Province address in January 2021, New Brunswick Premier, Blaine Higgs, underscored his commitment to non-emitting sources of energy and announced:
    - a $20 million investment in ARC (with $30 million in matching private funds);
    - a continued partnership with the federal government to support Moltex; and
    - the activation of an underutilized supply chain to participate in a worldwide SMR market.
- The Agency has made significant investments in the SMR technology cluster in New Brunswick. (See Appendix B).

Global context

- Other countries, notably the United States, the United Kingdom and France are taking steps to support SMR development.
    - U.S. – The Department of Energy announced a $600 million matched-funding package (over seven years) from the Department of Energy's Advanced Reactor Demonstration Program.
    - U.K. – A $294 million spending package for SMRs was announced, to be matched by private-sector investment and delivered by the government agency UK Research and Innovation.
    - France – President Macron recently unveiled a five-year, 30 billion euro investment plan for developing innovative technology and industrial activity, including building SMRs, electric cars and greener airplanes.

APPENDIX B

ACOA investments in the SMR technology cluster in New Brunswick

$ 3 million – Moltex (conditionally repayable)

- This project will help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume, and toxicity of spent nuclear waste while producing clean electricity at low cost.

$ 5 million – NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will engage with First Nations and the public as part of this project.

$ 561,750 – University of New Brunswick's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is meant to boost the centre's capacity to partner with private industry in research and development.

$ 13,750 – North Shore Micmac District Council (non-repayable)

- This project supports strategic planning for Indigenous involvement in SMR development and deployment in New Brunswick.

$ 786,250 – Organization of Canadian Nuclear Industries (OCNI) (non-repayable)

- This project will develop the Small Modular Reactor (SMR) supply chain with existing New Brunswick SMEs through the Ready4SMRNuclear program. Phase 1 will focus on training, education, and engagement. Supply chain and manufacturing consultants will assess and assist SMEs in achieving the necessary standards and official certifications to be part of the future of the nuclear industry in New Brunswick and Canada by implementing nuclear QA programs, nuclear management systems and advanced manufacturing.

$ 1,928,005 – The University of New Brunswick's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project will establish an Advanced Nuclear Reactors Laboratory (ANRL) to support the development and design of first-of-a-kind commercial demonstrations of small modular reactors (SMRs). Modernize and update key systems, equipment and test processes in order to allow CNER to pursue its work with the legacy nuclear industry and expand its mandate within a growing New Brunswick SMR nuclear energy cluster.

From:	Marc LeBlanc
To:	Francis McGuire
Cc:	Angele Bastarache; Rose Croteau;
Subject:	FOR APPROVAL - Backgrounder on SMR (DT605331)
Attachments:	Backgrounder-SMRs.docx
Sent:	1/27/2022 2:36:49 PM

Francis, attached is the update on SMR, as requested below. Approved by Kalie.

For your approval.

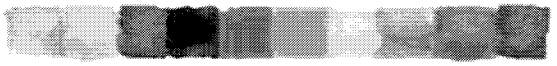
Merci
Marc

De : Daryell Nowlan <Daryell.Nowlan@ACOA-APECA.GC.CA>
Envoyé : 21 janvier 2022 14:19
À : Martine Cantin <Martine.Cantin@ACOA-APECA.GC.CA>
Cc : Darlene Scott <Darlene.Scott@ACOA-APECA.GC.CA>; Kasi McMicking <Kasi.McMicking@acoa-apeca.gc.ca>; Kevin Dubé <Kevin.Dube@ACOA-APECA.GC.CA>; Wade AuCoin <Wade.AuCoin@ACOA-APECA.GC.CA>
Objet : Taskings

Francis asked me to pass on the following requests from Guy. **Due for Francis' approval on Friday Jan 28 noon:**

1. A list of significant speaking/attendance events for the minister over a 6-9 month period (ie: trade show, major sector events etc) - Task to Kevin (already discussed with him)
2. A list of key advocacy file with a couple of points (ie: specific projects or initiatives such as the Bio accelerator or the SMR projects) – Task to Kasi in consultation with regions and PPC
3. Update on SIF /projects – Kasi
4. Update on SMR – Kalie

Vice-President / Vice-président
Policy, Programs and Communications / Politiques, Programmes et Communications
Atlantic Canada Opportunities Agency (ACOA) / Agence de promotion économique du Canada atlantique (APECA)
Government of Canada / Gouvernement du Canada
506-851-3805 Daryell.Nowlan@acoa-apeca.gc.ca he / him / il



I respectfully acknowledge the lands on which I work as unceded territories of the Wolastoqiyik, Mi'kmaq and Peskotomuhkati.
Je reconnais respectueusement les terres sur lesquelles je travaille en tant que territoires non cédée des Wolastoqiyik, des Mi'kmaq et des Peskotomuhkati.

BACKGROUNDER

Security classification
N/A
Reference No.
DT605331
Date submitted:
January 27, 2022

Subject: Development of advanced small modular reactors (SMR)

Purpose:

- To provide an update on recent developments with respect to advanced SMRs.

Background:

- The development of SMRs is a New Brunswick-based initiative, slated for deployment by NB Power beginning in the late 2020s, and represents an opportunity to support the country's move toward its vision for net-zero emissions.
- The Government released Canada's Small Modular Reactor Action Plan in December 2020.
- The magnitude of the investments required necessitates coordination with and funding from other federal departments to achieve the development and deployment of SMRs across Canada.

Current status:

- New Brunswick is well positioned to advance SMR technology because of its academic and scientific expertise in nuclear energy. Its existing nuclear site at Point Lepreau can accommodate multiple SMRs, and the utility has the skilled professionals required to effectively manage the addition of more nuclear generating assets.
- The Government of Canada released Canada's Small Modular Reactor Action Plan in December 2020, which indicates, "innovation in the nuclear sector plays a critical role in reducing greenhouse gas emissions and delivering good, middle-class jobs as Canada moves toward a low-carbon future."
- The release of the SMR Action Plan heightened expectations for federal funding to support SMR development among provincial and territorial governments, Indigenous people, organized labour, utilities, industry, innovators, academia and civil society.
- While the release of the SMR Action Plan recommended the provision of federal and

provincial funding for SMR development, there was no funding allocated for SMRs in Budget 2021, leaving the Strategic Innovation Fund (SIF) as the only likely funding source.

- To date, Innovation, Science and Economic Development Canada (ISED) has approved two significant SMR investments under the SIF: one for Moltex ($47.5 million), and one for Terrestrial Energy ($20 million).

- Since 2018, NB Power has been working with ARC Canada and Moltex Energy to advance Stream 2 – Generation IV Grid-size SMR technology. These advanced SMRs are being developed for use in Canada and internationally.

- By fostering a strong collaboration among the various research, manufacturing, federal and provincial agencies, New Brunswick seeks the completion of an initial ARC Clean Energy demonstration unit by 2030, and Moltex Energy's waste recycling facility and reactor, operational by the early 2030s.

- With these timelines, New Brunswick will be supporting the additional clean energy needs within Atlantic Canada and with partnering jurisdictions starting in 2030.

- According to NB Power, utilities in Ontario, Saskatchewan and Alberta are closely following the development of the ARC unit in New Brunswick.

Recent developments:

ARC Clean Energy

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s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

Moltex

- The main advantage of the Moltex SMR design under development in New Brunswick is its novel use of recycled nuclear fuel as its fuel source.

-

NB Power

- NB Power is actively talking with other Canadian utilities and working proactively to get the "right" players around the table to move SMR development forward.

- NB Power is currently challenged to progress at the same speed with the volume of regulatory work required to keep pace with advances in SMR development.

- NB Power sees the potential for deployment of additional ARC units in northern New Brunswick to help transition away from coal and allow a reliable source of clean, base-load energy to fuel current needs and future industrial development in that region, such as hydrogen/ammonia production. Deployment in northern New Brunswick is considered achievable by the mid-2030s.

- NB Power is also looking to SMRs as replacements for the Point Lepreau nuclear facility, which is scheduled to reach its end-of-life in the early 2040s. The facility currently supplies approximately 39% of the province's energy needs as well as baseload power supply to Prince Edward Island. The development and deployment of SMR technology will help the broader Atlantic region maintain its critical energy supply while providing mitigation from the intermittence of other renewable energy sources.

- As electrification of the transportation system continues to ramp up, the utility projects significant increases in the demand for electricity. There is a need for strategies not only to replace current supply but also to scale up clean energy production to meet the demands of increased electrification.

Position of ACOA:

- The Agency continues to advocate that federal departments should consult industry in determining their position on which SMR technologies should be supported. Since utilities will be the first market for these technologies, they are best positioned to speak to the market appeal of the various designs being proposed.

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s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(a)
s.21(1)(b)
s.21(1)(c)

- Please see:
    - Annex A for background information on SMR development in Canada.
    - Annex B for information regarding ACOA investments in SMR technology in New Brunswick
    - Annex C for additional background on ARC Clean Energy Canada

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

APPENDIX C

Additional background – ARC Clean Energy Canada

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- ARC also raised the issue of fuel supply that federal coordination could help address.
- In November 2021, ARC made a presentation to Global Affairs Canada and Natural Resources Canada concerning the secure supply of high-assay, low-enriched uranium (HALEU) fuel. Most North American reactor designs will require access to this fuel, including ARC's.
- At present, the only available source of HALEU fuel is through imports from Russia and further conversion at U.S.-based labs. While there is potential for a made-in-Canada supply in the long term, initial supply will need to come internationally to meet industry deployment timelines.
- The fuel source issue was highlighted in the SMR Action Plan as an area for development for federal departments and industry.

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

From:	Francis McGuire
To:	Kalie Hatt-Kilburn; Rose Croteau;
Subject:	FW: call with Seamus O Regan's Chief of staff
Attachments:	SMR Update_March 19 2020.docx
Sent:	3/20/2020 10:04:00 AM

So the attached note should be sent to the Chief of Staff but let's send it late this afternoon... like around 4 pm our time.

Rose can you indicate that I wanted to have a "personal" conversation with the Chief of Staff and that I won't have anyone else on the call. Cheers

From: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Sent: Thursday, March 19, 2020 7:13 PM
To: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Cc: Croteau, Rose (ACOA/APECA) <rose.croteau@canada.ca>
Subject: RE: call with Seamus O Regan's Chief of staff

Francis,

As requested, here is the updated note on the SMR file.

I touched base with Rory and he has not heard from ISED. I shared with him that we met with them to stress the importance of the file moving and highlight the regional significant of the file in the broader energy landscape for Atlantic Canada. He appreciated the update and plans to reach out to Andrea or her DG to see if there is any movement. His expectation is that now that the budget is postponed, they'll go into a wait and see mode while they wait for additional funds.

For ease of review, highlighted below are the additions made to the document.

-
- It is important to note that SMR development remains an important priority for Premier Blaine Higgs as a long term supply of clean, baseload energy for the province and for the rest of the Atlantic region as outlined in the Atlantic Clean Power Roadmap.
-
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s.20(1)(b)
s.21(1)(a)
s.21(1)(b)
s.21(1)(c)

- On February 26, 2020, Moltex and the North Shore Micmac District Council (NSMDC) announced a partnership on SMR development. This represents an early stage engagement of the First Nations to provide them with a seat at the table at project outset. .

If you need anything further, please let me know.

Kalie

From: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Sent: Thursday, March 19, 2020 3:47 PM
To: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Cc: Croteau, Rose (ACOA/APECA) <rose.croteau@canada.ca>
Subject: call with Seamus O Regan's Chief of staff

I have a call with him on Monday. I want to do it one –on-one but I think that we could send him in advance a quick note like the one we had for ISED. Keep it short though. Can you do that for tomorrow and Rose can forward to the Chief of staff.

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(a)
s.21(1)(b)
s.21(1)(c)

Small Modular Reactors

Topic

- Funding proposals under SIF for the development of small modular reactors (SMR) in Atlantic Canada.

Background

- Small Modular Reactors (SMRs) are proposed to be a smaller and less expensive alternative to conventional nuclear fission reactors.
- In August 2018, the provincial government of New Brunswick created a Nuclear Research Cluster and signed MOU's with two companies developing Small Modular Reactor (SMR) technology, ARC and Moltex. Through the New Brunswick Energy Solutions Corporation (NBESC), the government of New Brunswick (GNB) invested $10 million ($5M for ARC / $5M for Moltex) to foster research and development in these two SMR designs.
- GNB hopes that this provincial investment in SMR technology development will lead to a demonstration SMR unit being constructed at Point Lepreau - after completion of all Vendor Design Review (VDR) stages, regulatory requirements and adequate consultation.

Significance of SMR Development to Atlantic Canada

- SMRs are of particular interest to New Brunswick as a source of safe, clean and reliable baseload energy, which is of concern once the Belledune coal-fired generating station comes offline in 2030 and the Point Lepreau nuclear facility reaches its end of life in 2040.
- Currently, all four Atlantic provincial governments and utilities are collaborating along with Quebec on an Atlantic Clean Power Roadmap. SMRs are included among the future generation options being considered to supply the future clean energy needs of an interconnected regional grid, particularly as it relates to addressing baseload concerns.

SIF Program Requests

- Given the degree of technical sophistication involved in assessing proposals for the nuclear industry, NRCan has been engaged to provide advice in consideration of these and other SMR-related asks.

Key Considerations

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

- It is important to note that SMR development remains an important priority for Premier Blaine Higgs as a long term supply of clean, baseload energy for the province and for the rest of the Atlantic region as outlined in the Atlantic Clean Power Roadmap.

- On February 26, 2020, Moltex and the North Shore Micmac District Council (NSMDC) announced a partnership on SMR development. This represents an early stage engagement of the First Nations to provide them with a seat at the table at project outset.

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

s.21(1)(c)

From:	Francis McGuire
To:	Kalie Hatt-Kilburn
Subject:	FW: Do you have the paper that I sent to Dominique on the Atlantic loop please
Attachments:	Zero Emissions by 2050 in Atlantic Canada - September 1 2020.docx
Sent:	11/4/2020 4:58:00 PM

Got it.

From: LeBlanc3, Marc (ACOA/APECA) <marc.leblanc3@canada.ca>
Sent: Wednesday, November 04, 2020 4:56 PM
To: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Subject: RE: Do you have the paper that I sent to Dominique on the Atlantic loop please

Voici

From: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Sent: Wednesday, November 04, 2020 4:51 PM
To: LeBlanc3, Marc (ACOA/APECA) <marc.leblanc3@canada.ca>
Subject: Do you have the paper that I sent to Dominique on the Atlantic loop please

Zero Emission by 2050 in Atlantic Canada

September 2020

The Goal

To achieve zero emissions by 2050 in Atlantic Canada first and foremost

The Challenge

The Context

s.21(1)(a)
s.21(1)(b)
s.21(1)(c)

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

THE PLAN

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

From:	Francis McGuire
To:	Tremblay, Jean-Francois (NRCAN/RNCAN); Kennedy, Simon (ISED/ISDE);
Subject:	FW: France investing in SMRs
Attachments:	Meeting note - Call with NR Can - October 2021.docx
Sent:	10/21/2021 4:00:00 PM

I thought that I would share my briefing note with you. Difficult topic!

From: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Sent: Thursday, October 21, 2021 2:41 PM
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Subject: FW: France investing in SMRs

Francis, attached is your meeting note for your call scheduled for tomorrow at 2:00 pm.

ACOA Participants

- Francis McGuire
- Kalie Hatt-Kilburn

External Participants

- Simon Kennedy, DM ISED
- Jean-François Tremblay, DM NRCan
- Michael Vandergrift, DM PCO
- Mollie Johnson, ADM NRCan
- Lisa Khouri, MINO Chief of Staff, NRCan
- Chan Quang, Senior Policy Advisor, NRCan
- Cathy Chen, Senior Policy Analyst, NRCan

From: Francis McGuire
Sent: Wednesday, October 13, 2021 3:56 PM
To: Tremblay, Jean-François <Jean-Francois.Tremblay@NRCan-RNCan.gc.ca>; Kennedy, Simon (ISED/ISDE) <simon.kennedy@ised-isde.gc.ca>
Cc: Michael.Vandergrift@pco-bcp.gc.ca; Kaminsky, Colette (ISED/ISDE) <colette.kaminsky@ised-isde.gc.ca>; Andrew Noseworthy <Andrew.Noseworthy@ACOA-APECA.GC.CA>; Johnson, Mollie <Mollie.Johnson@NRCan-RNCan.gc.ca>
Subject: RE: France investing in SMRs

Jean-Francois, will you take the lead to organize it?

From: Tremblay, Jean-François <Jean-Francois.Tremblay@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 13, 2021 3:31 PM
To: Kennedy, Simon (ISED/ISDE) <simon.kennedy@ised-isde.gc.ca>
Cc: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>; Michael.Vandergrift@pco-bcp.gc.ca; Kaminsky, Colette (ISED/ISDE) <colette.kaminsky@ised-isde.gc.ca>; Andrew Noseworthy <Andrew.Noseworthy@ACOA-APECA.GC.CA>; Johnson, Mollie

<Mollie.Johnson@NRCan-RNCan.gc.ca>
Subject: Re: France investing in SMRs

Sure.

Sent from my iPhone

> On Oct 13, 2021, at 10:26, Kennedy, Simon (ISED/ISDE) <simon.kennedy@ised-isde.gc.ca> wrote:
>
> I would be happy to participate in a meeting as you see fit.
>
> Simon
>
> Simon Kennedy
> Deputy Minister
> Innovation, Science and Economic Development Canada
> 235 Queen Street
> Ottawa, Ontario
> K1A 0H5
> Phone: 343-291-2888
>
> ---
>
> Simon Kennedy
> Sous-ministre
> Innovation, Sciences et Développement économique Canada
> 235, rue Queen
> Ottawa (Ontario)
> K1A 0H5
> Tél: 343-291-2888
>
> (pronoun: he/him) (Pronom d'usage : il)
>
> **From:** Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
> **Sent:** October 13, 2021 9:58 AM
> **To:** Tremblay, Jean-Francois (NRCAN/RNCAN) <jean-francois.tremblay@canada.ca>; Kennedy, Simon (ISED/ISDE) <Simon.Kennedy@ised-isde.gc.ca>
> **Cc:** michael.vandergrift@pco-bcp.gc.ca
> **Subject:** France investing in SMRs
>
> As you know , the Province of New Brunswick has placed a high priority on developing and deploying SMR technology. SIF, NRCan and ACOA (to a smaller extent) have been investing in this area. Pre COVID, the federal government released an SMR Road Map. With France joining the fray and a new

government , it might be useful to have a meeting to discuss what our next steps might be.

Comments. merci

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

MEETING NOTE

To:	Francis McGuire	Security classification N/A
From:	Kent Estabrooks	Reference No. DT602392
		Date submitted October 21, 2021

Subject:	***SMR Development – Next Steps***
Meeting Date:	Friday, October 22, 2021 From 2 p.m. to 2:45 p.m.
Location:	MS Teams
Participants:	ACOA Participants • Francis McGuire • Kalie Hatt-Kilburn External Participants • Simon Kennedy, DM ISED • Jean-François Tremblay, DM NRCan • Michael Vandergrift, DM PCO • Mollie Johnson, ADM NRCan • Lisa Khouri, MINO Chief of Staff, NRCan • Chan Quang, Senior Policy Advisor, NRCan • Cathy Chen, Senior Policy Analyst, NRCan

Meeting Objective(s):

- This meeting offers an opportunity to discuss the development of SMR technology and next steps.

Background:

- Canada has declared its intention to be at the forefront of a new age of nuclear energy, embracing the potential of Small Modular Reactor (SMR) technology. The previous federal Minister responsible for Natural Resources Canada was quoted as saying "there is no credible path to net-zero emissions without nuclear power."
- The Government of Canada released Canada's SMR Action Plan in December 2020 to advance the safe and responsible development and deployment of SMRs through a pan-Canadian approach.
- The SMR Action Plan indicates that "innovation in the nuclear sector plays a critical role in reducing greenhouse gas emissions and delivering good, middle-class jobs as Canada moves toward a low-carbon future."

Key Facts and Considerations:

- The release of the SMR Action Plan heightened expectations for federal funding to support SMR

development amongst provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society.
- While the release of the SMR Action Plan recommended the provision of federal and provincial funding for SMR development, there was no funding allocated to SMRs in Budget 2021.

Global Context:
- Other countries around the world, notably the United States, the United Kingdom and France are taking steps to support SMR development.
    - U.S. – the Department of Energy announced a $600 million matched-funding package (over seven years) from the Department of Energy's Advanced Reactor Demonstration Program.
    - U.K. – a $294 million spending package for SMRs has been announced to be matched by private-sector investment and delivered by the government agency U.K. Research and Innovation.
    - France – President Macron recently unveiled a 5-year 30 billion-euro investment plan for developing innovative technology and industrial activity, including building SMRs, electric cars and greener airplanes.

Canadian Investments in SMRs:
- To date, ISED has approved two significant SMR investments under the Strategic Innovation Fund (SIF) for Moltex ($47.5M) and Terrestrial Energy ($20M).
- ACOA has also made significant investments in the SMR technology cluster in New Brunswick (see Appendix A)

New Brunswick-based Developments in SMRs:
-
-
-
-
- NB Power has raised the issue of ensuring a stable and secure supply of High Assay Low Enriched Uranium (HALEU) fuel needed to power the majority of SMR reactor designs currently under development in Canada. Currently, the only available supply would come from Russia and would need to be processed in the US, making this a highly complex issue, with significant regulatory hurtles. Long-term, there may be the potential for such fuel to be produced in Canada, ensuring a secure supply, but a concerted strategy to do so would be required.

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

- It is our understanding that a working group has been established to prepare a report for government and industry leaders that looks at the issue of stable and secure supply of SMR fuel. According to NB Power, maintaining momentum on this is essential because companies will need to move very soon to secure future fuel supply and will need to know that they have the regulatory support required to make such commitments.

Position of ACOA:

- The development of SMR technology offers a solution to solve New Brunswick's clean, baseload power generation needs and enable the province to contribute to play a central role in the advancement of the Clean Power Roadmap for Atlantic Canada.
- The development of SMR technology in New Brunswick represents an important opportunity to support Canada's leadership in this global industry, and enable the country to move toward its vision for net-zero emissions.
- While ACOA is using its full range of programming options and pathfinding capacity to assist in the development of the industry, the magnitude of the investments required necessitates coordination with and funding from other federal departments to achieve development and deployment of SMRs across Canada.

Key Points to Raise:

- With the release of the SMR Action Plan, expectations for investment in this space have been raised amongst all stakeholders.
- Early-mover advantage is critical to capturing global market share. Potential economic and research expertise spin-offs of SMRs could be significant, as could the supply chain opportunities for New Brunswick and Canadian-based companies.
- Considerable and timely government investments are required to develop and validate SMR technology, secure the establishment of the industry in New Brunswick, and retain IP inside Canada.
- Given no new money for SMRs was announced in Budget 2021, it would appear that ISED's SIF would be the most appropriate source of funds for SMR-related projects.
-

- The utilities (OPG, Bruce Power, NB Power and SaskPower) have estimated that approximately $640M will be required to advance the SMR projects they are currently pursuing.
    -

- A stable and secure supply of fuel for SMRs will be a key factor in enabling future SMR deployment in Canada. It is our understanding that a working group has been pulled together to prepare a report for government and industry leaders that looks at the issue of stable and secure supply of SMR fuel – is there anything that you can share with respect to addressing and overcoming gaps in the supply chain to met SMR deployment timelines?

s.21(1)(b)

s.21(1)(c)

Appendix A: ACOA investements in the SMR technology cluster in New Brunswick

$3 million – Moltex (conditionally repayable)

- This project will help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

$5 million – NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site in New Brunswick. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will also be engaging with First Nations and the public as part of this project.

$561,750 – UNB's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is intended to boost the centre's capacity to partner with private industry in research and development.

$13,750 – North Shore Micmac District Council (NSMDC) (non-repayable)

- This project is supporting strategic planning for Indigenous involvement in SMR development in NB.

From:	Francis McGuire
To:	
Subject:	FW: Letter addressed to the PM from utility CEOs on SMR
Attachments:	CEO letter on SMRs FINAL (003) Signed.pdf
Sent:	6/18/2020 2:48:33 PM

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: "Noseworthy, Andrew (ACOA/APECA)" <andrew.noseworthy@canada.ca>
Date: 2020-06-18 11:20 a.m. (GMT-04:00)
To: "McGuire, Francis (ACOA/APECA)" <francis.mcguire@canada.ca>, "Estabrooks, Kent (ACOA/APECA)" <kent.estabrooks@canada.ca>
Subject: FW: Letter addressed to the PM from utility CEOs on SMR

Just I case you have not seen this

s.19(1)

Bruce Power | Énergie NB Power | Ontario Power Generation | SaskPower Powering our future

June 16, 2020

Prime Minister of Canada
The Right Honourable Justin Trudeau
Prime Minister of Canada
Langevin Block
Ottawa, Ontario
K1A 0A2

Canadian Opportunities for Deployment of Small Modular Reactors post COVID-19

Dear Prime Minister,

As the CEO's of the major electricity utilities of New Brunswick, Ontario and Saskatchewan, we continue to actively support Federal and Provincial Government efforts and initiatives that seek to contain the COVID-19 virus and sustain the livelihood of Canadians. Equally, we recognize the critical importance that as Canada emerges from this pandemic, we need to collectively re-energize the economy to sustain and create stable jobs for Canadians. Today we draw your attention to a key enabler to achieve that – implementation in Canada of new nuclear power technology called Small Modular Reactors (SMRs) which will deliver clean, safe, reliable, and competitively priced power. We appreciate the federal government's leadership to-date in convening an SMR Roadmap with interested Provinces, Territories and utilities, as well as your recent commitment to develop an SMR Action Plan later this year. As our utilities make investments to advance SMR projects in Canada, Federal Government financial investment is needed in the short-term to continue to support the economic and environmental benefits this new clean energy technology can bring. Without a commitment of Federal financial support in 2020, and over the next few years, these SMR projects are not likely to proceed. In this letter we outline the requested commitment and the benefits to Canada. A complete summary of the requested commitment is provided in Appendix 3.

Canada as a World Leader in Innovation to Stimulate the Economy

SMRs could be a source of clean, safe and affordable energy, opening opportunities for a resilient, low-carbon future and capturing benefits for Canada and Canadians. Markets around the globe are signalling a need for clean energy and smaller, simpler, and less expensive nuclear energy. At the same time, international experts are telling us that new nuclear energy is needed to combat global climate change and meet our goal of net-zero emissions by 2050.

That's why we're working together to enable nuclear energy –and innovative SMRs – to play a key role in Canada and the world's low-carbon future. Canada's SMR Roadmap gave us a path for success, and we have been working together to make Canada the world leader in this area of high-tech innovation. **For Canada, this could mean anchoring jobs, intellectual property and supply chains in a global market estimated to be valued at over $150B by 2040**; and delivering on our climate change and clean energy commitments while opening opportunities for regional development, and enabling a constructive dialogue with northern and Indigenous communities on remote energy issues.

In February 2020, the Federal Minister of Natural Resources committed to take next steps on the recommendations in Canada's SMR Roadmap by preparing an SMR Action Plan later this year. We look forward to continuing to collaborate with our Federal, Provincial and nuclear industry partners to advance SMR deployment, including the need for cost-sharing and other measures to mitigate the risks of developing this innovative technology.

An Energy Strategy to Support Local and Remote Communities

Ontario Power Generation (OPG), Bruce Power, NB Power and SaskPower have been working collectively and investing over the last two years to develop three streams of SMR projects. The three streams of projects will help create flexibility and growth opportunities for communities connected to the grid (Stream 1), will support advancement in nuclear technology and innovative methods to reduce nuclear by-products (Stream 2), and will bring affordable, clean energy to remote communities (Stream 3).

OPG, Bruce Power and SaskPower will complete design selection for a fleet of on-grid "Stream 1" reactors in 2021 with a first power goal as early as 2028 in Ontario and then in Saskatchewan in the early 2030s. NB Power continues to develop 2 advanced reactor designs in Stream 2 with an expected deployment timeline in the early to mid 2030's. Two very small modular reactor designs and deployment methods for Stream 3 use in industry and the far north have advanced to the point where we expect to see prototype deployment by the mid 2020s with production deployment well before the end of the 2020s. The advances over the past year now put us in a position to bring forward some of this SMR work and provide additional near-term economic stimulus - this is in addition to the continuing stimulus into the future as the SMR industry expands beyond the initial deployments. Evidence of financial support from the Federal Government will continue to draw private investment and grow more jobs.

Investment Today to Build a Stronger Economy for Tomorrow

In previous presentations made to the Federal Government, in December 2019 and January 2020, we have proposed that the Federal Government provide funding to the "three streams" of SMR development and deployment in Canada. The proposals outlined the significant economic opportunities available to Canada through the development and deployment of SMR technology by sharing the cost with industry and private investors. There is an opportunity to advance the timing of this work to the long-term advantage of Canada while also providing significant economic stimulus to Canada in the very short term. However, the current economic uncertainty is a risk to that opportunity and the economic benefits of this innovative technology. SMR vendors are primarily small, start-up, high-tech companies, and as such, tend to be financially vulnerable. Without some stimulus support, it is likely that many of these companies may not survive the financial impacts of the current pandemic. **A clear Federal signal through investment in the 2020 fiscal year is needed in addition to industry investment.** The window of opportunity is now. Collectively, we need to make key investments now to achieve economic strategic goals that result in a more resilient domestic economy with a stronger domestic supply chain and manufacturing sector to safeguard Canadian interests. Appendix 1 details an earlier request through the Canadian Nuclear Association (CNA). Appendix 2 speaks to the benefits of such Federal investment.

Highlighted below is the minimum short-term financial support of $77.5M required from the Federal Government by the fall of 2020 and another $154.25M to the end of 2021 to advance the development of the three SMR streams in Canada and avoid loss of the investments made by our four utilities to date. This Federal investment is part of the overall request for $643M over five years presented to the Government of Canada in January 2020, which is summarized in Appendix 3.

- Stream 1 – On-grid SMRs

$3M in Federal funding is required in 2020 to support the development and approval of plans for SMR site selection, technology selection, licensing, and impact assessment in Saskatchewan and to support early public and Indigenous engagement. $13M in Federal funding is needed in 2021, matched by Saskatchewan, to support site and technology selection, development of a License to Prepare a Site, development of Impact Assessment and related stakeholder and Indigenous engagement. Key to reducing the risk of introducing SMRs into Saskatchewan is the First of a Kind (FOAK) deployment at the Darlington site in Ontario. A Federal commitment of $10M in 2021 is required to support licensing costs and preparation of the construction licence application, to defer FOAK project costs incurred by OPG on behalf of pan-Canadian deployment. We also believe the Federal Government should provide up to $18M support in 2021 to CNSC for first of a kind regulatory issues and to offset costs to licence first of a new design; for capacity building to enable the CNSC to obtain the required skill set to review and licence SMR technology increasing jobs at CNSC; and for Engagement programs. Stream 1 SMRs are the "ready soon" designs which Ontario and Saskatchewan would deploy to have a near-term substantial impact on GHG emissions and supply chain job benefits to Canada.

- Stream 2 – Advanced Reactor Designs

$70.5M in Federal investment is necessary in 2020 and $103.25M in 2021 to keep the SMR development option in New Brunswick viable. Federal investment will attract comparable private investment and allow the SMR companies to progress their preliminary design, VDR-2, waste discussions and project planning. NB Power would support environmental studies, engagement and technical support for the SMR developers, as well as pre-licensing activities for SMR deployment in New Brunswick. Stream 1 and 2 designs are complementary and synergistic. Stream 1 can enable relatively quick decarbonisation. Stream 2 Advanced Reactor designs are farther from deployment and therefore not practical for Stream 1 implementation in Ontario and the first units in Saskatchewan. On the other hand Stream 2 SMR designs have the potential to bring complementary and long-term benefits to Canada which the "ready soon" Stream 1 designs do not, e.g., the potential to reduce nuclear fuel waste. Stream 2 is expected to have long-term export market potential for Canada beyond what Stream 1 would bring.

- Stream 3 – Very Small Reactors

Stream 3 reactors are much smaller and serve a completely different market (off-grid; replacement of diesel in remote communities or for mines; or for mobile platforms such as shipping) than Stream 1, with a substantial export market potential.

OPG (Global First Power) is supporting a First-of-a-Kind commercial demonstration of the GFP vSMR design. $2 M in Federal funding in 2020 and $10M in 2021 is needed to demonstrate Federal commitment to the OPG-supported demonstration at Canadian Nuclear Laboratories (CNL).

In a separate industry effort an eVinci demonstration is being considered and a Strategic Innovation Fund (SIF) application in support is in progress. The eVinci-related Strategic Innovation Fund will support eventual deployment in Canada, but to advance economic stimulus completion of a demonstration build can be brought forward to the near term with potential availability of a commercial eVinci power source shortly after 2025. Additional funding beyond the support of the development activities through SIF will be required to achieve this. $2M in Federal funding in 2020 is requested to develop a detailed plan which will outline the specific funding and timing requirements to demonstrate and deploy a Federally-sponsored eVinci commercial prototype in Canada, including potentially at CNL Chalk River.

Supporting a Pan-Canadian Approach to Fight Climate Change

There is a large potential worldwide market for clean, non-emitting SMRs, where Canada is currently a leader. However, this advantage could be fleeting as other countries like the U.S. and U.K. have large government funding programs for SMRs. Government investment in the deployment of vSMR prototypes at CNL or elsewhere, and larger SMRs at OPG's Darlington site, in Saskatchewan and in New Brunswick could ensure Canadian supply chain competitiveness for the future. However, the situation is fragile. **Without a clear quantifiable demonstration from the Federal Government of its support for nuclear technology, other public sector and private sector investment will likely not materialize in time to prevent loss of the opportunity for Canada. SMRs present an opportunity for the Federal Government and Provinces to work together on projects that are good for the economy, good for the environment and good for Canadians.** In fact, our request is completely in line with the Memorandum of Understanding signed Dec 1, 2019 by the Premiers of Saskatchewan, New Brunswick and Ontario, to work collaboratively on deployment of SMRs across Canada. One of the key elements of the MOU is to work cooperatively with the federal government to provide support for SMRs as identified in the SMR Roadmap and as previously requested by our utilities. Specifically, the Federal Government needs to show, by investing in key SMR projects, that nuclear power is a clean energy priority.

- Federal financing to support SMR projects would show Provincial Governments and investors that clean nuclear energy is a technology the Federal Government will use to fight climate change. Otherwise, those jurisdictions and investors are unlikely to go it alone especially with the financial challenges arising due to the COVID pandemic. Federal stimulus will enable additional private investment and lock-in the strategic, economic and environmental benefits of Canada becoming a first-mover on SMRs.

- A strong Federal partner in the pan-Canadian, fleet-based deployment of SMRs is considered foundational in the feasibility of SMR deployment in Saskatchewan. In the absence of SaskPower's proposed Federal/Provincial cost-sharing of project development costs, deployment of SMRs will not be feasible in Saskatchewan and SaskPower will advance with the construction of significant new natural gas generation making deeper reductions in SaskPower's GHG emissions after 2030 much more expensive and difficult to achieve.

- The advantages to Canada's supply chain are enabled by building a fleet of SMRs, not by building a single SMR in Ontario. Suppliers need to fill their order books by replicating orders in Saskatchewan and potentially in other provinces. In addition, Canadian suppliers' ability to leverage a first-mover advantage in Ontario, into being a world-wide export supplier, is decreased if not lost if there are no more Canadian orders outside Ontario. SMR companies based in New Brunswick will not be able to attract private investment necessary to ever deploy a new reactor and thus never have an opportunity to achieve the identified export market potential and business development.

- Similarly, Alberta's opportunity to deploy nuclear as part of decarbonisation of the oil sands will be dramatically and negatively impacted if the Federal government and other Provinces do not invest in new nuclear technology. There is little chance that Alberta will proceed with SMR development if other Provinces do not.

- Without Federal support this year to the SMR developers in New Brunswick, one or both companies are expected to close their offices in the next year, and the opportunity for Canada to gain the environmental and economic benefits from these technologies will be lost

- The first, and to date only, SMR project announced in Canada will fail if the Canadian government does not provide some funding. The Global First Power vSMR project will not proceed without any Federal support. Failure of this first vSMR project with its strong support from OPG will send a signal that will discourage all others from advancing projects as well as efforts by CNL to attract SMRs to the Federally-owned (AECL) site. Failure to demonstrate a viable SMR project in the next few years would mean mining companies and remote communities will not include nuclear in their planning as a potential tool to replace diesel and reduce their carbon footprint. AECL's efforts to redefine the site as a Canadian Centre of Excellence for nuclear will likely fail as well without the draw of new nuclear (SMR) technology.

We believe the Federal Government has a variety of tools which could be used to deploy such financing. One vehicle may not fit all. In the short-term, the Strategic Innovation Fund (SIF) might be an appropriate vehicle in some cases as several of the technology companies involved in these projects applied to SIF. Clean energy grants could be deployed in other cases. The Canadian Infrastructure Bank could be an applicable vehicle as well.

To summarize, the importance of providing Canadians with clean nuclear energy to fight climate change remains just as important today as it was before Covid-19. The electricity generation companies of Saskatchewan, Ontario and New Brunswick, along with CNL's interest in siting SMRs at AECL sites, have led the way towards demonstration and commercial deployment of nuclear power from SMRs which can provide clean power, grow the economy and establish whole new business opportunities at the same time. This is an opportunity for partnership with Provinces to support an economically sustainable clean energy transition and achievement of a net-zero Canada by 2050 while creating and maintaining good jobs for Canadians today. As Canada recovers from the pandemic and we reopen the economy, it is critical that the Federal Government provides the financial support required, starting this year, to enable the pan-Canadian deployment of SMR technologies.

We look forward to discussing these opportunities with you and your staff.

Mike Rencheck
President and CEO, Bruce Power

Keith Cronkhite
President and CEO, NB Power

Ken Hartwick
President and CEO, OPG

Mike Marsh
President and CEO, SaskPower

CC: The Hon. Chrystia Freeland, Deputy Prime Minister and Minister of Intergovernmental Affairs
The Hon. Bill Morneau, Minister of Finance
The Hon. Seamus O'Regan, Minister of Natural Resources Canada
The Hon. Jonathan Wilkinson, Minister of Environment and Climate Change
The Hon. Navdeep Bains, Minister of Innovation, Science, and Industry
The Hon. Catherine McKenna, Minister of Infrastructure and Communities

Reference 1: John Gorman to Shawn Tupper, April 3, 2020, "Nuclear Industry critical priorities, stimulus opportunities, and how we can help".

Appendices

s.19(1)

Appendix 1

As described in the CNA letter Reference 1, opportunities exist to utilize the proposed $77.5 and 154.25M in stimulus funds in 2020 and 2021 to support the ability of Canadian companies -- including the nuclear operators, SMR developers and the nuclear supply chain -- to increase economic activity in Canada by advancing SMR development in the 3 Streams as noted below. Addition information on the benefits arising from each stream is provided in Appendix 2, and on the required Federal financial support in Appendix 3.

Near Grid Small Reactors - Stream 1:

Advance completion of prerequisites to the deployment of SMRs in Ontario and Saskatchewan:

- Support the planning phase of SMR deployment in Saskatchewan including the development of plans for site selection, technology selection and impact assessment as well as early stakeholder and Indigenous engagement.
- Also included in the short-term funding request, we have identified funding we believe the Federal Government should consider providing to CNSC and other agencies as needed for first of a kind regulatory issues and for public engagement:
- Darlington New Nuclear Project SMR work is ongoing, funded by OPG. Should a Project proceed to construction approval, Federal Government cost-sharing on FOAK licensing costs will be important, e.g., as noted above related to the CNSC. Moreover, evidence of Federal Government support to SMR deployment in Saskatchewan would be an important signal of the value to Canada of a pan-Canadian fleet and the value of Ontario proceeding with a FOAK project that Saskatchewan could build upon.

Generation IV Advanced Small Reactors - Stream 2:

- The private sector SMR development companies in New Brunswick rely on capital raised from the private markets and the strength and liquidity of those markets in order to secure financing for ongoing operation. The current uncertainty and unprecedented market conditions within the financial sector significantly challenge this capability and could result in insolvency for the small companies before year end. The Federal Government can prevent these consequences and maintain high quality full time staff positions for Canadian developers by providing bridging funds beginning in 2020. Direct support by the Federal Government will also provide the confidence necessary to obtain private capital.

SMR General and vSMR - Stream 3:

- Ensure nuclear power has access to low cost clean/green energy funds.
- Revisit SIF cost-share ratios and funding process for SMR projects:
    - Increase funding ratios to 50% or 80% (currently 30% tied to significant commitments)
    - Streamline the SIF process to stimulate economic activity quickly by reducing the requirement for "guaranteed" results which are contrary to the need to move quickly on innovation and associated R&D.
- Immediately waive or significantly subsidize regulatory fees for first-of-a-kind designs. Advance timing of previously requested industrial incentives and risk reduction mechanisms for companies willing to move forward in 2020 with investment and in Canada development work related to vSMR nuclear power to replace fossil-fueled

power with clean nuclear power for sectors such as mining, remote communities, oil sands, and marine carbon-reduction programs.

- Fund in Canada vSMR demonstration program(s) that can begin in 2020.

Appendix 2

The economic benefits associated with the requested funding to the end of 2021 or longer-term for each Stream are discussed below:

Stream 1

Benefit	Value per SMR unit	Assume ten 300MW SMRs built in Canada 2025-2040
Decreased CO_2 emissions	2 million tons per year	Reduction of 20 million tons per year by 2040
GDP	$428M per year for 4 years in Ontario for construction; $120M for 40 years of operation	Approx $17B over 15 years in construction. Approx 1.2B/year for 40 years of operation
Direct construction Jobs	1000 per year for 4 years (construction), + 160 per year for 6 years (project management)	Approximately 40,000 person-years of construction labour; approx. 10,000 person-year in project management
Indirect construction period Jobs	690 per year for 4 years, + 110 per year for 6 years	Approximately 37,000 person-years employment
Direct operations jobs	200 per year for 40 years	Approximately 2000 for 40 years
Indirect operations period jobs	260 per year for 40 years	Approximately 2600 for 40 years

Stream 2

Proponent (in millions $)	Immediate Request 2020	2021	2022	Total

The short-term economic stimulus benefits can be summarized as follows:

Based on preliminary results from the NB SMR Economic Impact Analysis, the activities required to develop the technologies, finalize the designs, construct/commission, and complete the owner/operator pre-operational activities for the two NB advanced on-grid SMR demonstration units at Point Lepreau is expected to have the following positive economic impact in Canada by the end of 2035:

- Provide over 21,000 person-years of Direct and Indirect employment
- Have a positive impact on GDP (Direct and Indirect) of over $2B
- Result in an increase of provincial revenues of over $120M and Federal revenue of over $195M.

If potential subsequent units in New Brunswick, across Canada and internationally are also considered, this could increase to the following by end of 2060:

- Provide over 522,000 person-years of Direct and Indirect employment
- Have a positive impact on GDP (Direct and Indirect) of over $58B
- Result in an increase of provincial revenues of over $1B and Federal revenue of over $5B.

It is also important to note that one of the key attractions of these Advanced Reactor designs (both in Canada and in export markets), is that they bring the opportunity to recycle their own waste (reducing the burden of long-term disposal of used fuel). They also have heat co-generation capabilities that may be optimal for hydrogen generation. They also promise superior load following characteristics to support complete integration with renewables.

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

Stream 3

Very small reactors will bring about a profound change in the availability of clean, green power offering an ease of use and level of transportability that was unimaginable just a few years ago. Commercialization of these reactors is entirely possible within the next 5-7 years if the commercial demonstration and prototype testing is completed as planned. The stimulus funds can advance this work and bring more of it into Canada. The 2 programs currently being pursued are described below. Both have applied for funding from the federal government's SIF but no funding has been committed to date. The 2020-2021 stimulus funding will only be effective if done in conjunction with approval of this or equivalent longer term funding.

OPG

Short-term benefits of supporting the OPG-supported FOAK SMR project at CNL include direct employment of 40-50 staff per year on project deployment through 2026 plus typically twice as many again through indirect and construction jobs. Longer-term, this commercial demonstration project is expected to result in 7-9 units of the same design deployed across Canada, plus potential export sales. Each of those SMRs will displace diesel generation, reduce GHG emissions, and employ Canadians in Operations, Maintenance, Engineering, R&D, uranium mining, and other well-paying jobs.

This project, and practically any work on very small modular reactors, serves to strengthen Canada's national nuclear labs (at Chalk River, operated by CNL) as a nuclear R&D Centre of Excellence. CNL is envisaged as a clean-energy park demonstrating capability of vSMRs and integration of SMR, battery storage, hydrogen and renewables. vSMR demonstrators at CNL enable decarbonisation of off-grid locations and support renewables. Certain aspects of the R&D and preparation work can be accelerated to begin in 2020 and 2021, including new fuel fabrication and qualification techniques, environmental studies related to SMRs, R&D on factory fabrication of SMR modules. Investment will support employment of professional and technical staff, while advancing work to make SMR demonstrator technology deployable more quickly at CNL. It is estimated that at least 20 CNL staff are likely to directly support the GFP project.

Federal investment of approximately 1/3 the First of a Kind project cost is required to support the first vSMR project at CNL. The remaining funding is being provided by private investors and OPG. The necessary Federal contribution of $66M includes $2M in 2020, $10M in 2021 and the remainder through 2026.

Other industry vSMR interests

Supporting the First of a Kind Prototype eVinci vSMR will allow exploration of moving much of this work to Canada with the resulting direct employment in Canada. If the work goes forward then in the longer term Indirect and construction jobs both in reactor construction and in development and construction of mobile deployment platforms will occur. It is expected this demonstration project could generate a whole new industry resulting in many units of this design deployed across Canada and internationally. Each of those SMRs will displace diesel electrical generation, diesel propulsion for large ships and power many other industry applications. Development of a Canadian based international operation is expected and will employ Canadians in all aspects of the new industry while replacing GHG emissions with plentiful clean energy. Availability of commercial units is possible by end of 2025.

Appendix 3

Required Federal government fiscal commitments to sustain small modular reactor demonstration and deployment in Canada

This table summarizes the proposed Federal fiscal commitment that electric power utilities, which are the primary customers for SMRs, consider essential if SMR deployment is to continue in Canada beyond 2020. This request is consistent with the proposals made previously by industry ($643M) although some details vary where projects have continued to develop. Otherwise, the utilities predict that deployment programs will end because the utilities and private investors will not commit further to SMRs without clearer signals of Federal risk-sharing, and/or that alternative, quicker-to-build electricity sources with higher GHG emissions such as natural gas will pre-empt the market. The overall request from the Federal Government over this period is $643M, with allocations described in this letter and the table below outlining where certain funds are required to progress projects and opportunities. These allocations total to about $601M, with about $42M not currently detailed. Depending on how certain projects progress, the specifics of requests for this remaining allocation will be forthcoming from the utilities in the next year or so.

Horizon	Stream 1 Saskatchewan	Stream 3 vSMRs and Stream 1 Ontario	Stream 2 New Brunswick	Pan-Canadian
Immediate (By fall 2020)	$3.0M to support planning for SMR deployment including finalization of plans for site selection, technology selection and licensing, impact assessment as well as early public and Indigenous engagement.	$4M by winter 2020 ($2M for the GFP project work and $2M from approval of the eVinci related SIF) is required to provide a clear signal of Federal government commitment to SMRs, including actual disbursement of funds on vSMRs, for Ontario utilities to continue investing in SMR/vSMR demonstration and deployment.	$70.5M this year for two SMR technologies in NB (design, R&D, regulatory design review), plus support to NB Power for environmental studies, pre-licensing etc.	
Near Term (2021-2022)	$13M in 2021 and $23.5M in 2022 for SMR development phase activities (matched by SaskPower/Saskatchewan) including site and technology selection; preparation of site license application and Impact Assessment; stakeholder and Indigenous engagement; and development of required training capacity. *(Note: Additionally, Federal investment in regional transmission infrastructure is an essential complement to SMR deployment in SK)* CONTINUES NEXT PAGE	For the GFP project: $10M in 2021 and $12M in 2022 towards environmental assessment, licensing, engineering, project development and site preparation costs. Funding beyond the eVinci related SIF will be required to advance timing on the eVinci prototype. A specific plan to develop and deploy an eVinci commercial prototype in Canada can be established by 2021to define the funding requirements. For FOAK on-grid SMR development in Ontario	$103.25M in 2021 and $91.25M in 2022, applied to same purposes as above funds. CONTINUES NEXT PAGE	$16M in Financial Support to Government Agencies for SMR-related Regulatory Development. $20M towards Education, Capacity Building and Engagement Program funding. (Nominally the costs above and in future years would be 50%

		leading to pan-Canadian deployment, $10M in 2021 and $20M in 2022 towards licensing costs and preparation of construction licence application.		per year over 2 years)
2023-2024	$23M in 2023 and $20M in 2024 to advance engineering, Environmental Assessment and Licensing	For the GFP project, $14M in 2023 and $14M in 2024 for licensing and construction costs. For FOAK on-grid SMR development in Ontario leading to pan-Canadian deployment, $20M in 2023 and $20M in 2024 towards licensing fees and construction licence completion.		$16M in Financial Support to Government Agencies for SMR-related Regulatory Development. $6M towards Education, Capacity Building and Engagement Program funding
2025-2026	$17.5M in 2025.	For the GFP project $12M in 2025 and $2M in 2026 for construction, licensing and commissioning costs. For FOAK on-grid SMR development in Ontario leading to pan-Canadian deployment, $15M in 2025 and $15M in 2026 towards licensing fees and operating licence completion.		$8M in Financial Support to Government Agencies for SMR-related Regulatory Development. $2M towards Education, Capacity Building and Engagement Program funding

From:	Marc LeBlanc on behalf of Marc LeBlanc
To:	Francis McGuire
Subject:	SMR Meeting with Premier Higgs
Attachments:	Meeting note - Call with Premier Higgs - October 2021.docx
Sent:	10/28/2021 1:21:55 PM

Francis, attached is your meeting note for tomorrow's meeting at 2:00 pm.

From: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Sent: Monday, October 25, 2021 5:24 PM
To: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Subject: RE: SMR Meeting with Premier Higgs

Ok Katie needs to be there with me.

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Date: 2021-10-25 4:16 p.m. (GMT-05:00)
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Subject: SMR Meeting with Premier Higgs

Francis, a meeting with Premier Higgs has been scheduled for Friday this week at 3:30 pm.

From: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Sent: Monday, October 25, 2021 11:06 AM
To: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Cc: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>; Patrick Lacroix <Patrick.Lacroix@ACOA-APECA.GC.CA>
Subject: SMR Meeting with Premier Higgs

Hi Rose,
Following the SMR meeting on Friday, Francis expressed interest in a potential follow up discussion with Premier Higgs on the topic of SMRs for later this week (on either Thursday or Friday). Patrick has followed up with the Premier's Office and they have extended the offer to meet. He is checking with them now to see who would be best for you to connect with re: scheduling and availability. I would plan to join Francis for that meeting as well.
If you have any questions, please let me know.
Thanks,
Kalie

Kalie Hatt-Kilburn
Director General, Regional Operations (New Brunswick)
Atlantic Canada Opportunities Agency | Government of Canada
kalie.hatt-kilburn@acoa-apeca.gc.ca / Tel: 506-452-2413 / TTY: 7-1-1
Directrice générale, Opérations régionales (Nouveau-Brunswick)

Agence de promotion économique du Canada atlantique / Gouvernement du Canada
kalie.hatt-kilburn@acoa-apeca.gc.ca / Tél: 506-452-2413 / ATS: 7-1-1

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

MEETING NOTE

To:	Francis McGuire	Security classification N/A
From:	Kent Estabrooks	Reference No. DT602545
		Date submitted October 27, 2021

Subject:	***Call with Premier Higgs***
Meeting Date:	Friday, October 29, 2021 From 2:00 p.m. to 3:00 p.m.
Location:	MS Teams
Participants:	ACOA Participants • Francis McGuire • Kalie Hatt-Kilburn External Participants • Premier Blaine Higgs • Louis Léger

Meeting Objective(s):

- This meeting offers an opportunity to discuss SMRs.

Background:

- Canada has declared its intention to be at the forefront of a new age of nuclear energy, embracing the potential of Small Modular Reactor (SMR) technology.
- The Government of Canada released Canada's *SMR Action Plan* in December 2020 to advance the safe and responsible development and deployment of SMRs through a pan-Canadian approach.
- The *SMR Action Plan* states that "innovation in the nuclear sector plays a critical role in reducing greenhouse gas emissions and delivering good, middle-class jobs as Canada moves toward a low-carbon future."

Key Facts and Considerations:

- The release of the SMR Action Plan heightened expectations for federal funding to support SMR development amongst provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society.
- While the release of the SMR Action Plan recommended the provision of federal and provincial funding for SMR development, there was no funding allocated to SMRs in Budget 2021.

Global Context:

- Other countries around the world, notably the United States, the United Kingdom and France are taking steps to support SMR development.
    - U.S. – the Department of Energy announced a $600 million matched-funding package (over seven years) from the Department of Energy's Advanced Reactor Demonstration Program.
    - U.K. – a $294 million spending package for SMRs has been announced to be matched by private-sector investment and delivered by the government agency U.K. Research and Innovation.
    - France – President Macron recently unveiled a 5-year 30 billion-euro investment plan for developing innovative technology and industrial activity, including building SMRs, electric cars and greener airplanes.

Canadian Investments in SMRs:

- To date, ISED has approved two significant SMR investments under the Strategic Innovation Fund (SIF) for Moltex ($47.5M) and Terrestrial Energy ($20M).
- ACOA has also made significant investments in the SMR technology cluster in New Brunswick (see Appendix A)

New Brunswick-based Developments in SMRs:

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-
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- NB Power has raised the issue of ensuring a stable and secure supply of High Assay Low Enriched Uranium (HALEU) fuel needed to power the majority of SMR reactor designs currently under development in Canada. Currently, the only available supply would come from Russia and would need to be processed in the US, making this a highly complex issue, with significant regulatory hurtles. Long-term, there may be the potential for such fuel to be produced in Canada, ensuring a secure supply, but a concerted strategy to do so would be required.
- It is our understanding that a working group has been established to prepare a report for government and industry leaders that looks at the issue of stable and secure supply of SMR fuel. According to NB Power, maintaining momentum on this is essential because companies will need to move very soon to secure future fuel supply and will need to know that they have the regulatory support required to make such commitments.

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)

Position of ACOA:

- The development of SMR technology offers a solution to address New Brunswick's need for clean, baseload power generation and would enable the province to play a central role in the advancement of the Atlantic Loop (also known as the Clean Power Roadmap) in Atlantic Canada.
- The development of SMR technology in New Brunswick represents an important opportunity to support Canada's leadership in this global industry, and enable the country to move toward its vision for net-zero emissions.
- While ACOA is using its full range of programming options and pathfinding capacity to assist in the development of the industry, the magnitude of the investments required necessitates coordination with and funding from other federal departments to achieve development and deployment of SMRs across Canada.

Key Points to Raise:

- Potential economic and research expertise spin-offs in the development of SMR technology could be significant, as could the supply chain opportunities for New Brunswick and Canadian-based companies.
- Considerable and timely government investments are required to develop and validate SMR technology, secure the establishment of the industry, and retain IP in Canada.
- While efforts to-date to develop SMR technology have been led by the power utilities in New Brunswick, Ontario, Saskatchewan and Alberta, through a joint MOU, there is a need for a concerted effort by all four provincial governments to work together to support these efforts.

Appendix A: ACOA investements in the SMR technology cluster in New Brunswick

$3 million – Moltex (conditionally repayable)

- This project will help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

$5 million – NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site in New Brunswick. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will also be engaging with First Nations and the public as part of this project.

$561,750 – UNB's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is intended to boost the centre's capacity to partner with private industry in research and development.

$13,750 – North Shore Micmac District Council (NSMDC) (non-repayable)

- This project is supporting strategic planning for Indigenous involvement in SMR development in NB.

From:	Francis McGuire
To:	
Subject:	FW: Notes for Monday's DM Roundtable on SMRs
Attachments:	CEO letter on SMRs FINAL (003) Signed.pdf;Keynote-Address-Minister-ORegan-CNA-Feb-27.pdf;Meeting Note - DM Roundtable SMR - 29June2020.docx;AGENDA - DM Roundtable on SMRs - BIL - 2020.docx;
Sent:	6/26/2020 3:22:32 PM

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: "LeBlanc3, Marc (ACOA/APECA)" <marc.leblanc3@canada.ca>
Date: 2020-06-26 2:50 p.m. (GMT-04:00)
To: "McGuire, Francis (ACOA/APECA)" <francis.mcguire@canada.ca>
Cc: "Croteau, Rose (ACOA/APECA)" <rose.croteau@canada.ca>, "Léger-Fortin, Joanne (ACOA/APECA)" <joanne.leger-fortin@canada.ca>
Subject: Notes for Monday's DM Roundtable on SMRs

Francis, attached are the documents for Monday's meeting at 4:00 p.m.

Kalie and Andy will also participate.

Marc

s.19(1)

Keynote Address by Minister Seamus O'Regan
Canadian Nuclear Association – 2020 Conference (February 27, 2020)

Thank you John and good morning everyone!

I want to begin by acknowledging that we are meeting on the traditional territory of the Algonquin people – and to honour their continuing connection to these lands.

I also want to congratulate you, John, on taking the helm of the Canadian Nuclear Association at such a pivotal moment.

Your experience in the renewables sector will help open new doors for Canada's nuclear community as we build our clean energy future.

And to the CNA itself on a landmark anniversary: 60 years.

I understand that the traditional gift for a 60th anniversary is diamonds. I haven't brought any today . . . But I do want to thank this organization for its leadership through six decades – a remarkable milestone.

Thank you for joining us today.

I'm going to share something with you... and if you know about the lightsaber I keep in my office, it won't be much of a surprise. I'm a huge nerd. Like many of you in this room, I grew up on comic books and science fiction. I fully believe that scientific advancement is the cornerstone of our future economic growth.

And as the world tackles a changing climate, nuclear power is poised to provide the next wave of clean, affordable, safe and reliable power.

Bill Gates put it succinctly: "Nuclear is ideal for dealing with climate change."

Why? Because it can provide almost immeasurable amounts of energy with zero CO^2 emissions. Zero.

In fact, nuclear energy in Canada already displaces over 50 million tonnes of greenhouse gas emissions every year. That's the same as removing 3 million cars from the road each year.

That's critical when you realize that our Government has made a commitment that Canada will not just exceed its 2030 Paris Agreement targets, but will reach net-zero by 2050.

We are joined in that commitment by 77 nations around the world, and by a growing number of small, medium, and large corporations.

For its part, Canada has put a price on pollution.

We're phasing out coal-powered electricity.

We're making generational investments in clean energy, new technologies, and green infrastructure.

My department alone is supporting over 900 clean technology projects across the country. We've invested nearly $1 billion in Canadian cleantech initiatives, with the total value of these projects more than four times that.

As a government, we have invested more than $3 billion since 2017 in clean energy innovation like carbon capture and storage, wind and solar power, alternative fuels, energy storage, smart grids, and energy efficiency.

As the landmark report released by Dr. Fatih Birol makes clear, failing to invest in nuclear energy makes the path to meeting our climate targets longer. With greater risk of failure. And a much higher price tag – as much as $1.6 trillion U.S. higher.

Just for perspective, that's roughly the value of Canada's entire GDP.

That's why the current refurbishment of reactors here in Ontario is so important.

As Canadian Manufacturers & Exporters pointed out, refurbishment will provide clean electrical production for another 25 to 30 years. And support greater use of renewables such as wind and solar.

Not to mention that once completed, a single nuclear unit can provide upwards of 1,000 full-time jobs – for decades.

Our government understands the importance of nuclear energy to meeting our climate-change goals. To help northern and remote areas move off less clean sources of energy, such as diesel. To open up opportunities in the resource sector. To drive growth. And to create jobs.

Which is why we've been working so hard to support this industry. We are placing nuclear energy front and centre. Something that had never been done before.

The United Kingdom was so impressed by our approach that it plans, and I'm quoting, "to echo and amplify" that nuclear message when it hosts COP 26 later this year, in Glasgow.

Of course, nowhere is the potential of nuclear greater than with respect to small modular reactors. To generate electricity. And power resource extraction in distant places. To Desalinate water. And replace coal. And to offer a clean, alternative source of light and heat in rural and remote communities.

Canada is perfectly positioned to be among the leaders in SMRs.

In 2018, Canada hosted its first-ever international conference on Small Modular Reactors, where we launched the S-M-R Roadmap. A roadmap that outlines over 50 actions that governments, industry and stakeholders can take to position Canada as the world leader in the next wave of nuclear innovation.

A roadmap that hasn't sat on a shelf gathering dust – it's been widely embraced and gathering steam. It's also been the driving force behind recent federal efforts to establish clear timelines for the review of new S-M-R applications through the new Impact Assessment Act, and promote Canadian industry leadership on the global stage.

It was also an important part of the recent agreement by the governments of Ontario, Saskatchewan and New Brunswick to work together to develop this exciting technology.

All of these efforts are translating into very real and promising projects.

There are 12 SMR proposals before the Canadian Nuclear Safety Commission for vendor design reviews. Five entities are working with Canadian Nuclear Laboratories on siting. Two are engaged with New Brunswick Power and another two with O-P-G and Bruce Power.

To keep the momentum going, this fall, together with our partners from across the country, we will launch Canada's S-M-R Action Plan. Outlining the progress and ongoing efforts across Canada to turn our Roadmap into reality.

So lots of progress in a fairly short time.

To truly capture the opportunity S-M-Rs represent we know that protecting the health and safety of Canadians and the environment must always be our top priority. That means ensuring that we have the trust of Canadians, including Indigenous Peoples.

Fortunately, we have a great foundation to build on – over 70 years of experience and expertise in Canada – as well as our world-class regulator, the CNSC, and I'm pleased to recognize its President Rumina Velshi who will speak to you later this morning on the importance of safety and international harmonization.

And, through the *Nuclear Fuel Waste Act* and the NWMO, we are making good progress in implementing *Canada's Plan* for the long-term management of our fuel waste from nuclear reactors.

Over the coming months, we will be working with stakeholders and talking to Canadians, to ensure that Canada has a strong policy framework and a clear plan in place for the safe, long-term management of all of our nuclear waste, including any future waste from S-M-Rs.

At the same time, we'll continue to look at new and innovative technologies that can reduce or eliminate waste.

This is nuclear's moment. This is your moment. To shape the next wave of nuclear technology. And move to the frontlines in the battle against climate change and the plan to get Canada to net zero by 2050.

I've just arrived back in Ottawa from Northern Alberta - a part of the country that, like you folks, is living on the front lines of that battle.

I sat down with businesses, labour union leaders, elected provincial and municipal officials, and Indigenous leaders. And I heard the same message from them that I've heard from many of you since I became Minister of Natural Resources:

We need that plan. We need a plan for Net Zero that is smart, that is thorough, and a plan that is honest...with our fellow citizens, with one another.

First, the plan must be smart, utilizing every ounce of our ingenuity to decarbonise our way of life -- and that includes decarbonizing our carbon-extractive industries — through electrification, carbon storage, S-M-Rs, and other clean technologies.

Second, it must be thorough, utilizing every available opportunity to reduce carbon output and the warming of our planet, by modifying our houses and buildings, by reducing energy consumption, by persuading our citizens to make individual choices that will achieve collective results. This radical incrementalism will be more effective than any single, revolutionary technology we keep hoping will one day save us.

And third, we must be honest with each other about just how fundamental this transition to a Net Zero economy will be, and how fast we will be able to sustain such change. Some will say we're far too slow. Others, far too fast. Choices will be made – none of them easy.

And we must do all this now. Time is not on our side. Our planet has rarely been joined in such collective urgency.

We are moving beyond IF energy transition will happen, to HOW energy transition will happen.

How will we transition fast enough to mitigate catastrophic climate impacts?

How will we transition effectively enough to ensure continued prosperity for our fellow citizens?

How will we transition thoughtfully enough to ensure that people – energy workers and their families – aren't left behind? That whole regions of this country aren't left behind?

Here's what I believe:

That Net Zero is not just a plan for our climate. It is a plan for our economic competitiveness. And that plan must be brought about by government – the whole of government – working with ENGOs, indigenous partners, and the private sector.

That government must work with both SMEs and big incumbents on decarbonisation.

That the regulations we develop must be stringent, but streamlined.

That we must focus on those areas where Canada can and should lead — like nuclear. I would add to that Canada can, should, and must lead.

That just as we focus our approach, we must also scale up our ambitions.

This Assembly of thinkers, doers, and achievers – and gatherings like this all over the world – must move now on our common mission: a net zero economy by 2050, a global economy that continues to grow, and an energy transition that leaves no one behind.

This is happening.
This is real.
This is our mission.

This is one of the rooms that can do it.
And we are the country that can do it.
Canada will lead.
I believe that.

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

Canada

MEETING NOTE

MEETING/EVENT: DM Roundtable on Small Modular Reactor

DATE: Monday, June 29, 2020

TIME: 4:00 – 5:30 p.m.

LOCATION: Microsoft Teams Meeting

PARTICIPANTS:
Francis McGuire
Kalie Hatt-Kilburn
DM Roundtable Participants

PURPOSE OF MEETING/EVENT:
To discuss key developments on the SMR file.

BACKGROUND:

On November, 2018 NRCan published a "Canadian Roadmap for SMRs" which outlined key considerations for the SMR development in Canada. New Brunswick Power and the Province of New Brunswick were engaged participants throughout the roadmap development process, which concluded with the following five key recommendations:

1. Successful SMR deployment will likely require a 'fleet' based approach to operations in order to benefit from standardization and economies of series (i.e. capital costs decrease as more units are produced).
2. Demonstrating SMR technology in Canada is key to capturing first mover advantage. Canada's three applications will likely have different demonstration 'tracks'.
3. Appropriate risk sharing among governments, power utilities and industry will be necessary for SMR demonstration and deployment in Canada.
4. Public and Indigenous groups, as well as other potential end-users, have concerns about safety, waste management, and overall cost of SMRs. Ongoing engagement and knowledge-sharing will be important as more information on SMRs becomes available.

5. Canada's regulatory framework and waste management regime are well-positioned to respond to the SMR paradigm shift, but some modernization will be necessary to reflect the reality of the smaller size of an SMR.

For New Brunswick and Canada, it is clear that SMRs are a potentially game-changing technology that could provide benefits for the economy, bolster innovation and reduce GHGs. Canadian SMR stakeholders are well-positioned to be leaders in the development of this promising, new gateway technology to cleaner grids; however, other countries are now providing large investments and closing the gap in order to seize the opportunity associated with this growing sector.

RECENT DEVELOPMENTS:

On June 16, 2020, a joint letter was sent to the Prime Minister from the CEOs of Ontario Power Group, Bruce Power, NB Power and Sask Power. The letter praised the early leadership of the federal government in developing the SMR roadmap, but stressed the urgency of continued funding to maintain Canada's leadership in a market they estimate to reach $150B in value by 2040.

The letter confims the utilities' support for the three streams of SMR development in the country and outlines the significant economic and climate change benefits to Canada in fully realizing their development. It further outlines a request for a minimum $77.5M federal investment by the fall of 2020 and another $154.25M to the end of 2021 to advance development in the three SMR streams. These requests are part of an overall $643M funding request presented to the Government of Canada in January 2020.

KEY POINTS TO RAISE:

- Considerable and timely government investments are required to develop and validate SMR technology, secure the establishment of the industry in New Brunswick and retain IP inside Canada. Work is also required by various stakeholders to grow New Brunswick's capacity, the local supply chain and the sector's commercialization and export potential.

- ACOA will use its full range of programming options and pathfinding capacity to assist in the development of the industry. ACOA's support will be in coordination with other federal departments and will aim to leverage the industry's economic development opportunities in Atlantic Canada.

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s.20(1)(b)

s.21(1)(b)

s.21(1)(c)

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- ACOA has had initial discussions with UNB's Nuclear Lab (CNER) regarding opportunities to develop the lab's capacity for R&D and talent development.
- To ensure the development of the SMR industry, continued engagement with all levels of government, academia, the community and private sector stakeholders is required.

Date: June 25, 2020

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

s.21(1)(c)

DEPUTY MINISTERS' ROUNDTABLE ON SMALL MODULAR REACTORS (SMRs)
June 29, 2020, 3:00-4:30 pm
Microsoft Teams – Join Microsoft Teams Meeting

MEETING AGENDA

1. **Welcome and Scene Setting** (5 minutes)
   NRCan

2. **Canada's SMR Action Plan** (15 minutes)
   NRCan

3. **Update on SMR Proposals to the Strategic Innovation Fund** (15 minutes)
   ISED

4. **Update on CANDU Exports** (15 minutes)
   NRCan

5. **Review of Canada's Radioactive Waste Policy Framework** (15 minutes)
   NRCan

6. **Roundtable** (20 minutes)
   All

7. **Closing Remarks** (5 minutes)
   NRCan

TABLE RONDE DES SOUS-MINISTRES SUR LES PETITS RÉACTEURS MODULAIRES (PRM)

29 juin 2020, 15h-16h30

Microsoft Teams – Join Microsoft Teams Meeting

ORDRE DU JOUR DE LA RÉUNION

1. **Mot de bienvenue et portrait de la situation** (5 minutes)
   RNCan

2. **Plan d'action canadien sur les PRM** (15 minutes)
   RNCan

3. **Mise à jour sur les propositions de PRM au Fonds stratégique pour l'innovation** (15 minutes)
   ISDE

4. **Mise à jour sur les exportations CANDU** (15 minutes)
   RNCan

5. **Examen du Politique-cadre en matière de déchets radioactifs du Canada** (15 minutes)
   RNCan

6. **Table ronde** (20 minutes)
   Tous

7. **Mot de la fin** (5 minutes)
   RNCan

s.16(2)(c)

From:	Francis McGuire
To:	Lavigne, Kevin
Subject:	FW: SMR Letter
Attachments:	CEO letter on SMRs FINAL.pdf
Sent:	4/22/2021 5:44:00 PM

Keith says that there is very strong expectations that the distribution and timing that all the utilities were hoping for was clearly set out in their letter. So $265 million for NB starting right now over the next 3 years. He is sure that none of the other utilities have deviated from what they consider to be a pan-Canadian approach. They all need to share in each other's knowledge. If someone put forward only part of the plan, it was not the utilities.

So now we have to figure out what is next. We will think about it with Keith for a couple of days and then check back with you.

From: Cronkhite, Keith @nbpower.com>
Sent: Thursday, April 22, 2021 5:35 PM
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Cc: Scheme, Erica (Deveau) @nbpower.com>
Subject: SMR Letter

Hi Francis,

Per our discussion, please find attached the letter which was signed by all four CEOs.

If you require the fully signed version, I will ask Erica to track down and send to you.

Thanks,
Keith C.

Keith Cronkhite
President & CEO
NB Power

s.19(1)

From:	Francis McGuire
To:	Kalie Hatt-Kilburn
Subject:	FW: SMR Meeting with Premier Higgs
Attachments:	Meeting note - Call with Premier Higgs - October 2021.docx
Sent:	10/28/2021 1:28:00 PM

From: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Sent: Thursday, October 28, 2021 1:22 PM
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Subject: SMR Meeting with Premier Higgs

Francis, attached is your meeting note for tomorrow's meeting at 2:00 pm.

From: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Sent: Monday, October 25, 2021 5:24 PM
To: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Subject: RE: SMR Meeting with Premier Higgs

Ok Katie needs to be there with me.

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Date: 2021-10-25 4:16 p.m. (GMT-05:00)
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Subject: SMR Meeting with Premier Higgs

Francis, a meeting with Premier Higgs has been scheduled for Friday this week at 3:30 pm.

From: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Sent: Monday, October 25, 2021 11:06 AM
To: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Cc: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>; Patrick Lacroix <Patrick.Lacroix@ACOA-APECA.GC.CA>
Subject: SMR Meeting with Premier Higgs

Hi Rose,

s.20(1)(b)
s.21(1)(b)
s.21(1)(c)

Following the SMR meeting on Friday, Francis expressed interest in a potential follow up discussion with Premier Higgs on the topic of SMRs for later this week (on either Thursday or Friday). Patrick has followed up with the Premier's Office and they have extended the offer to meet. He is checking with them now to see who would be best for you to connect with re: scheduling and availability. I would plan to join Francis for that meeting as well.

If you have any questions, please let me know.

Thanks,
Kalie

Kalie Hatt-Kilburn

Director General, Regional Operations (New Brunswick)
Atlantic Canada Opportunities Agency | Government of Canada
kalie.hatt-kilburn@acoa-apeca.gc.ca / Tel: 506-452-2413 / TTY: 7-1-1

Directrice générale, Opérations régionales (Nouveau-Brunswick)
Agence de promotion économique du Canada atlantique / Gouvernement du Canada
kalie.hatt-kilburn@acoa-apeca.gc.ca / Tél: 506-452-2413 / ATS: 7-1-1

From:	Francis McGuire
To:	Gillis, Kelly (INFC)
Subject:	FW: SMR Update_April 30 2020.docx
Attachments:	SMR Update_April 30 2020.docx;Letter - Premier Higgs to Prime Minister - April 23 2020.pdf;
Sent:	4/30/2020 5:19:59 PM

Kelly
Note that The Province of NB has asked that small nuclear reactors be considered under infrastructure. See attached briefiblng note.
This is a bit unusual but with your MinisterS interest in clean energy, this might be of interest.
One it recycles spent nuclear fuel. Second it is part three of converting the Atlantic electrical grid from a dirty grid to a clean one.
Part one is completing the inter tie between NS and NB. Part two is to implement a smart grid to better integrate renewables.

Glad to chat. Cheers

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: "Hatt-Kilburn, Kalie (ACOA/APECA)" <kalie.hatt-kilburn@canada.ca>
Date: 2020-04-30 1:29 p.m. (GMT-04:00)
To: "McGuire, Francis (ACOA/APECA)" <francis.mcguire@canada.ca>
Cc: "Estabrooks, Kent (ACOA/APECA)" <kent.estabrooks@canada.ca>
Subject: SMR Update_April 30 2020.docx

Francis,

As requested, the attached SMR backgrounder has been updated. We have also learned that Premier Higgs recently sent the attached letter to the Prime Minister requesting an amendment to the Canada-NB Infrastructure Agreement, requesting that SMRs be included as an eligible project type. Furthermore, the letter requests a reduction in the required provincial funding percentage in order to account for the province's reduced fiscal capacity. This has been positioned as an opportunity to use projects under the fund as an opportunity to kick-start economic recovery.

For ease of reference, the SMR backgrounder has been updated with the following:

- Positioning of the UK funding commitment
- Inclusion of Indigenous Consultations between the company and the FNs
- References to the Premier's letter to the Prime Minister and requests for amendments to the infrastructure agreement

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s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

If you need anything else or would like to discuss, please let me know.

Thanks,
Kalie

Small Modular Reactors

Topic

- Development of small modular reactors (SMR) in New Brunswick.

Background

- Small Modular Reactors (SMRs) are proposed to be a smaller and less expensive alternative to conventional nuclear fission reactors.
- In August 2018, the provincial government of New Brunswick created a Nuclear Research Cluster and signed MOU's with two companies developing Small Modular Reactor (SMR) technology, ARC and Moltex. Through the New Brunswick Energy Solutions Corporation (NBESC), the government of New Brunswick (GNB) invested $10 million ($5M for ARC / $5M for Moltex) to foster research and development in these two SMR designs.
- The Province of New Brunswick hopes that this provincial investment in SMR technology development will lead to a demonstration SMR unit being constructed at Point Lepreau - after completion of all Vendor Design Review (VDR) stages, regulatory requirements and adequate consultation.

Significance of SMR Development to Atlantic Canada

- SMRs are of particular interest to New Brunswick as a source of safe, clean and reliable baseload energy, which is of concern once the Belledune coal-fired generating station comes offline in 2030 and the Point Lepreau nuclear facility reaches its end of life in 2040.
- Currently, all four Atlantic provincial governments and utilities are collaborating along with Quebec on an Atlantic Clean Power Roadmap. SMRs are included among the future generation options being considered to supply the future clean energy needs of an interconnected regional grid. Because of the intermittence of renewables like wind and solar, SMRs are seen as particularly important in helping to address concerns with sourcing a supply of a clean, reliable baseload power.

SIF Program Requests

- Given the degree of technical sophistication involved in assessing proposals for the nuclear industry, NRCan has been engaged to provide advice to ISED in consideration of these and other SMR-related asks.

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Key Considerations

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- Although these discussions are at the very early stages, First Nations have indicated an appreciation for being consulted at the very first stages of development, in keeping with the spirit of reconciliation.
- In particular, the Northshore District Mi'kmaq Council (NSDMC), which represents seven First Nations communities in New Brunswick, has expressed an interest in a close collaboration with Moltex,
- ACOA is working with the NSDMC, in consultation with Indigenous Services Canada, to help the organization engage the services of a consultant that can assist with articulating the terms of their collaboration with Moltex and support more fulsome engagement with the FN communities.

Provincial Position

- It is important to note that SMR development remains an important priority for Premier Blaine Higgs as a long term supply of clean, baseload energy for the province and for the rest of the Atlantic region as part of the Atlantic Clean Power Roadmap.
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- In an April 23, 2020 letter to the Prime Minister, Premier Higgs advanced a request to see ammendments to the Canada-New Brunswick Integrated Bilateral Agreement for the Investing in Canada Infrastructure Program as a cornerstone to economic recovery efforts relating to Covid-19.
- The letter outlined a request to reduce the provincial funding requirements under the program in recognition of the province's limited fiscal capacity in order to see a larger number of projects advance to stimulate economic activity.
- A further amendment to the agreement was requested to include SMR projects in the investment mix in order to support the advancement of this technology and further Canada's leadership in developing the next generation of nuclear technologies.

s.20(1)(b)

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s.21(1)(b)

s.21(1)(c)

New Nouveau Brunswick
CANADA

April 23, 2020

The Right Honourable Justin Trudeau
Prime Minister of Canada
House of Commons
Ottawa ON K1A 0A6

Dear Prime Minister:

I want to begin by sincerely thanking you and your government for the extensive efforts made to ensure Canadian's security, safety and well-being during the COVID-19 Pandemic. I am writing to you to request that the Canada–New Brunswick Integrated Bilateral Agreement for the Investing in Canada Infrastructure Program be amended or replaced to serve as a pan Canadian cornerstone in rebuilding our economy.

In New Brunswick our federal infrastructure funding priority continues to be towards stable and flexible long-term funding to address the rehabilitation, capital maintenance and asset management needs of our existing aging infrastructure.

To achieve this for New Brunswick I would like to seek your collaboration in enabling the following program changes:

1. Reduce the Provincial Contribution for all projects to 20% to restart the economy for a three-year term. Presently we have very limited financial resources to contribute to projects based on the current funding requirement of 33%-50% based on project proponent and scope. This would also include a relaxing of the 33% provincial contribution for municipal projects.

2. Increase the Community Economic Benefits threshold from $10m to $25m (same as BC/AB/SK). This will reduce our project reporting requirements and allow for greater flexibility in delivering a project.

3. We require a faster approval of projects in order to advance both the seasonality of the work and the economy. Following the efficiencies demonstrated during the Government of Canada's Economic Response it would be our hope that provinces would be provided approval based on the overarching program criteria and that funds could flow pursuant to a transfer payment.

...2

Office of the Premier / Cabinet du premier ministre
P.O. Box/C. P. 6000 Fredericton New Brunswick/Nouveau-Brunswick E3B 5H1 Canada
Tel./Tél. : (506) 453-2144 Fax/Téléc. : (506) 453-7407
Email/Courriel : premier@gnb.ca/premier.ministre@gnb.ca

4. We are requesting the administrative process be revised to recognize provincial processes with respect to consultation. New Brunswick has a robust "Duty to Consult Policy" and Environmental Assessment process, and we follow them based on good governance and standards.

5. We are requesting greater flexibility to move money between Streams i.e. Public Transit to Rural. As of today, we have committed almost all the funding in the Rural and Northern Stream, however we have not allocated much of the Public Transit Stream. We realize that an offer to move money between these two streams was made in the past, but it came with a caveat to gain support from municipalities, yet this does not follow the spirit of a bilateral agreement. We need to also flatten this curve and streamline this process.

6. We are requesting that the agreement be permitted to allow for cost-shared federal funding to conduct studies (including detailed engineering analysis), such as those needed on flood mitigation, adaptation and resiliency projects in advance of proposal submissions.

7. We would also request that infrastructure funding amendments also include support for Small Modular Reactors as part of the investment mix to advance this technology further, enabling Canada to be a global leader in the next generation of nuclear development.

8. Need to allow for bundling of projects to provide for efficiencies in administration for minor capital work including paving resurfacing on rural roads, guide rail replacement, brush cutting on rural roads, etc. This will allow for administrative efficiencies, expedited process and economies of scale.

New Brunswick has shovel ready projects ready to begin right away, and this would start the stimulation of our economy, however we need the assistance of the Government of Canada and the political will of your office to make this happen. As Premier of the Province of New Brunswick, I ask you to direct your Minister(s) responsible to commence the amendment process immediately so we can work together to start the great Canadian come back.

Yours sincerely,

Blaine M. Higgs
Premier

From:	Francis McGuire
To:	Kalie Hatt-Kilburn
Subject:	FW: SMR Update_April 30 2020.docx
Sent:	5/1/2020 8:05:35 AM

Fyi

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: "Gillis, Kelly (INFC)" <kelly.gillis@canada.ca>
Date: 2020-04-30 6:41 p.m. (GMT-04:00)
To: "McGuire, Francis (ACOA/APECA)" <francis.mcguire@canada.ca>
Subject: RE: SMR Update_April 30 2020.docx

Hi, Hope you and family are well. Thanks for sharing – we had received a copy as well.

Thanks again Kelly

From: McGuire, Francis (ACOA/APECA)
Sent: Thursday, April 30, 2020 4:20 PM
To: Gillis, Kelly (INFC) <kelly.gillis@canada.ca>
Subject: FW: SMR Update_April 30 2020.docx

Kelly
Note that The Province of NB has asked that small nuclear reactors be considered under infrastructure. See attached briefiblng note.
This is a bit unusual but with your MinisterS interest in clean energy, this might be of interest.
One it recycles spent nuclear fuel. Second it is part three of converting the Atlantic electrical grid from a dirty grid to a clean one.
Part one is completing the inter tie between NS and NB. Part two is to implement a smart grid to better integrate renewables.

Glad to chat. Cheers

Sent from my Bell Samsung device over Canada's largest network.

-------- Original message --------
From: "Hatt-Kilburn, Kalie (ACOA/APECA)" <kalie.hatt-kilburn@canada.ca>
Date: 2020-04-30 1:29 p.m. (GMT-04:00)

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

To: "McGuire, Francis (ACOA/APECA)" <francis.mcguire@canada.ca>
Cc: "Estabrooks, Kent (ACOA/APECA)" <kent.estabrooks@canada.ca>
Subject: SMR Update_April 30 2020.docx

Francis,

As requested, the attached SMR backgrounder has been updated. We have also learned that Premier Higgs recently sent the attached letter to the Prime Minister requesting an amendment to the Canada-NB Infrastructure Agreement, requesting that SMRs be included as an eligible project type. Furthermore, the letter requests a reduction in the required provincial funding percentage in order to account for the province's reduced fiscal capacity. This has been positioned as an opportunity to use projects under the fund as an opportunity to kick-start economic recovery.

For ease of reference, the SMR backgrounder has been updated with the following:

- Positioning of the UK funding commitment
- Inclusion of Indigenous Consultations between the company and the FNs
- References to the Premier's letter to the Prime Minister and requests for amendments to the infrastructure agreement

If you need anything else or would like to discuss, please let me know.

Thanks,
Kalie

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

From:	Marc LeBlanc
To:	Francis McGuire
Subject:	Meeting Note for call with Keith Cronkhite, Friday, October 29th at 4:30 p.m. (DT602636)
Attachments:	Meeting note - Call with Keith Cronkhite - October 2021.docx
Sent:	10/29/2021 11:06:05 AM

Francis, please see the attached note for this afternoon's call.

Kalie will participate with you.

Pages 102 to / à 106

are under consultation

sont sous consultation

From:	Marc LeBlanc
To:	Francis McGuire
Cc:	Rose Croteau
Subject:	Meeting with ARC Clean Energy Canada and NB Power
Attachments:	Meeting Note ARC Energy and NB Power August 25 2021.docx
Sent:	8/23/2021 1:44:11 PM

Francis, attached is your meeting note for Wednesday's meeting.

Kalie will also participate.

Thanks
Marc

From: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Sent: Monday, August 23, 2021 9:29 AM
To: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Cc: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>; Angele Bastarache <Angele.Bastarache@ACOA-APECA.GC.CA>
Subject: RE: Meeting with ARC Clean Energy Canada and NB Power

Fine with me. Cheers

From: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Sent: Friday, August 20, 2021 9:58 AM
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Cc: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>; Angele Bastarache <Angele.Bastarache@ACOA-APECA.GC.CA>
Subject: FW: Meeting with ARC Clean Energy Canada and NB Power

Francis,

A meeting has been scheduled for next Wednesday, August 25th at 9 a.m. with ARC and NB Power. The meeting is scheduled to be in-person at the Fredericton office. Are you comfortable attending in person or we can change to an MS Teams meeting if you wish?

Participants at the meeting will be Kalie, Brett Plummer – Vice President Nuclear & Chief Nuclear Officer, NB Power and William Labbe – President & CEO, ARC Canada.

Rose

From: Spires, Joanne @nbpower.com>
Sent: Friday, August 13, 2021 1:55 PM
To: Angele Bastarache <Angele.Bastarache@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>; Carol Landry @arcenergy.co>
Subject: RE: EXT - FW: Meeting with ARC Clean Energy Canada and NB Power

Hi Angèle,

It was a pleasure speaking with you this morning. In response to your questions below:

1) The topics for the meeting:
    a. Timeline to Commercial Operations
    b. Technology enabler to renewable integration on Grid
    c. Project Financing
    d. Deployment of Multiple Units for GHG reductions (Grid/non-grid solutions)

2) Mr. Plummer and Mr. Labbe will come to the ACOA office in Fredericton, unless Mr. McGuire would prefer a video conference

Also, the email addresses for them are as follows: @nbpower.com and @arcenergy.co.

Please let me know if I may assist further.

Thank you,

Joanne

From: Angele Bastarache <Angele.Bastarache@ACOA-APECA.GC.CA>
Sent: August 13, 2021 11:44 AM
To: Spires, Joanne @nbpower.com>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Subject: EXT - FW: Meeting with ARC Clean Energy Canada and NB Power

*** Attention: External Message / Message externe ***

Good morning Ms. Spires,

In the absence of Rose Croteau, I will assist in coordinating a meeting. As discussed over the phone, I will be sending a meeting request to Brett Plummer and William Labbe along with Francis McGuire and Kalie Hatt-Kilburn while copying you for a meeting scheduled for August 25 (9 am to 9:50 am).

1) Would you have any additional pertinent information for briefing prior to the meeting?
2) Would it be best to have the meeting via video conference?

Please advise.

Thank you kindly.

Angèle Bastarache
Administrative Assistant to the President, President's Office
Atlantic Canada Opportunities Agency / Government of Canada
angele.bastarache@acoa-apeca.ca / Telephone : 506-961-3299

Adjointe administrative au président, Cabinet du président
Agence de promotion économique du Canada atlantique / Gouvernement du Canada
angele.bastarache@acoa-apeca.gc.ca / Téléphone : 506-961-3299

Government of Canada / Gouvernement du Canada

From: Spires, Joanne @nbpower.com>
Sent: August 13, 2021 8:05 AM
To: Manon Maurice <Manon.Maurice@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>; Carol Landry @arcenergy.co>
Subject: Meeting with ARC Clean Energy Canada and NB Power

Good morning Manon,

ARC Clean Energy are interested in meeting with Francis McGuire and Kalie Hatt-Kilburn. If possible, the week of August 23rd appears to work best for them and Mr. Plummer.

Can you please advise if there may be a time slot for this meeting during that week. If not, if you can offer alternatives, it would be greatly appreciated.

Thank you,

Énergie NB Power
the power of possibility
débordant d'énergie

Joanne C. Spires
Executive Assistant to Brett Plummer
Vice President Nuclear and Chief Nuclear Officer |
Ajointe exécutive au Vice-président du chantier et chef de l'exploitation nucléaire

T:
C:
nbpower.com | energienb.com

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

MEETING NOTE

To:	Francis P. McGuire	Security classification N/A
From:	Kalie Hatt-Kilburn	Reference No. DT601483
		Date submitted

Subject:	**Meeting with ARC Clean Energy and NB Power**
Meeting Date:	9:00 am – 9:50 am – August 25, 2021
Location:	ACOA NB Office, 81 Regent Street.
Participants:	ACOA Participants • Francis McGuire • Kalie Hatt-Kilburn External Participants • Brett Plummer – Vice President Nuclear & Chief Nuclear Officer, NB Power • William Labbe – President & CEO, ARC Canada

Meeting Objective:

- This meeting was requested by NB Power on behalf of ARC Clean Energy in order for the company to update ACOA on its plans.

Key Facts and Considerations:

General Background:

- The New Brunswick Energy Solutions Corporation, a provincial Crown corporation, committed $10 million in 2018 towards the establishment of an advanced SMR Research Cluster in New Brunswick. Moltex and ARC Clean Energy also each invested $5 million to progress research and development of their advanced technologies.
- The Government of New Brunswick, is also playing a role in helping to map a Canadian strategy for the development of SMR technology. In December 2019, New Brunswick, Ontario and Saskatchewan signed a Memorandum of Understanding (MOU) to work cooperatively for the development and deployment of SMR in Canada. In August 2020, Alberta also signalled its intent to sign the MOU.
- In the State of the Province address in January 2021, Premier Higgs underscored his commitment to developing non-emitting sources of energy and announced:
  - A $20 million investment in ARC Clean Energy (with $30 million in private matching funds);
  - A continued partnership with the federal government to support Moltex; and
  - Activating an under-utilized supply chain to participate in a worldwide SMR market.

Federal SMR Investments

-

- To date, ISED has approved two significant SMR investments under the Strategic Innovation Fund (SIF) for Moltex ($47.5M) and Terrestrial Energy ($20M).
- ACOA has also made significant investments in the SMR technology cluster in New Brunswick *(see Appendix A)*
- ACOA's investments, coupled with its advocay efforts, demonstrate the Agency's support for SMR technology development and the Agency's intregal role as convenor.
-

- It is very unlikely that the utilities can self-fund SMR projects by recouping the level of investment required for SMR development through increases to their rate bases – particularly in jurisdictions where utility boards prevent rate increases (like in NB).

ARC Update

- ARC has advised that they will provide information on the following topics:
    - Timeline to Commercial Operations
    - Technology enabler to renewable integration on Grid
    - Project Financing
    - Deployment of Multiple Units for GHG reductions (Grid/non-grid solutions)

Key Points to Raise:

- SMRs can support Canada's goals of phasing out coal by 2030, becoming carbon net zero by 2050, and providing affordable clean energy.
- Strengthened federal government climate policies are being implemented to drive Canada's economy towards decarbonisation and net-zero emissions by 2050.
- The size of ACOA's funding envelope would make it challenging for the Agency to provide assistance given the magnitude of the investments required to see SMR technology through to demonstration.
- ACOA supports the desire to move toward cleaner, non-emitting electricity and will work within its mandate to advocate for projects that support and promote opportunities for economic development and by championing the region's strengths.
-

s.20(1)(b)

s.21(1)(b)

s.21(1)(c)

Brett Plummer - Vice President Nuclear & Chief Nuclear Officer – NB Power

Brett was appointed Vice President Nuclear & Chief Nuclear Officer at NB Power's Point Lepreau Nuclear Generating Station in November 2015. He is accountable for leading the Point Lepreau Nuclear Generating Station's strategic direction to achieve safe, predictable and productive nuclear performance.

Brett's extensive background includes more than 40 years of commercial nuclear power plant experience in Operations, Senior Leadership and Project Management roles.

Brett holds a Bachelor of Science degree in Technical Business from New Hampshire College, as well as an Associate of Science degree in Nuclear Engineering Technology from the University of New York. While in the United States Navy, he attended the Naval Nuclear Power School as well as the Naval Electronics Technician School. Additionally, Brett has completed the Institute of Nuclear Power Operations (INPO) Senior Nuclear Plant Management Course.

William Labbe - President & CEO – ARC Canada

Mr. Labbe has over 30+ years of experience and progressive responsibility in senior leadership positions.

Most recently, Mr. Labbe served as Owner's Engineer at Commonwealth Fusion Systems.

Previously, as Senior Vice President, Mr. Labbe had responsibility for Program Management of TRC Company's Power Sector, West Region Power Delivery Operations, and the Corporate Strategic Planning and Initiatives.

In addition, Mr. Labbe has held positions in Utility Power Generation Business Units and has served in various leadership capacities in Power Plant Operations, Work Controls, Outage Management, Project Management and Portfolio Management. His qualifications include extensive hands-on planning, permitting, and regulatory affairs in order to obtain the necessary License Amendmnet Requests (LARs) approvals of both Federal (NRC) and State agencies (PSCs); organizing and managing Plant Outages as well as the management of large EPC Projects where his fleet portfolio budget (7 PWRs / 1 BWR) was in excess of $2 Billion.

Mr. Labbe's background includes extensive experience in the public and private sectors including Pacific Gas & Electric, Florida Power and Light / NextEra Energy, Northeast Utilities and Southern Califoria Edison.

Appendix A: ACOA investements in the SMR technology cluster in New Brunswick

$3 million – Moltex (conditionally repayable)

- This project will help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

$5 million – NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site in New Brunswick. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will also be engaging with First Nations and the public as part of this project.

$561,750 – UNB's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is intended to boost the centre's capacity to partner with private industry in research and development.

$13,750 – North Shore Micmac District Council (NSMDC) (non-repayable)

- This project is supporting strategic planning for Indigenous involvement in SMR development in NB.

From:	Sharon Stanford-Rutter
To:	Francis McGuire; Kalie Hatt-Kilburn;
Cc:	Peta Fussell; Marc LeBlanc; Ann Kenney;
Subject:	Moltex - materials and additional information
Attachments:	2021.03.18 NR_SIF Moltex+ACOA bundle_V09_FINAL_EN.docx;DT597352_Media lines_SMRs_Bundle_FR.docx;DT597352_Media lines_SMRs_Bundle_ENG.docx;2021.03.18 SBK_Moltex_V06_FINAL.docx;2021.03.18 NR_SIF Moltex+ACOA bundle_FINAL_FR (003).docx;2021.03.18 SP_LeBlanc_SIF Moltex (ACOA bundle)_V06_FINAL_BIL(clean).docx;
Sent:	3/17/2021 7:43:47 PM

Hey there – have attached a backgrounder on SIF, Minister LeBlanc's speaking notes, the news release, and the media lines/Qs and As.

FYI, the following provincial politicians will also be in attendance:

Minister Arlene Dunn -
Minister Gary Crossman -
MLA Andrea Anderson-Mason -
Minister Trevor Holder -

Confirmed reporters are:

CHSJ News
Brunswick News
Global News
CTV Atlantic
All NB

Thanks! Please let me know if you have questions.

Sharon Stanford-Rutter
Director, Communications/Directrice, Communications
ACOA New Brunswick-APECA N.-B.
Cell: 506-260-2301
Sharon.stanford-rutter@canada.ca

s.19(1)

News Release

For Immediate Release

Government of Canada invests in technology to help reach net-zero greenhouse gas emissions

Support for small modular reactor research and technology development in New Brunswick to help produce clean energy and reduce storage of nuclear waste

March 18, 2021 – Saint John, New Brunswick – Innovation, Science and Economic Development Canada and the Atlantic Canada Opportunities Agency

As a global leader in nuclear energy and nuclear safety, Canada has one of the world's most promising domestic markets for the safe and responsible development of small modular reactor (SMR) technology. SMRs are expected to play a key role in Canada's efforts to achieve net-zero greenhouse gas emissions by 2050 and provide economic benefits as Canada transitions to a clean growth economy.

The Honourable Dominic LeBlanc, President of the Queen's Privy Council for Canada and Minister of Intergovernmental Affairs, on behalf of the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry, and the Honourable Mélanie Joly, Minister of Economic Development and Official Languages and Minister responsible for the Atlantic Canada Opportunities Agency (ACOA), today announced an investment of $50.5 million in Moltex Energy Canada Inc., provided through the Strategic Innovation Fund (SIF) and the Regional Economic Growth through Innovation (REGI) program.

This contribution will help Moltex develop a Stable Salt Reactor – Wasteburner (SSR-W) that will produce emissions-free energy through the WAste To Stable Salts (WATSS) process that recycles existing used nuclear fuel to produce clean energy. This technology has the potential to reduce storage needs for existing used nuclear fuel and could lead the way in establishing a first-of-its-kind, world-class clean-energy system for Canada and the world.

In addition to this investment, Minister LeBlanc also announced the following:

- $4,999,568 million to help NB Power Corporation prepare the site at its Point Lepreau location for SMR deployment and demonstration; and
- $561,750 to help the University of New Brunswick's Centre for Nuclear Energy Research expand its capacity to support SMR technology development in New Brunswick.

These projects support the Government of Canada's Innovation and Skills Plan by building a highly skilled workforce and advancing research in new foundational technology—a key component for future economic growth and innovation. They also support Canada's SMR Action Plan, which outlines a long-term vision for the development and deployment of this technology in Canada and the world.

Quotes

"Our government supports the use of this innovative technology to help deliver cleaner energy sources and build on Canada's global leadership in small nuclear reactors. As we continue to protect Canadians and support them through the COVID-19 pandemic, we must also lay the foundation for a better-prepared, healthier and more prosperous Canada. The investments announced today will play a critical role in fighting climate change and will boost Canada's economic stabilization after the pandemic."
– The Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry

"Today's announcement demonstrates our government's commitment to a clean environment and a strong economy. By investing in an SMR technology cluster in New Brunswick, we are proud to support emerging technology with great potential to generate economic opportunities for Canada and the world."
– The Honourable Mélanie Joly, Minister of Economic Development and Official Languages and Minister responsible for the Atlantic Canada Opportunities Agency

"The future of energy in Atlantic Canada is carbon-free. Today's investment to develop innovative SMR technology in New Brunswick will support the deployment of the Atlantic Loop, help us build a more resilient economy and bring us one step closer to our climate goal of net-zero emissions by 2050."
– The Honourable Dominic LeBlanc, President of the Queen's Privy Council for Canada and Minister of Intergovernmental Affairs and Member of Parliament for Beauséjour

"SMRs are a game-changing technology with the potential to lower emissions, create jobs and increase our competitiveness. This supports workers in New Brunswick and strengthens Canada's position as a Tier-1 nuclear nation."
– The Honourable Seamus O'Regan Jr., Minister of Natural Resources

"We are extremely grateful to the federal government for its support of our project to design and commercialize an innovative nuclear reactor and nuclear waste recycling facility. We are one step closer to providing clean, reliable and affordable energy to the province of New Brunswick, while growing the economy and creating high-value jobs. This investment will support economic recovery and help Canada meet its net-zero emissions and waste minimization goals."
– Rory O'Sullivan, Chief Executive Officer, North America, Moltex Energy

"The best way to ensure that Canada, specifically New Brunswick, becomes a leader in advanced small modular reactor development is through continued engagement and partnerships. Two years ago, we signed a memorandum of understanding with Ontario and Saskatchewan, committing to collaborate on the development of SMRs, right here in Canada. By investing in SMRs, not only are we supporting the development of local expertise but we are also helping to create a critical mass to attract the best talent, which will enable other companies in our province to grow. I am confident this technology could help us create a more prosperous and sustainable tomorrow for future generations."
– The Honourable Blaine Higgs, Premier of New Brunswick

Quick facts

- Moltex is receiving $47.5 million through SIF and $3 million through REGI.
- As part of the SIF investment, the company has committed to creating and maintaining 48 full-time jobs.
- SMRs offer a clean energy alternative to conventional coal and fossil fuel power generation, with the potential to reduce the use of diesel fuel in remote sites and increase the competitiveness of Canada's key industrial sectors.
- The SMR technology being developed by New Brunswick-based Moltex Energy Canada Inc. is grid-connected and can produce 300 MW of electricity. It seeks to generate emissions-free energy through a process that recycles existing used nuclear fuel, potentially offsetting up to 2.1 million tonnes of greenhouse gases.
- REGI supports projects that promote sustainable community economic development, enhance business development and growth, and facilitate innovation.
- In addition to SIF, there are various programs and services to help businesses innovate, create jobs and grow Canada's economy. With its simple, story-based user interface, the Business Benefits Finder can match businesses with the most fitting programs and services in about two minutes.

Associated links

- Strategic Innovation Fund
- Innovation and Skills Plan
- ACOA's Regional Economic Growth through Innovation (REGI)
- SMR Roadmap
- SMR Action Plan
- Canada's COVID-19 Economic Response Plan
- Coronavirus disease (COVID-19)

Contacts

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Follow Innovation, Science and Economic Development Canada on Twitter: @ISED_CA

INFOCAPSULES

Le 18 mars 2021

Annonce de financement pour les PRM / Moltex

Messages clés :

- Innovation, Sciences et Développement économique Canada (ISDE) et l'Agence de promotion économique du Canada atlantique (APECA) encouragent le développement d'un pôle technologique de petits réacteurs modulaires (PRM) au Nouveau-Brunswick, conformément au plan d'action des PRM du gouvernement du Canada et aux efforts du gouvernement provincial pour donner une impulsion à l'industrie.

- En tant que chef de file mondial dans le domaine de l'énergie et de la sûreté nucléaires, le Canada est en passe de devenir un grand acteur dans le développement sécuritaire et responsable de la technologie des PRM.

- Logiquement, les PRM joueront un rôle essentiel dans l'atteinte de la carboneutralité d'ici 2050 au Canada et la production de retombées économiques en vue d'une transition vers une économie plus propre.

- Les investissements dans les PMR annoncés aujourd'hui sont essentiels à la mise en place d'une solution canadienne de sources énergétiques non émettrices, pour assurer une production de base propre en complément d'autres sources d'énergie renouvelable au Nouveau-Brunswick, et pour créer des possibilités de commercialisation, de développement de la chaîne d'approvisionnement et d'exportation.

- ISDE investit 47,5 millions de dollars dans Moltex, en provenance de son Fonds stratégique pour l'innovation, et l'APECA investit plus de 8,5 millions de dollars dans le cadre de son programme Croissance économique régionale par l'innovation (CERI) dans Moltex, Énergie NB et le Centre de recherche sur l'énergie nucléaire de l'Université du Nouveau-Brunswick.

Q. et R.

Q1. Qu'est-ce qu'un petit réacteur modulaire (PRM) avancé?

R1. Voici quelques caractéristiques des petits réacteurs modulaires :

- « **Petits** » en dimension et aussi en matière de production d'énergie par rapport aux centrales conventionnelles. Ils produisent jusqu'à 300 mégawatts (MW) d'électricité, contre 700 à 900 MW pour les réacteurs traditionnels.

- « **Réacteurs** » avancés qui utilisent l'énergie nucléaire, un moyen efficace et non polluant de produire de l'électricité. Leur conception comprend également des dispositifs de sécurité simplifiés et une résistance à la prolifération.
- « **Modulaires** » signifie qu'ils sont fabriqués en usine, ce qui permet de réaliser des économies d'échelle, et transportés ensuite sur le site afin de réduire les coûts d'investissement et d'en faciliter l'installation, l'exploitation et le démontage.

Q2. Quel investissement ISDE fait-il dans le pôle technologique des PRM au Nouveau-Brunswick?

R2. ISDE investit 47,5 millions de dollars dans Moltex, qui proviennent de son Fonds stratégique pour l'innovation.

- Cette contribution aidera à mettre au point un réacteur à sels stables (RSS) qui produira de l'énergie sans émissions grâce au processus de conversion des déchets en sels stables qui recycle les déchets nucléaires existants pour alimenter la production d'énergie propre. Cette technologie a le potentiel de réduire les besoins de stockage des déchets nucléaires existants et pourrait ouvrir la voie à l'établissement d'un système d'énergie propre de classe mondiale, le premier en son genre.

Q3. Quel investissement l'APECA fait-elle dans le pôle technologique des PRM au Nouveau-Brunswick?

R3. L'APECA investit dans les projets suivants :

Trois millions de dollars dans Moltex (remboursable sous conditions)

- Ce projet aidera Moltex à démontrer, dans un environnement à faible radioactivité, la viabilité fondamentale de sa technologie brevetée de conversion du combustible usé des réacteurs CANDU en combustible recyclé pour les PRM. Cette technologie vise à réduire le coût, le volume et la toxicité des déchets nucléaires usés tout en produisant de l'électricité propre à faible coût.

Cinq millions de dollars dans Énergie NB (non remboursable)

- Ce projet permettra à Énergie NB de se préparer à la mise en service et à la démonstration des technologies de PRM sur son site nucléaire approuvé au Nouveau-Brunswick. Le projet portera sur les activités fondamentales telles que déterminer les conceptions de base du site et se conformer aux exigences environnementales et réglementaires. Énergie NB mènera également des consultations auprès des Premières Nations et du public pour ce projet.

561,750 dollars au Centre de recherche sur l'énergie nucléaire de l'UNB (non remboursable)

- Ce projet consiste à étendre la capacité du centre de recherche à soutenir le développement du pôle technologique des PRM au Nouveau-Brunswick. Les activités comprennent l'embauche d'un responsable de l'innovation et d'un consultant pour établir un système de gestion de la qualité qui répondra aux normes de certification de l'industrie. Cet investissement vise à renforcer la capacité du centre à s'associer au secteur privé dans le domaine de la recherche et du développement.

Q4. En quoi l'investissement de l'APECA dans Moltex diffère-t-il de l'investissement d'ISDE provenant du Fonds stratégique pour l'innovation?

R4.

- L'investissement de l'APECA permet à Moltex de mener un projet de démonstration de faible radioactivité à partir de matériaux inactifs pour valider sa technologie de conversion du combustible. Il s'agit d'un élément fondamental du processus plus large visant à établir la viabilité de la technologie. Le financement de l'APECA couvre les coûts liés à cette démonstration, une entreprise qui n'est pas soutenue par d'autres intervenants provinciaux ou fédéraux.

- Moltex passera ensuite aux phases suivantes du développement technologique, financées par le Fonds stratégique pour l'innovation d'ISDE et d'autres programmes, partenaires et investissements privés. Ce projet de démonstration est un catalyseur essentiel au développement de l'industrie des PRM dans le Canada atlantique, et un investissement stratégique pour l'Agence.

Q5. Pourquoi le gouvernement du Canada investit-il dans le Moltex?

R5.

- La technologie innovante de conversion des déchets de Moltex a le potentiel de bouleverser l'industrie nucléaire en transformant les déchets nucléaires en combustible pour de nouveaux réacteurs, créant ainsi une nouvelle valeur ajoutée.

- Les investissements accordés à Moltex, à Énergie NB et au Centre de recherche sur l'énergie nucléaire suivent la feuille de route et le plan d'action des PRM du Canada, une vision à long terme pour le développement et le déploiement de cette technologie au Canada. En raison de leur petite taille et de leur adaptabilité, les technologies de PRM constituent une option énergétique propre pouvant remplacer les méthodes conventionnelles qui ont recours au charbon et aux combustibles fossiles, y compris pour les secteurs difficiles à décarboniser comme l'extraction des ressources et les industries lourdes. Les PRM sont également dotés de dispositifs de sûreté et de sécurité améliorés, ce qui réduirait bon nombre des risques inhérents aux installations nucléaires classiques.

- Le financement de ces projets s'inscrit dans le plan du gouvernement visant à dépasser l'objectif climatique du Canada pour 2030, ainsi que dans l'objectif de carboneutralité d'ici 2050 que vise le gouvernement, puisque les PRM ne produisent pas d'émissions.

- Les PRM présentent des avantages économiques et joueront un rôle important pour répondre à la demande croissante de sources d'énergie propres, sûres et abordables. Selon Ressources naturelles Canada (RNC), le marché des PRM a le potentiel de créer 6 000 emplois directs et indirects et de générer deux milliards de dollars d'activité économique par an au Canada d'ici 2040. En investissant dans des projets de PRM, le Fonds stratégique pour l'innovation peut jouer un rôle moteur dans la réalisation de ces avantages pour le Canada.

Q6. Le gouvernement provincial a récemment annoncé un investissement de 20 millions de dollars dans ARC Clean Energy pour développer la technologie des PRM. Pourquoi le gouvernement fédéral n'investit-il pas dans cette entreprise? Pourquoi investit-il dans deux entreprises qui développent des technologies de PRM?

R6.

- Les deux entreprises – Moltex et ARC Clean Energy – s'efforcent de mettre au point des technologies permettant de soutenir un système énergétique propre.

- Ni l'APECA ni ISDE ne finance ARC Clean Energy dans le cadre de ce cycle de financement. Ces nouvelles technologies, différentes, en sont à des stades différents de développement et le financement se fait en fonction des divers calendriers ou besoins. Actuellement, le gouvernement provincial du Nouveau-Brunswick a annoncé des investissements stratégiques pour ARC Clean Energy afin que l'entreprise puisse poursuivre son travail de développement dans la province aux côtés des sociétés d'État, de l'industrie et du monde universitaire.

- Les investissements annoncés aujourd'hui viendront compléter ceux déjà promis par le Nouveau-Brunswick en faisant progresser le développement du pôle de recherche sur les PRM de la province. L'APECA continuera d'examiner et d'évaluer les projets dans ce secteur au fur et à mesure qu'ils progressent.

Q7. Vous avez mentionné que cette technologie sera importante en contexte de sources énergétiques moins émettrices. Comment ce projet contribue-t-il à une énergie plus propre? Et qu'en est-il des déchets nucléaires?

R7.

- De nombreux gouvernements dans le monde se tournent vers l'énergie nucléaire pour réduire les émissions à l'origine du changement climatique. La technologie des PRM de Moltex est potentiellement une solution de rechange aux centrales électriques au charbon et à l'utilisation de combustibles fossiles dans les applications industrielles lourdes, réduisant ainsi les émissions de gaz à effet de serre.

- La technologie de conversion des déchets en sels stables vise à recycler les déchets de combustible nucléaire provenant des réacteurs nucléaires existants.

- Tout déchet radioactif résultant de cette technologie de PRM, ou autres, sera géré conformément à la politique du gouvernement du Canada en matière de déchets radioactifs et devra être approuvé par la Commission canadienne de sûreté nucléaire, l'organisme de réglementation indépendant du Canada. Le gouvernement du Canada est déterminé à faciliter la mise en place de solutions sûres pour la gestion des déchets radioactifs, y compris les déchets provenant des PRM.

Q8. Qu'est-ce que la technologie des PRM de Moltex a de nouveau ou d'innovant?

R8.

- Avec ce projet, Moltex vise à construire le premier PRM avancé au monde qui utilise des déchets nucléaires existants comme combustible. L'incinérateur à déchets de réacteur à sels stables de Moltex vise à fournir une électricité propre et peu coûteuse, produite à partir des déchets laissés par les réacteurs CANDU existants.

- Cette technologie présente des avantages considérables pour la province, contribuant de manière substantielle à la stratégie canadienne de carboneutralité et ouvrant la voie à des possibilités d'exportation importantes, tant pour les composants fabriqués que pour le savoir-faire canadien.

Q9. Qu'est-ce que le Plan d'action des PRM?

R9.

- Le Plan d'action des PRM est le plan du Canada pour le développement, la démonstration et le déploiement des PRM pour de multiples applications au Canada et à l'étranger. Il se divise en chapitres qui regroupent les actions concrètes

soumises par plus de 100 organisations de tout le pays, dont sept gouvernements provinciaux et territoriaux et un large éventail d'acteurs de l'industrie, de la société civile et des collectivités autochtones.

- Le plan d'action est la suite logique de la feuille de route des PRM du Canada publiée en novembre 2018, qui définit une vision pour ce domaine émergent de l'innovation nucléaire. La feuille de route a marqué le début du plan du Canada pour devenir le chef de file mondial de cette technologie novatrice. Le Plan d'action répond aux 53 recommandations de la feuille de route et comprend des actions volontaires qui vont au-delà des recommandations initiales.

Q10. Qu'est-ce que le Nouveau-Brunswick espère accomplir de différent par rapport aux investissements effectués en Ontario?

R10.

- Les travaux au Nouveau-Brunswick visent à faire progresser le volet 2 de l'approche pancanadienne aux PRM, tandis que les investissements en Ontario financent les volets 1 et 3 du développement de projets de PRM.
    - **Volet 1 –** Proposer un premier projet de PRM adapté à la dimension du réseau d'environ 300 MW et construit sur le site nucléaire de Darlington, en Ontario, d'ici 2028, suivi d'un parc d'unités en Saskatchewan, dont la première unité entrerait en service d'ici 2032.
    - **Volet 2 –** Proposer deux conceptions de réacteurs avancés au Nouveau-Brunswick pour une mise en service sur le site de Point Lepreau. L'objectif serait d'achever les unités de démonstration d'ici 2035.
    - **Volet 3** – Proposer une nouvelle classe de micro-PRM conçue principalement pour remplacer l'utilisation du diesel dans les collectivités éloignées et les mines. Un projet de démonstration de 5 MW est en cours sur le site des Laboratoires de Chalk River, en Ontario, et devrait être en service d'ici 2026.
- Les entreprises ARC et Moltex développent des technologies complémentaires et chacune de leurs conceptions comporte des dispositifs de sécurité passive et inhérente, les deux réacteurs contribuant, à leur manière, au traitement du combustible nucléaire usé.

Q11. Quand les PRM seront-ils en service au Nouveau-Brunswick?

R11.

- L'objectif pour les premières unités de démonstration déployées au Nouveau-Brunswick est 2030-2035. Il s'agit d'une longue échéance, mais il y a de nombreuses complexités technologiques et exigences réglementaires à satisfaire.

Q12. Les communautés des Premières Nations ont-elles été consultées sur le développement de la technologie des PRM au Nouveau-Brunswick?

R12.

- Énergie NB mène des consultations actives auprès des communautés des Premières Nations pour discuter du potentiel et des possibilités de ce pôle technologique de PRM. Une partie du projet de cinq millions de dollars financé par l'APECA aidera la société d'État à mener ces consultations.

Q13. Pourquoi le gouvernement du Canada investit-il dans les PRM plutôt que dans la capacité d'énergie renouvelable?

R13.

- Pour répondre aux besoins de production d'électricité des Canadiens et des Néo-Brunswickois en particulier, toutes les sources d'énergie seront nécessaires. L'accroissement de l'électrification et le vieillissement des actifs actuels nécessitent des investissements pour garantir la capacité de production d'électricité de base.

- Les sources d'énergie renouvelables comme le solaire et l'éolien sont intermittentes, tandis que l'énergie nucléaire constitue une source d'énergie de base solide et fiable. Il est important d'investir dans les PRM en parallèle aux sources d'énergie renouvelables afin de garantir que les entreprises et les citoyens aient accès à l'électricité dont ils auront besoin à l'avenir pour prospérer et se développer.

Q14. Quelles activités le gouvernement provincial a-t-il entreprises pour soutenir le développement des PRM au Nouveau-Brunswick?

R14.

- Énergie NB a investi dans ARC Clean Energy et Moltex pour faire progresser la technologie des PRM de Génération IV adaptés à la dimension du réseau électrique en vue de sont utilisation au Nouveau-Brunswick.

- La Société de solutions énergétiques du Nouveau-Brunswick, une société d'État provinciale, s'est engagée à verser dix millions de dollars en 2018 pour la création d'un pôle de recherche avancée sur les PRM au Nouveau-Brunswick. Les entreprises ARC et Moltex ont également investi chacune cinq millions de dollars pour faire progresser la recherche et le développement de leurs technologies de pointe.

- Le gouvernement du Nouveau-Brunswick, par l'entremise de la Société des solutions énergétiques, joue également un rôle en aidant à définir une stratégie canadienne pour le développement de la technologie des PRM. En décembre 2019, le Nouveau-Brunswick, l'Ontario et la Saskatchewan ont signé un protocole d'entente pour travailler ensemble à la mise au point et au déploiement des PRM au Canada. En août 2020, l'Alberta a également signalé son intention de signer le protocole d'entente.

- Lors du discours sur l'état de la province en janvier 2021, le premier ministre Higgs a souligné son engagement à développer des sources d'énergie non émettrices et a annoncé :

    - un investissement de 20 millions de dollars dans ARC Clean Energy (avec 30 millions de dollars de fonds de contrepartie privés);
    - un partenariat continu avec le gouvernement fédéral pour soutenir Moltex;
    - l'activation d'une chaîne d'approvisionnement sous-exploitée pour participer à un marché mondial des PRM.

Préparation et approbations :

- **Préparé par :** Peta Fussell, analyste principale des politiques, 506-260-9751 et Laura DeLong, analyste des politiques, APECA (Nouveau-Brunswick) 506-429-9848

- **Personne-ressource du secteur :** Ted Parisé, agent de développement économique, 506-260-7020

- **Approuvé par :** Kalie Hatt-Kilburn, directrice générale, Opérations régionales, APECA (Nouveau-Brunswick) 506-260-1563

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

Canada

MEDIA LINES

March 18, 2021

SMR / Moltex Funding Announcement

Key Messages:

- ISED and ACOA are supporting the development of a small modular reactor (SMR) technology cluster in New Brunswick, in line with the Government of Canada's SMR Action Plan and the provincial government's efforts to advance the industry.

- As a global leader in nuclear energy and nuclear safety, Canada is poised to be a leader in the safe and responsible development of SMR technology.

- SMRs are expected to play a key role in Canada's efforts to achieve net-zero greenhouse gas emissions by 2050 and in providing economic benefits as we transition to a clean growth economy.

- The SMR investments announced today are foundational for a made-in-Canada solution of non-emitting energy sources, to secure a clean baseload complement to other renewable energy sources in New Brunswick, and to create opportunities for commercialization, supply chain development, and exports.

- ISED is investing $47.5 million in Moltex through its Strategic Innovation Fund and ACOA is investing more than $8.5 million through its Regional Economic Growth through Innovation (REGI) program in Moltex, NB Power, and the Centre for Nuclear Energy Research at the University of New Brunswick.

Q&As:

Q1. What are advanced small modular reactors (SMRs)?

A1. Small modular reactors are:

- **Small** in both size and power output compared to conventional power reactors. They produce up to 300 megawatts (MW) of electricity, as opposed to 700-900 MW produced by traditional reactors.
- **Modular** means that they are manufactured in factories, thus creating economies of scale and transported to site for lower capital costs as well as ease of installation, operation and removal.
- **Reactors** in advanced SMRs use nuclear power, which is a non emitting and efficient way to generate electricity. SMRs are also designed for simplified safety and proliferation resistance.

Q2. What investment is ISED making in the SMR technology cluster in New Brunswick?

A2: ISED is investing $47.5 million in Moltex through its Strategic Innovation Fund.

- This contribution will help to develop a Stable Salt Reactor (SSR) that will produce emissions-free energy through the Waste to Stable Salts (WATSS) conversion process that recycles existing nuclear waste to fuel the production of clean energy. This technology has the potential to reduce storage needs of existing nuclear waste and could lead the way in establishing a first-of-its-kind world-class clean-energy system.

Q3. What investments is ACOA making in the SMR technology cluster in New Brunswick?

A3. ACOA is investing in the following projects:

$3 million in Moltex (conditionally repayable)

- This project will help Moltex demonstrate in a low-radioactive setting the foundational viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology aims to reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

$5 million in NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site in New Brunswick. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will also be engaging with First Nations and the public as part of this project.

$561,750 in UNB's Centre for Nuclear Energy Research (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is intended to boost the centre's capacity to partner with private industry in research and development.

Q4. How does the ACOA investment in Moltex differ from the investment that ISED is making through the Strategic Innovation Fund?

A4.

- ACOA's investment is supporting Moltex to conduct a low-radioactive demonstration project that uses inactive materials to validate its fuel conversion technology. It is a foundational component of the larger process to establish viability of the technology. ACOA's support is covering the costs tied to this demonstration, an undertaking not supported by other provincial or federal stakeholders.

- Moltex will then progress to the subsequent phases of technology development, supported by the ISED SIF project and other programs, partners and private investments. This demonstration project is an essential catalyst for the development of the SMR industry in Atlantic Canada, and a strategic investment for the Agency.

Q5. Why is the Government of Canada investing in Moltex?

A5.

- Moltex's innovative waste conversion technology has the potential to disrupt the nuclear industry by transforming nuclear waste into fuel for new reactors, creating a new way to derive value from existing nuclear fuel waste.

- The investments in Moltex, NB Power and CNER align with Canada's SMR Roadmap and Action Plan, a long-term vision for the development and deployment of this technology in Canada. Due to their smaller sizes and scalability, SMR technologies can provide a clean energy alternative to conventional coal and fossil fuel energy generation, including in hard-to-decarbonize sectors like resource extraction and heavy industries. SMRs also come with enhanced safety and security features, which would reduce many of the safety risks inherent to conventional nuclear facilities.

- Supporting these projects aligns with the government's plan to exceed Canada's 2030 climate goal, as well as the meeting the government's goal of net-zero emissions by 2050, as SMRs are non-emitting.

- There are economic benefits to SMRs, which will play a significant role in addressing the increasing demand for clean, safe and affordable sources of energy. According to Natural Resources Canada (NRCan), the SMR market has the potential to create 6,000 direct and indirect jobs and $2 billion in economic activity per year in Canada by 2040. By investing in SMR projects, the Strategic Innovation Fund can be a significant driving force behind achievement of these benefits for Canada.

Q6. The provincial government recently announced a $20 million investment in ARC Clean Energy to develop SMR technology. Why is the federal government not investing in ARC Clean Energy? Why are there government investments in two companies developing SMR technologies?

A6.

- Both companies – Moltex and ARC Clean Energy – are working to develop technologies to support a clean-energy system.

- Neither ACOA, nor ISED, are providing support to ARC Clean Energy in this round of funding. These various novel technologies are at different stages in their development and need support based on a different timelines and/or needs. Currently, the New Brunswick provincial government has announced strategic investments for ARC Clean Energy in order for the organization to pursue its developmental work in the province alongside public utilities, industry and academia.

- The investments announced today will complement those investments already commited by the Province of New Brunswick by advancing the development of the SMR research cluster in New Brunswick. ACOA will continue to consider and evaluate projects in this industry as it progresses.

Q7. You mentioned that this technology will be important as we move towards energy sources that emit less carbon. How does this project contribute to cleaner energy? What about nuclear waste?

A7.

- Many governments around the world are looking to nuclear energy as a way to reduce emissions that cause climate change. Moltex's SMR technology is potentially an alternative to replace coal power plants and the use of fossil fuels in heavy industrial applications, thus reducing greenhouse gas emissions.

- The Waste to Stable Salts technology aims to recycle nuclear waste fuel from existing legacy nuclear reactors.

- Any resulting radioactive waste from this SMR technology, or others, will be managed in accordance with the Government of Canada's Radioactive Waste Policy and will require approval from the Canadian Nuclear Safety Commission, Canada's independent regulator. The Government of Canada is dedicated to ensuring that safe solutions are in place for managing radioactive waste, including any future waste from SMRs.

Q8. What is new and innovative about Moltex's SMR technology?

A8.

- With this project, Moltex is aiming to construct the world's first Advanced SMR that uses existing nuclear waste as its fuel. The Moltex Stable Salt Reactor Wasteburner aims to deliver clean and low-cost electricity, generated from the waste left by existing CANDU reactors.

- This could bring significant benefits to the province, make a substantial contribution to Canada's Net Zero strategy, and create substantial export opportunities, both for manufactured components and Canadian know-how.

Q9. What is the SMR Action Plan?

A9.

- The SMR Action Plan is Canada's plan for the development, demonstration and deployment of SMRs for multiple applications in Canada and abroad. The Action Plan includes chapters with concrete actions submitted by more than 100 organizations from across the country, including seven provincial and territorial governments and a wide range of industry, civil society and Indigenous voices.

- The Action Plan builds on the momentum of Canada's SMR Roadmap launched in November 2018, which charted a vision for this emerging area of nuclear innovation. The Roadmap marked the beginning of Canada's plan to lead the world in this game-changing technology. The Action Plan responds to the 53 recommendations in the Roadmap and includes voluntary actions that go beyond the initial recommendations.

Q10. How is what New Brunswick is hoping to accomplish different from the investments being made in Ontario?

A10.

- Work in New Brunswick aims to advance Stream 2 of the Pan-Canadian SMR approach while investments in Ontario are supporting Stream 1 and 3 of SMR project development.

    - **Stream 1:** Proposes a first grid-scale SMR project of about 300 MW constructed at the Darlington nuclear site in Ontario by 2028, followed by a fleet of units in Saskatchewan with the first unit in service by 2032.

    - **Stream 2:** Proposes two advanced reactor designs in New Brunswick for deployment at the Point Lepreau site. The target would be to complete demonstration units by 2035.

- **Stream 3:** Proposes a new class of micro SMRs designed primarily to replace the use of diesel for remote communities and mines. A demonstration project of 5 MW is underway at the Chalk River laboratories site in Ontario, with plans to be in service by 2026.

- ARC and Moltex are developing complementary technologies and each of their designs offers passive, inherent safety features with both reactors, in different ways, contributing to addressing used nuclear fuel.

Q11: Question: When will the SMRs be operational in New Brunswick?

A11:

- The target for the first two first-of-a-kind demonstration units deployed in New Brunswick is the 2030-35 time frame. While this is a long timeframe, there are many technological complexities and regulatory requirements to satisfy.

Q12: Have First Nations communities been consulted on the development of SMR technology in New Brunswick?

A12:

- NB Power is in active consultations with First Nations communities to discuss the potential and opportunities of this SMR technology cluster. A portion of the $5 million project funded by ACOA will assist the utility in conducting those consultations.

Q13: Why is the Government of Canada investing in SMRs instead of renewable energy capacity?

A13:

- To support the power generation needs of Canadians and New Brunswickers specifically, all sources of power will be required. Increased electrification and the aging of current assets require investments in securing baseload power generating capacity.

- Given that renewable energy generating sources like solar and wind are intermittent, nuclear enery provides a solid and reliable baseload power source. Investing in SMRs alongside renewable energy sources is important to ensure that both businesses and residents have access to the electricity they need in the future to thrive and grow.

Q14. What activities has the provincial government undertaken to support SMR development in New Brunswick?

A14.

- NB Power has invested in ARC Clean Energy and Moltex to advance Generation IV Grid sized SMR technology for use in New Brunswick.

- The New Brunswick Energy Solutions Corporation, a provincial Crown corporation, committed $10 million in 2018 towards the establishment of an advanced SMR Research Cluster in New Brunswick. Moltex and ARC Clean Energy also each invested $5 million to progress research and development of their advanced technologies.

- The Government of New Brunswick, through the Energy Solutions Corporation, is also playing a role in helping to map a Canadian strategy for the development of SMR technology. In December 2019, New Brunswick, Ontario and Saskatchewan signed a Memorandum of Understanding (MOU) to work cooperatively for the development and deployment of SMR in Canada. In August 2020, Alberta also signalled its intent to sign the MOU.

- In the State of the Province address in January 2021, Premier Higgs underscored his commitment to developing non-emitting sources of energy and announced:

    - A $20 million investment in ARC Clean Energy (with $30 million in private matching funds);
    - A continued partnership with the federal government to support Moltex; and
    - Activating an under-utilized supply chain to participate in a worldwide SMR market.

Preparation and approvals:

- **Prepared by:** Peta Fussell, Senior Policy Analyst, 506-260-9751 and Laura DeLong, Policy Analyst, ACOA NB, 506-429-9848

- **Sector contact:** Ted Parisé, Economic Development Officer, ACOA NB, 506-260-7020

- **Approved by:** Kalie Hatt-Kilburn, Director General, Regional Operations ACOA NB, 506-260-1563

Communiqué

Pour diffusion immédiate

Le gouvernement du Canada investit dans une technologie qui favorisera l'atteinte des émissions net zéro de gaz à effet de serre

Le gouvernement soutient la recherche et la mise au point technologique de petits réacteurs modulaires au Nouveau-Brunswick afin de produire de l'énergie propre et de réduire le volume de déchets nucléaires à entreposer

Le 18 mars 2021 – Saint John, Nouveau-Brunswick – Innovation, Sciences et Développement économique Canada et Agence de promotion économique du Canada atlantique

Le Canada se classe parmi les leaders mondiaux de la production d'énergie nucléaire et de la sûreté nucléaire. Le pays possède l'un des marchés intérieurs les plus prometteurs pour la technologie de petits réacteurs modulaires (PRM). Ces réacteurs devraient apporter une contribution clé aux efforts visant à atteindre l'objectif du Canada de ne produire aucune émission nette de gaz à effet de serre à l'horizon 2050. De plus, les projets dans ce domaine produiront des retombées économiques pendant la transition à une économie axée sur la croissance propre.

Le président du Conseil privé de la Reine pour le Canada et ministre des Affaires intergouvernementales, l'honorable Dominic LeBlanc, a annoncé aujourd'hui, au nom du ministre de l'Innovation, des Sciences et de l'Industrie, l'honorable François-Philippe Champagne, et de la ministre du Développement économique et des Langues officielles et ministre responsable de l'Agence de promotion économique du Canada atlantique (APECA), l'honorable Mélanie Joly, un investissement de 50,5 millions de dollars dans Moltex Energy Canada Inc. (anglais) par l'entremise du Fonds stratégique pour l'innovation (FSI) et du programme Croissance économique régionale par l'innovation (CERI).

Cette contribution appuiera la mise au point par Moltex d'un réacteur à sels stables – Wasteburner (RSS-W), qui produira de l'énergie propre et sans émission par la conversion de combustibles nucléaires usés existants en sels stables. La technologie pourrait réduire le volume de combustibles nucléaires usés à entreposer et ouvrir la voie à un système de production d'énergie propre sans précédent et de calibre mondial.

Le ministre LeBlanc a également annoncé les investissements complémentaires suivants :

- 4 999 568 $ à la Société d'énergie du Nouveau-Brunswick aux fins de la préparation de ses installations de Point Lepreau pour l'aménagement et la démonstration de PRM.
- 561 750 $ au Centre de recherche sur l'énergie nucléaire de l'Université du Nouveau-Brunswick (anglais), ce qui l'aidera à accroître sa capacité de soutien au développement de la technologie de PRM au Nouveau-Brunswick.

Ces projets cadrent avec le Plan pour l'innovation et les compétences du gouvernement du Canada, car ils favorisent l'établissement d'une main-d'œuvre hautement qualifiée et la conduite de travaux de recherche sur de nouvelles technologies fondamentales, des éléments clés pour la croissance économique et l'innovation. Ils appuient également la réalisation du Plan d'action des PRM, qui énonce une vision à long terme pour le développement et le déploiement de cette technologie au Canada et ailleurs dans le monde.

Citations

« Notre gouvernement appuie la mise en place de cette technologie innovatrice en vue de produire de l'énergie de façon plus écologique et de consolider le leadership mondial du pays en matière de petits réacteurs nucléaires. Nous poursuivons nos efforts pour protéger et soutenir les Canadiens durant la pandémie de COVID-19, mais jetons également les bases d'un avenir où le pays sera prêt à réagir à toute éventualité, plus sain et plus prospère. Les investissements annoncés aujourd'hui joueront un rôle primordial dans la lutte aux changements climatiques et favoriseront la stabilisation économique du Canada dans l'après-pandémie. »
– Le ministre de l'Innovation, des Sciences et de l'Industrie, l'honorable François-Philippe Champagne

« L'annonce d'aujourd'hui correspond à l'engagement de notre gouvernement à l'endroit d'un environnement sain et d'une économie forte. En investissant dans une grappe de technologies de PRM au Nouveau-Brunswick, nous appuyons fièrement un secteur émergent offrant d'excellentes avenues de développement économique pour le Canada et le monde entier. »
– La ministre du Développement économique et des Langues officielles et ministre responsable de l'Agence de promotion économique du Canada atlantique, l'honorable Mélanie Joly

« L'avenir énergétique du Canada atlantique passe par la décarbonisation. L'investissement annoncé aujourd'hui dans la conception de technologies de PRM de pointe s'inscrit dans le développement de la boucle de l'Atlantique et nous aidera à bâtir une économie plus résiliente. Nous nous rapprocherons ainsi de notre objectif en matière de changements climatiques : des émissions net zéro d'ici 2050. »
– Le président du Conseil privé de la Reine pour le Canada, ministre des Affaires intergouvernementales et député de Beauséjour, l'honorable Dominic LeBlanc

« Les PRM sont une technologie révolutionnaire qui ont le potentiel de réduire les émissions, de créer des emplois et d'améliorer la compétitivité. Ils permettent ainsi de soutenir les travailleurs du Nouveau-Brunswick et de renforcer la position du Canada à titre de pays nucléaire de niveau 1. »
– Le ministre des Ressources naturelles, l'honorable Seamus O'Regan Jr.

« Nous sommes profondément reconnaissants que le gouvernement fédéral appuie notre projet de conception et de commercialisation d'un réacteur nucléaire innovateur ainsi que d'installations de recyclage de déchets nucléaires. Nous faisons un pas de plus vers la production d'énergie propre, fiable et abordable au Nouveau-Brunswick, tout en soutenant la croissance économique et en créant des emplois à forte valeur ajoutée. Cet investissement soutiendra la relance économique et aidera le Canada à atteindre ces cibles en matière d'émissions net zéro et de réduction des déchets. »
– Le chef de la direction pour l'Amérique du Nord de Moltex Energy, Rory O'Sullivan

« La meilleure façon de veiller à ce le Canada, notamment le Nouveau-Brunswick, devienne un chef de file du développement des petits réacteurs modulaires de pointe est favoriser la mobilisation et les partenariats. Il y a deux ans, nous avons signé un protocole d'entente avec les gouvernements de l'Ontario et de la Saskatchewan, dans le cadre duquel nous nous sommes engagés à collaborer à la mise au point de petits réacteurs modulaires au Canada. En investissant dans ces réacteurs, nous favorisons non seulement la mise en place d'une expertise locale, mais nous contribuons également à créer les conditions idéales pour attirer les meilleurs talents. En conséquence, cela favorisera la croissance d'autres entreprises de notre province. Je suis convaincu que cette technologie peut nous aider à créer un avenir plus prospère et plus durable pour les générations futures. »
– Le premier ministre du Nouveau-Brunswick, l'honorable Blaine Higgs

Les faits en bref

- Moltex a obtenu 47,5 millions de dollars du FSI et 3 millions de dollars au titre du programme CERI.
- Dans le cadre de son entente de financement par le FSI, l'entreprise s'est engagée à créer ou à maintenir 48 emplois à temps plein.
- Les PRM sont une solution de rechange à la production d'électricité traditionnelle avec du charbon et des combustibles fossiles. Ces systèmes d'énergie propre pourraient servir à réduire l'utilisation de carburant diesel dans des régions éloignées. De plus, leur développement constitue un avantage concurrentiel pour des secteurs industriels clés au Canada.
- La technologie de PRM mise au point par l'entreprise néo-brunswickoise Moltex Energy Canada Inc. sera connectée au réseau électrique et pourra produire 300 MW d'électricité. L'entreprise produira de l'énergie sans émission en utilisant des combustibles nucléaires usés, ce qui pourrait entraîner une réduction de 2,1 millions de tonnes d'émissions de gaz à effet de serre.
- Le programme CERI appuie les projets qui favorisent le développement économique durable des collectivités, renforcent le développement et la croissance des entreprises, et facilitent l'innovation.
- Outre le FSI, un grand nombre de programmes et services sont offerts pour aider les entreprises à innover, à créer des emplois et à contribuer à l'essor économique du pays. Grâce à son interface utilisateur simple, l'Outil de recherche d'aide aux entreprises permet aux entreprises de dresser leur profil et d'avoir accès, en deux minutes environ, à l'information sur les programmes et les services qui leur conviennent le mieux.

Liens connexes

- Fonds stratégique pour l'innovation
- Plan pour l'innovation et les compétences
- Programme de croissance économique régionale par l'innovation de l'APECA
- Feuille de route des PRM
- Plan d'action des PRM
- Plan d'intervention économique du Canada pour répondre à la COVID-19
- Maladie à coronavirus (COVID-19)

Renseignements

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Cabinet du ministre de l'Innovation, des Sciences et de l'Industrie
john.power@canada.ca

Corinne Havard
Attachée de presse
Cabinet du ministre des Affaires intergouvernementales
Corinne.Havard@qpc-cpr.gc.ca

Relations avec les médias
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ic.mediarelations-mediasrelations.ic@canada.ca

Ann Kenney
Conseillère principale en communications
Agence de promotion économique du Canada atlantique, Nouveau-Brunswick
Ann.Kenney@canada.ca

Restez branchés

Suivez Innovation, Sciences et Développement économique Canada sur Twitter : @ISDE_CA.

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

Canada

Speaking Points

Dominic LeBlanc
President of the Queen's Privy Council for Canada and Minister of Intergovernmental Affairs, and Member of Parliament for Beauséjour

Funding Announcement for SMR cluster

Thursday, March 18, 2021
10:00 a.m.

Check Against Delivery

Thank you, Wayne Long, for the introduction.

- The Honourable Blaine Higgs, Premier of New Brunswick;
- Rory O'Sullivan, CEO of Moltex Energy Canada Inc.;
- Rep from NB Power;
- Paul Mazerolle, President and Vice Chancellor of the University of New Brunswick;
- Special guests;

Bonjour et bienvenue. Hello and welcome.

I am very pleased to be here today on behalf of my colleagues, the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry; the Honourable Mélanie Joly, Minister of Economic Development and Official Languages and Minister responsible for the Atlantic Canada Opportunities Agency; and the Honourable Seamus O'Regan, Canada's Minister of Natural Resources, to share exciting news for the province of New Brunswick and our energy future.

Small Modular Reactors – or SMRs – could represent the next great opportunity to take a bold step toward meeting our goal of net-zero emissions by 2050.

Our Government firmly believes that good jobs and a greener future go hand in hand. By investing in alternative sources of energy, we position Canada to be a global leader in emerging markets, all the while creating opportunities here at home for our workforce.

SMRs have potential to replace conventional coal and fossil fuel power generation, and to increase the competitiveness of some of Canada's most important industrial sectors.

Le Canada est un leader mondial en matière d'énergie et de sûreté nucléaire. Le marché canadien est aussi l'un des plus prometteurs pour la mise au point sécuritaire et responsable de la technologie des petits réacteurs modulaires (PRM).

New Brunswick-based Moltex Energy Canada is developing leading SMR technology designed to be grid-connected andpower approximately 210,000 homes. 300 MW of electricity. It aims to generate emissions-free energy through a process that recycles existing used nuclear fuel , potentially offsetting up to 2.1 million tonnes of greenhouse gases.

Our government supports the use of this innovative technology to help deliver cleaner energy sources and build on Canada's global leadership in SMRs.

That is why I am pleased to announce today that the Government of Canada is investing more than 56 million dollars ($56,000,000)

to support the development and advancement of safe, non-emitting and reliable energy generation.

This investment will help develop and validate SMR technology, secure the establishment of the industry in New Brunswick, and establish a first-of-its-kind, world-class, clean-energy system for Canada and the world.

Specifically, our government is investing to help Moltex Energy Canada develop a reactor that will recycle existing used nuclear fuel to produce of clean energy. This could also potentially reduce storage needs of existing used nuclear fuel.
Through its Strategic Innovation Fund, Innovation, Science and Economic Development Canada is investing over $47 million dollars ($47,500,000), while ACOA's Regional Economic Growth through Innovation program is contributing $3 million (3,000,000) to the project.

Furthermore, our government is supporting the development of an SMR technology research cluster in New Brunswick by investing close to five million dollars ($5,000,000) to help NB Power prepare for SMR deployment and demonstration at the Point Lepreau site; as well as more than half a million dollars ($561,750) for the Centre for Nuclear Energy Research at the University of New Brunswick.

La technologie des PRM permettra au Nouveau-Brunswick de jouer un rôle central dans la boucle de l'Atlantique, qui unira les quatre provinces de l'Atlantique et le Québec dans un projet de partage des capacités de génération d'énergie propre.

Ces projets vont générer 38 emplois, favoriser l'innovation et créer un système d'énergie propre pour la production d'électricité. Nous allons aussi pouvoir réduire les stocks de combustible nucléaire usé.

Grâce à ces investissements, nous allons avoir accès à des solutions canadiennes de production d'énergie carboneutre. Nous allons aussi pouvoir alimenter en électricité les communautés rurales et éloignées, et profiter des débouchés offerts dans le domaine de la commercialisation, du développement de la chaîne d'approvisionnement et de l'exportation.

Overall, this initiative marks the beginning of a coordinated effort to ensure New Brunswick is well positioned to become a global leader in the development and deployment of SMR technology, helping to meet our climate goals.

These projects support our government's Innovation and Skills Plan by building a highly skilled workforce and advancing research in new foundational technology—a key component for future economic growth and innovation.

Nous allons continuer de protéger et de soutenir les Canadiens durant la pandémie de COVID-19, tout en jetant les bases d'un avenir prospère au pays. Le Canada sera mieux outillé, et notre population, en meilleure santé.

Les investissements annoncés aujourd'hui vont jouer un rôle important dans la lutte aux changements climatiques. Ils vont aussi stimuler la compétitivité économique du Canada, une fois la pandémie de COVID-19 terminée.

By investing in a major SMR technology cluster in New Brunswick, we are supporting an emerging technology with great potential to generate economic opportunities across Canada and globally.

Thank you / Merci.

Word count: 755

Pages 145 to / à 151

are not relevant

sont non pertinentes

From:	Lindsay Walker
To:	Francis McGuire; Kalie Hatt-Kilburn; Marc LeBlanc;
Cc:	Laura DeLong; Michelle Caissie;
Subject:	RE: Meeting with Michael Vandergrift, Deputy Minister of Intergovernmental Affairs, PCO
Attachments:	Briefing Note to the Minister- ARC SMR.docx
Sent:	12/9/2021 1:53:04 PM

Hi Francis,

Please find attached the final version of the BN for the Minster re the ARC SMR.

Let us know if you have any questions.

Cheers,
Lindsay

From: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Sent: Thursday, December 09, 2021 1:51 PM
To: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>; Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Cc: Lindsay Walker <Lindsay.Walker@ACOA-APECA.GC.CA>
Subject: RE: Meeting with Michael Vandergrift, Deputy Minister of Intergovernmental Affairs, PCO

Thanks

From: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Sent: Thursday, December 9, 2021 1:40 PM
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>; Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Cc: Lindsay Walker <Lindsay.Walker@ACOA-APECA.GC.CA>
Subject: RE: Meeting with Michael Vandergrift, Deputy Minister of Intergovernmental Affairs, PCO

Not sure if there's been any movement, but I'll reach out and see what we can find out. The Minister's Office also requested a briefing note on ARC, which is due tomorrow. I'm copying Lindsay on this to ask her to share the final version with you – just for your reference.

Kalie

From: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Sent: Thursday, December 09, 2021 11:30 AM
To: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Cc: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Subject: RE: Meeting with Michael Vandergrift, Deputy Minister of Intergovernmental Affairs, PCO

From: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Sent: Thursday, December 9, 2021 8:21 AM
To: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Cc: Rose Croteau <Rose.Croteau@ACOA-APECA.GC.CA>
Subject: Meeting with Michael Vandergrift, Deputy Minister of Intergovernmental Affairs, PCO

Francis, Mr. Vandergrift will be in Moncton next Monday and would like to meet with you.

Your schedule would allow you to travel to Moncton and I'll get back to you with meeting time options.

Marc LeBlanc
A/Administrative Coordinator, President's Office
Atlantic Canada Opportunities Agency / Government of Canada
Marc.LeBlanc@acoa-apeca.gc.ca / Tel: 506-872-4550

Coordonnateur administratif, bureau du président, p.i.
Agence de promotion économique du Canada atlantique / Gouvernement du Canada
Marc.LeBlanc@acoa-apeca.gc.ca / Tél. : 506-872-4550

Government of Canada / Gouvernement du Canada

s.20(1)(b)

s.21(1)(b)

s.21(1)(c)

Atlantic Canada Opportunities Agency
Agence de promotion économique du Canada atlantique

Security classification
N/A
Reference No.
DT603807

President

Head Office
P.O. Box 6051
Moncton, N.B.
Canada E1C 9J8

BRIEFING NOTE

TO: The Honourable Ginette Petitpas Taylor
Minister of Official Languages and Minister responsible for ACOA

FROM: Francis P. McGuire

SUBJECT: ARC CLEAN ENERGY CANADA

PURPOSE: To provide an update on ARC Clean Energy's development of an advanced small modular reactor (SMR).

SUMMARY

- The development of SMR is a New Brunswick (NB)-based initiative, slated for deployment by NB Power beginning in the late 2020s, and represents an opportunity to support the country's move toward its vision for net-zero emissions.
- The Government of Canada released Canada's SMR Action Plan in December 2020.
- The magnitude of the investments required necessitates coordination with and funding from other federal departments to achieve development and deployment of SMRs across Canada.

BACKGROUND:

- The Government of Canada released Canada's SMR Action Plan in December 2020, which indicates that "innovation in the nuclear sector plays a critical role in reducing greenhouse gas emissions and delivering good, middle-

.../2

Canada

class jobs as Canada moves toward a low-carbon future."

- The release of the SMR Action Plan heightened expectations for federal funding to support SMR development amongst provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society.
- While the release of the SMR Action Plan recommended the provision of federal and provincial funding for SMR development, there was no funding allocated to SMRs in Budget 2021, leaving the Strategic Innovation Fund (SIF) program as the only likely funding source.
- To-date, Innovation, Science and Economic Development (ISED) has approved two significant SMR investments under the SIF for Moltex ($47.5M) and Terrestrial Energy ($20M).
-

Recent developments:

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- In November 2021, ARC made a presentation to Global Affairs Canada and Natural Resources Canada concerning the secure supply of high assay, low enriched uranimum (HALEU) fuel. Most North American reactor designs will require access to this fuel type, including ARC.
- At present the only available source of HALEU fuel is through imports from Russia and further conversion at US-based labs. While there is potential for a made-in-Canada supply in the long term, initial supply will need to come internationally to meet industry deployment timelines.
- The fuel source issue was highlighted in the SMR Action Plan as an area of required development for federal departments and industry.

RECOMMENDATION:

The Agency continues to advocate that federal departments should consult industry in determining their position on which SMR technologies should be supported. Since utilities will be the first market for these technologies, they are best positioned to speak to the market appeal of the various designs being proposed.

This position would appear to align with Minister Guilbeault's public comments regarding nuclear energy at the UN Climate Change Summit last month when he indicated: as for "which forms of energy will be part of tomorrow's energy mix, it's not up to government to decide which of these technologies will drive" the transition. "It's going to be up to the market."

NB Power is in active dialogue with other Canadian utilities on this matter and has expressed their willingness to meet with any federal representatives that would like to understand their perspective. ACOA is well positioned to facilitate any introductions that may be helpful with NB Power.

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s.21(1)(c)

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Francis P. McGuire

Attachments

.../5

Appendix A: Background information on small modular reactor development in Canada

Role of SMRs in clean energy supply:

- SMRs are small in both size and power output compared to conventional power reactors, producing one to 300 megawatts (MW) of electricity, as opposed to 700-900 MW produced by traditional reactors. They are manufactured in factories and transported to site after for lower capital costs as well as ease of installation, operation and removal.
- SMRs use nuclear power, which is a non emitting and efficient way to generate electricity and designed for simplified safety and proliferation resistance.
- The development of SMR technology offers a solution to solve NB's clean, baseload power generation needs and enable the province to play a central role in the advancement of the Clean Power Roadmap for Atlantic Canada.
- Potential economic and research expertise spin-offs in the development of SMR technology could be significant, as could the supply chain opportunities for NB and Canadian companies.

NB-based Developments in SMRs:

- New Brunswick is currently home to the development of two reactor designs undertaken by ARC and Moltex. Both are considered "generation 4" reactors, which are attractive to the market because they are safer than earlier versions, effectively mitigating the risk of a thermal nuclear incident.
- According to NB Power, utilities in Ontario, Saskatchewan and Alberta are closely following the development of the ARC unit in New Brunswick. These reactors represent the most advanced units currently under development in Canada and have the potential to meet future clean energy needs in those provinces.
- In the NB State of the Province address in January 2021, Premier Higgs underscored his commitment to non-emitting sources of energy and announced:
    - A $20M investment in ARC (with $30M in private matching funds);
    - A continued partnership with the federal government to support Moltex; and
    - Activating an under-utilized supply chain to participate in a worldwide SMR market.
- ACOA has also made significant investments in the SMR technology cluster in NB (see Appendix B)

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Global Context:

- Other countries around the world, notably the United States (US), the United Kingdom (UK) and France are taking steps to support SMR development.
    - US – the Department of Energy announced a $600 million matched-funding package (over seven years) from the Department of Energy's Advanced Reactor Demonstration Program.
    - UK – a $294 million spending package for SMRs has been announced to be matched by private-sector investment and delivered by the government agency UK Research and Innovation.
    - France – President Macron recently unveiled a 5-year 30 billion-euro investment plan for developing innovative technology and industrial activity, including building SMRs, electric cars and greener airplanes.

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Appendix B: ACOA investements in the SMR technology cluster in New Brunswick

$3 million – Moltex (conditionally repayable)

- This project will help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

$5 million – NB Power (non-repayable)

- This project will enable NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site in New Brunswick. The project will focus on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power will also be engaging with First Nations and the public as part of this project.

$561,750 – UNB's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project involves expanding CNER's capacity to support SMR technology cluster development in New Brunswick. The activities include hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment is intended to boost the centre's capacity to partner with private industry in research and development.

$13,750 – North Shore Micmac District Council (NSMDC) (non-repayable)

- This project is supporting strategic planning for Indigenous involvement in SMR development in NB.

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

From:	Kalie Hatt-Kilburn
To:	Daryell Nowlan; Kasi McMicking;
Cc:	Marc LeBlanc; Francis McGuire;
Subject:	RE: Need a meeting on SMRs asap with the 4 of us.
Attachments:	CEO letter on SMRs FINAL (003) Signed.pdf;2021 01 25 - CEO SMR Letter.pdf;Stream 2 fed gov request Dec 16 2019.pdf;
Sent:	4/29/2021 11:44:33 AM

Kasi & Daryell,

To provide you with a bit of context, you may find the attached info useful. They summarize the joint request to the federal government by utility CEOs re: SMR development. Following the release of the SMR Action plan by Minister O'Regan in December, expectations were raised that there would be some dedicated funding to see this through. Without a specific commitment in the budget, it would appear that ISED's SIF/Net Zero Accelerator is the only game in town.

Kalie

From: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>
Sent: Thursday, April 29, 2021 10:27 AM
To: Daryell Nowlan <Daryell.Nowlan@ACOA-APECA.GC.CA>; Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>; Kasi McMicking <Kasi.McMicking@acoa-apeca.gc.ca>
Cc: Marc LeBlanc <Marc.LeBlanc@ACOA-APECA.GC.CA>
Subject: Need a meeting on SMRs asap with the 4 of us.

January 25, 2021

The Right Honourable Justin Trudeau
Prime Minister of Canada
Ottawa, Ontario
K1A 0A2

Dear Prime Minister,

As the CEO's of the major electricity utilities of New Brunswick, Ontario and Saskatchewan and the Canadian Nuclear Association, we are writing to you today with regard to Canada's clean energy transition and the critical and very timely action we require from your government that will help enable it to proceed.

We have previously provided a summary of the important work we already have underway regarding clean electricity Small Modular Reactor (SMR) projects. These SMR initiatives are dependent on a commitment to provide Federal investments in the order of approximately $130 million/year ($640 million over five years) to proceed.

We would very much appreciate the opportunity to further discuss our project priorities and areas of alignment with government objectives. We propose a short-term process to convert these opportunities into concrete investment decisions using specific budget allocations to support project timelines which align with the government's emission-reduction targets.

We recognize the Government has been and remains focused on fighting the COVID-19 pandemic and appreciate your efforts in that regard. As leaders of our organizations, we have also focused on protecting our workers, contributing to the fight against COVID-19 by making protective equipment donations to our communities and ensuring we continue to provide the electricity needed by Canadians in this difficult time. As we have communicated with all levels of government, the nuclear industry in Canada stands ready to leverage our existing infrastructure to accelerate economic recovery.

We were encouraged to see acknowledgment of the important role nuclear power will play in Canada's updated Climate Change Plan and welcomed the release of the federal Hydrogen Strategy and SMR Action Plan in December 2020. The significant investments included in the climate and Hydrogen plans will go a significant distance in achieving the Government of Canada's Paris 2030 and net-zero 2050 goals. Likewise, it is important for us to collectively invest in the SMR Action Plan to ensure the goal of net zero emissions by 2050 is met.

Our utilities are making financial and grid system decisions today with the goal of enabling the deployment of new nuclear innovation reflecting the different needs of Canada's regions in a coordinated Pan-Canadian approach. The urgency of climate change requires such timely action.

Last June, we provided an outline (attached) of the significant work we already have underway regarding clean electricity SMR projects. These SMR initiatives are dependent on a commitment to provide federal investments on the order of approximately $130 million/year ($640 million over five years) to proceed. These project proposals were reviewed earlier last year (pre-pandemic, in anticipation of Budget 2020) with officials across federal departments including Finance, NRCan, Environment and your office. They are fully aligned with the federal SMR Action Plan, and in fact constitute the lion's share of both short- and medium-term potential outlined in the Plan.

In addition, very Small Modular Reactors (vSMRs), or micro reactors, provide potential opportunities for off-grid northern, remote and indigenous communities who may choose to explore this zero-emissions energy option. These technologies could provide them with the option to reduce their dependence on high emission diesel for their electricity and enable their economic and social development. The first vSMR project is actually underway today and needs your support to continue.

Federal investment will unlock further SMR investment on the part of our utilities and would be a significant contribution to the fulfillment of a "build back better" vision for economic recovery and meeting net zero emissions target by 2050. We fully agree with Minister O'Regan, as he has stated publicly, that there is no path forward in meeting net zero emissions targets without a role for both existing nuclear and new small modular reactors.

Ontario is making a $26 billion infrastructure investment to refurbish existing nuclear assets at Bruce Power and OPG, which is recapitalizing the Canadian nuclear supply chain and can be leveraged to enhance economic recovery efforts and production of life-saving medical isotopes, an area of global leadership for Canada. The success of SMR's will build on this strong foundation of existing nuclear projects, supply chain and medical isotopes which can also benefit from access to capital through government support that will help advance strategic areas of Canada's economy. And Canada's opportunity to be a world leader in this innovative clean SMR technology is now – we can leverage our recapitalized supply chain, operator and regulatory experience and first mover potential to gain the economic benefits as well.

The transformation in Canadian electricity over the past two decades is already a major success story, even by international standards. Canada's electricity sector emissions have fallen from a peak of 130 Mt in 2001 to 64 Mt in 2018. There is even more potential that nuclear can unlock.

Nuclear energy is recognized as critical to meeting climate change goals. As stated in the report released by the Task Force for a Resilient Recovery, SMRs have the potential to be part of the clean energy transition that will significantly reduce emissions. International expert bodies say the same.

It would be our pleasure to better describe our project priorities and how they align with your government's objectives, and to outline our proposals to convert these opportunities into concrete investment decisions and projects in a virtual meeting with you. Our office will be reaching out to seek an opportunity in this regard.

Sincerely,

John Gorman
President and Chief Executive Officer
Canadian Nuclear Association

Keith Cronkhite
President and Chief Executive Officer
NB Power

Ken Hartwick
President and Chief Executive Officer
Ontario Power Generation

Mike Marsh
President and Chief Executive Officer
SaskPower

Mike Rencheck
President and Chief Executive Officer
Bruce Power

Reference: Letter to Prime Minister June 16, 2020

CC: The Hon. Chrystia Freeland, Deputy Prime Minister and Minister of Finance
The Hon. Seamus O'Regan, Minister of Natural Resources Canada
The Hon. Jonathan Wilkinson, Minister of Environment and Climate Change
The Hon. Francois-Philippe Champagne, Minister of Innovation, Science, and Industry
The Hon. Catherine McKenna, Minister of Infrastructure, and Communities
The Hon. Jim Carr, Minister Without Portfolio

Pages 165 to / à 168

are withheld pursuant to sections

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14, 20(1)(b), 20(1)(c), 20(1)(d), 21(1)(b), 21(1)(c)

of the Access to Information Act

de la Loi sur l'accès à l'information

From:	Francis McGuire
To:	Madonna Kent; Daryell Nowlan;
Cc:	Richard Lincoln; Lucy Falastein;
Subject:	RE: SMR Action Plan announced today, December 18
Sent:	12/21/2020 11:53:00 AM

Thanks

From: Kent, Madonna (ACOA/APECA) <madonna.kent@canada.ca>
Sent: Friday, December 18, 2020 4:00 PM
To: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>; Nowlan, Daryell (ACOA/APECA) <daryell.nowlan@canada.ca>
Cc: Lincoln, Richard (ACOA/APECA) <richard.lincoln@canada.ca>; Falastein, Lucy (ACOA/APECA) <lucy.falastein@canada.ca>
Subject: FW: SMR Action Plan announced today, December 18

Francis,

Below is a summary that Richard pulled together of the major points of the SMR Action plan announced today by Minister Natural Resources. Of note there was no money identified for the Action plan in today's announcement

****

The Minister of Natural Resources today announced the SMR Action Plan. As a summary of the major elements are below:

- On December 18, the Minister of Natural Resources announced the Small Modular Reactor Action Plan (SMR) for Canada. Canada's SMR Action Plan seeks to advance the safe and responsible development and deployment of SMRs through a pan-Canadian approach in partnership with provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society. Following on the SMR Roadmap released in November 2018, this new Action Plan will address 53 recommendations from that Roadmap, and lay out the next steps for developing and deploying nascent SMR technologies in various jurisdictions across Canada. The SMR Action Plan provides concrete actions for the Government of Canada on four pillars:
    - ensure robust policy, regulatory and legislative frameworks are in place to protect people and the environment;
    - accelerate innovation;
    - continue meaningful engagement with Indigenous communities and all Canadians; and
    - develop international partnerships and open up new markets.
- Canada's plan sees the following principles as part of the SMR Action Plan:
    - Act together and within our jurisdictions and areas of authority to support the development and deployment of various SMR technologies in Canada, with first units in operation by the late 2020s;

- Unite as "Team Canada" to engage international partners to seize export opportunities, influence international standards and secure investments in Canada's future;
- Seek out opportunities to integrate SMRs with other clean energy sources, storage technologies and applications to accelerate Canada's low-carbon future;
- Pursue opportunities to minimize nuclear waste and potentially reuse nuclear fuel, complementing Canada's existing practices for safe, long-term management of radioactive waste;
- Strengthen diversity and representation in the nuclear industry through greater inclusion of women, minority communities and youth, and exploring meaningful and long-term economic partnership opportunities with Indigenous, rural, remote and northern communities;
- Leverage Canada's extensive capabilities in academia, research, engineering and manufacturing in the deployment and export of SMRs; and
- Support complementary activities outlined in each partner's chapter.

- Both **New Brunswick and Prince Edward Island** are including in the announcement as both provinces support the principles laid out in the plan, and in New Brunswick's case, have are already invested in the early planning and research and development of SMRs.
- There was not any money identified with the Action Plan in today's announcement.

From:	Kalie Hatt-Kilburn
To:	Francis McGuire
Subject:	SMR Funding Request from Utility CEOs
Attachments:	CEO letter on SMRs FINAL (003) Signed.pdf;2021 01 25 - CEO SMR Letter.pdf;
Sent:	3/23/2021 5:05:24 PM

Francis,

Brett shared with me the attached letters to the PM on the joint SMR funding request from the Utility CEOs. The first was sent in January 2021, which references the second previous letter, which was sent in June 2020 and provides more of the specific details around the SMR funding ask.

Proponent (in millions $)	Immediate Request 2020	2021	2022	Total

Kalie

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

From:	Luke Bulmer
To:	@moltexenergy.com
Cc:	@moltexenergy.com
Subject:	Connecting with ACOA NB
Attachments:	BRIEF - NRCan Engagement on Key Priorities - 2022-07.pdf
Sent:	8/2/2022 11:41:00 AM

Good morning Rory,
I hope all is well with you!
My name is Luke Bulmer, I am working as an Economic Development Officer with ACOA New Brunswick, having taken over our Clean Tech portfolio in recent months, I am now managing your file with our New Brunswick office. I have had the pleasure of attending several events at which you and your team have been present, including the NSMDC's SMR Symposium and the SMR Supply Chain event in Saint John.
I would love to connect with your team to discuss the ongoing project, and also to discuss the attached document from NR Can – specifically whether you find yourselves running into any barriers or challenges that could potentially be addressed through these funding opportunities?
Looking forward to connecting and discussing further,
Thank you,

Luke Bulmer, CPA
Atlantic Canada Opportunities Agency / Government of Canada
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Canada

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Enabling Responsible SMR Deployment Program: Engagement and Outreach

Nuclear energy is an important part of Canada's economy and energy mix today, and is positioned to serve a critical function as a non-emitting and reliable source of electricity going forward. Small Modular Reactors (SMR) are a potential tool to reduce greenhouse gas emissions while delivering good, middle-class jobs for Canadians as Canada moves towards a low-emissions energy future. As a global leader in nuclear energy and nuclear safety, Canada is well-positioned to be a leader in the safe and responsible development of this new technology.

Through the recent release of the federal budget on April 7th 2022, the Government of Canada has indicated its support for SMRs on the pathway to net-zero and ongoing commitment to upholding world-class standards for safety and security in all nuclear projects.

Budget 2022 proposes to include almost $70 million to support activities to safely manage the waste generated from SMRs; support the creation of SMR supply chains including for SMR fuel supply; strengthen international nuclear cooperation agreements; and enhance domestic safety and security policies and practices.

Budget 2022 is subject to parliamentary approval. If approved, the $70M announced for NRCan will be used to support the launch and execution of the program over the next five years, as well as to provide direct funding via transfer payments to external Canadian recipients to advance Canada's expertise and knowledge in the areas of:

- Radioactive waste management and minimization for SMRs,
- Robust supply chains for SMRs, and
- SMR fuel supply.

Stakeholder Engagement

In anticipation of budget approval and subsequent internal approval processes, NRCan is engaging key stakeholders to understand priority activities in these three areas to understand how to target and leverage the limited funding available to effectively support necessary enabling conditions for the responsible deployment of SMRs by provinces and territories.

The following sections provide more details about the three program areas including potential initiatives and scope that may be considered under each area.

1. **Radioactive Waste Management and Minimization**
   Responsible waste management is important for long-term environmental stewardship, and is a critical enabler of public acceptance of an expanded role for nuclear through SMRs. NRCan's program may support work to advance SMR waste management initiatives, including technologies that have the potential to reduce potential SMR waste. The program could support maintaining Canada's leadership to improve the understanding and reduce any potential environmental impact of SMR waste streams. It could also support Canada's environmental stewardship by ensuring that SMRs are deployed within a robust framework that addresses environmental and waste management concerns. Potential activities may include projects and/or studies to:
   - advance identification and characterisation of fuel supply waste streams for SMRs;
   - research and develop SMR waste management solutions, including technologies that have the potential to reduce nuclear waste;
   - research and develop technologies for managing non-fuel SMR radioactive waste and contaminated materials;

- advance understanding of the long-term safety requirements for SMR waste storage and disposal;
- advance understanding of safeguards and proliferation-resistance of SMR fuel cycles;
- explore transportation requirements for radioactive SMR material based on Canada's proliferation policies;

2. Robust Canadian Supply Chains for SMRs

To ensure Canada's nuclear supply chain is strong and ready to support the advancement of SMR development and deployment, the program would support work towards the development of robust and resilient supply chains for SMRs, including to enable anchoring of specific elements of the SMR supply chain in Canada. Potential activities may include project and/or studies to:

- perform economic impact and gap analysis on nuclear and non-nuclear supply chains related domestic SMR deployment, including fleet deployment for electric and non-electric applications;
- explore Canada's capabilities to anchor specific elements of the SMR supply chain in Canada, support economic growth and ensure geopolitical security of the SMR supply chain;
- assess the readiness of SMR supply chain, and build domestic resilience and security of SMR supply chain, including qualification of supply chain through CSA requirements for licensees;
- identify and develop advanced manufacturing and innovative technologies for SMR construction;
- explore and develop serial manufacturing techniques for selected SMR technologies;
- allow potential SMR suppliers to assess their operations against standards, and requirements to supply within the nuclear industry;
- establish an inventory of assets available for Canada's SMR supply chain to support serial manufacturing and deployment;
- ensure that SMR suppliers (existing or new, nuclear or non-nuclear) have the required accreditations, certifications, qualifications, or quality assurance management system to support a the future SMR supply chain.

3. SMR Fuel Supply

SMRs require new types of fuel, and Canada is a world-leading uranium supplier. The program may support work towards the development of SMR fuel supply, potentially with geopolitical allies, and advance life cycle management of SMR fuel, to ensure that Canada is able to secure long-term economic activity in Canada and secure supply chains against geopolitical risks. Potential activities may include project and/or studies to:

- develop fabrication, characterization, examination capabilities for SMR fuels and fuel materials;
- explore fuel processes for SMR technologies relevant to Canada, while considering potential proliferation issues;
- address barriers and opportunities for the Canadian nuclear industry already engaged in the fuel supply chain;
- explore opportunities to vertically integrate the SMR fuel supply chain for domestic security and export potential;
- advance work towards the development of a robust domestic SMR fuel supply considering existing capabilities globally;
- advance life cycle management of SMR fuel to ensure that Canada can secure long-term economic activity in Canada and secure supply chains against geopolitical risks.

Favoriser un programme responsable de déploiement de PRM : Mobilisation et sensibilisation

Aujourd'hui, l'énergie nucléaire est une composante importante de l'économie et de la gamme de sources d'énergie du Canada, et elle est en mesure de jouer un rôle essentiel en tant que source d'électricité fiable et non polluante à l'avenir. Les petits réacteurs modulaires (PRM) représentent un instrument possible pour réduire les émissions de gaz à effet de serre tout en fournissant aux Canadiens des emplois de qualité et de classe moyenne, alors que le Canada se dirige vers un avenir énergétique à faibles émissions. En tant que chef de file mondial dans le secteur de l'énergie nucléaire et de la sécurité nucléaire, le Canada est bien positionné pour être un chef de file au chapitre du développement sécuritaire et responsable de cette nouvelle technologie.

Dans le cadre de la récente publication du budget fédéral, le 7 avril 2022, le gouvernement du Canada a indiqué qu'il soutenait les PRM en vue d'atteindre la carboneutralité et qu'il s'engageait à maintenir des normes de classe mondiale en matière de sûreté et de sécurité dans tous les projets nucléaires.

Le budget 2022 propose d'inclure près de 70 millions de dollars pour appuyer les activités visant à gérer en toute sécurité les déchets issus des PRM, pour soutenir la création de chaînes d'approvisionnement liées aux PRM, y compris pour leur approvisionnement en combustible, pour renforcer les accords internationaux de coopération nucléaire et pour améliorer les politiques et pratiques nationales en matière de sûreté et de sécurité.

Le budget 2022 est assujetti à l'approbation du Parlement. Si la proposition est approuvée, les 70 millions de dollars prévus pour RNCan serviront à financer le lancement et l'exécution du programme au cours des cinq prochaines années, ainsi qu'à fournir un financement direct par le biais de paiements de transfert à des bénéficiaires canadiens externes afin de faire progresser l'expertise et les connaissances du Canada dans les domaines suivants :

- Gestion et minimisation des déchets radioactifs pour les PRM
- Robustesse des chaînes d'approvisionnement pour les PRM
- Approvisionnement des combustibles des PRM

Mobilisation des intervenants

En prévision de l'approbation du budget et des processus d'approbation internes consécutifs, RNCan mobilise les principaux intervenants pour comprendre les activités prioritaires dans ces trois domaines afin de déterminer la manière de cibler et de maximiser le financement limité disponible pour appuyer efficacement les mesures propices à un déploiement responsable des PRM par les provinces et les territoires.

Les sections ci-après présentent de plus amples renseignements sur les trois domaines du programme, y compris les initiatives potentielles et la portée qui peuvent être envisagées dans chaque domaine.

1. **Gestion et minimisation des déchets radioactifs**
   Une gestion responsable des déchets est essentielle à la gestion de l'environnement à long terme et constitue un facteur déterminant de l'acceptation par le public d'un rôle accru du nucléaire par le biais des PRM. Le programme de RNCan peut soutenir les activités visant à faire progresser les initiatives de gestion des déchets PRM, notamment les technologies qui ont le potentiel de réduire les déchets potentiels des PRM. Ce programme pourrait contribuer à maintenir le leadership du Canada pour une meilleure compréhension et une réduction de tout impact environnemental potentiel des flux de déchets PRM. Il pourrait également contribuer à l'intendance environnementale du Canada en veillant à ce que les PRM soient déployés au sein d'un cadre solide qui répond aux préoccupations en matière

d'environnement et de gestion des déchets. Les activités possibles peuvent inclure des projets et/ou des études pour :

- favoriser l'identification et la caractérisation des flux de déchets d'approvisionnement en combustible pour les PRM;
- rechercher et développer des solutions de gestion des déchets PRM, y compris des technologies qui ont le potentiel de réduire les déchets nucléaires;
- rechercher et développer des technologies pour gérer les déchets radioactifs et les matériaux contaminés des PRM non combustibles;
- améliorer la compréhension des exigences de sécurité à long terme pour le stockage et l'élimination des déchets des PRM;
- favoriser la compréhension des garanties et de la résistance à la prolifération des cycles du combustible des PRM;
- étudier les exigences en matière de transport des matières de PRM radioactives en fonction des politiques de prolifération du Canada.

2. Robustesse des chaînes d'approvisionnement pour les PRM

Pour garantir la solidité de la chaîne d'approvisionnement nucléaire du Canada et sa capacité à soutenir l'avancement du développement et du déploiement des PRM, le programme permettrait de soutenir les travaux visant à développer des chaînes d'approvisionnement robustes et résilientes pour les PRM, notamment pour permettre de fixer des éléments spécifiques de la chaîne d'approvisionnement des PRM au Canada. Les activités possibles peuvent inclure des projets et/ou des études pour :

- réaliser une analyse des retombées économiques et des écarts sur les chaînes d'approvisionnement nucléaires et non nucléaires liées au déploiement national des PRM, y compris le déploiement du parc pour les applications électriques et non électriques;
- examiner les capacités du Canada à établir des éléments spécifiques de la chaîne d'approvisionnement des PRM au Canada, à appuyer la croissance économique et à garantir la sécurité géopolitique de la chaîne d'approvisionnement des PRM;
- évaluer l'état de préparation de la chaîne d'approvisionnement des PRM et renforcer la résilience et la sécurité de la chaîne d'approvisionnement des PRM au niveau national, y compris la qualification de la chaîne d'approvisionnement par le biais des exigences de la CSA pour les détenteurs de licence;
- identifier et développer des technologies de production avancées et novatrices pour la construction de PRM;
- examiner et développer des techniques de fabrication en série pour certaines technologies de PRM;
- permettre aux fournisseurs potentiels de PRM d'évaluer leurs opérations par rapport aux normes et aux exigences du secteur nucléaire en matière d'approvisionnement;
- établir un inventaire des actifs disponibles pour la chaîne d'approvisionnement des PRM du Canada afin de soutenir la fabrication et le déploiement en série;
- veiller à ce que les fournisseurs de PRM (existants ou nouveaux, nucléaires ou non nucléaires) détiennent les accréditations, les certifications, les qualifications ou le système de gestion du contrôle de la qualité requis pour appuyer la future chaîne d'approvisionnement de PRM.

3. Approvisionnement des combustibles des PRM

Les PRM requièrent de nouveaux types de combustible, et le Canada est un fournisseur d'uranium de premier plan dans le monde. Le programme peut favoriser les activités de développement de l'approvisionnement en combustible des PRM, éventuellement avec des alliés géopolitiques, et faire avancer la gestion du cycle de vie du combustible des PRM, afin que le Canada soit en mesure de sécuriser l'activité économique à long terme au Canada et de protéger les chaînes d'approvisionnement contre les risques géopolitiques. Les activités possibles peuvent inclure des projets et/ou des études pour :

- développer les capacités de fabrication, de caractérisation et d'examen des combustibles et des matériaux combustibles des PRM;
- étudier les processus de combustible pour les technologies de PRM pertinentes pour le Canada, tout en tenant compte des problèmes potentiels de prolifération;
- traiter les obstacles et les possibilités pour la filière nucléaire canadienne déjà active dans la chaîne d'approvisionnement en combustible;
- examiner les occasions d'intégrer verticalement la chaîne d'approvisionnement en combustible des PRM pour assurer la sécurité du pays et le potentiel d'exportation;
- faire avancer les recherches en vue du développement de solides réserves nationales de combustible pour les PRM, en tenant compte des capacités existantes au niveau mondial;
- promouvoir la gestion du cycle de vie du combustible des PRM afin que le Canada soit en mesure de garantir une activité économique à long terme sur son territoire et de protéger les chaînes d'approvisionnement contre les risques géopolitiques.

From:	Danielle Collin
To:	Luke Bulmer
Subject:	FW: Innovate NB - mtg highlights
Attachments:	Innovate NB Highlights Nov. 22 2002.docx
Sent:	11/29/2022 9:49:13 AM

Here were my notes.. in case they help in anyway..

From: Danielle Collin
Sent: Wednesday, November 23, 2022 4:30 PM
To: Nadine Cormier
Subject: Innovate NB - mtg highlights
Hi there,
These are messy and essentially just tried to capture the flow of the 2 hr session...
Apologies, I went for speed, not quality of writing....

Danielle Collin
(she/elle)
Manager, Innovation, Head Office
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I acknowledge that the land on which I work and live is the traditional unceded territory of the Wolastoqiyik (Maliseet) and the Mi'kmaq peoples.
Gestionnaire, Innovation, Siège social
Agence de promotion économique du Canada atlantique / Gouvernement du Canada
danielle.collin@canada.ca / Tél. : (506) 962-3202/ ATS: 1-877-456-6500
Je reconnais que la terre sur laquelle je travaille et que j'habite est le territoire traditionnel non cédé du peuple Wolastoqiyik (Malécites) et le peuple Mi'kmaq.

Though Leadership session – "**Meet New Brunswick green-tech ecosystem players leading our response to climate change"**

Innovate NB Event (Saint John)

Nov. 22nd

Facilitated by [redacted] on behalf of McKenna Institute s.19(1)

Schedule — InnovateNB Celebration

Though Leadership session – "**Meet New Brunswick green-tech ecosystem players leading our response to climate change"**

Innovate NB Event (Saint John)

Nov. 22nd

Facilitated by on behalf of McKenna Institute s.19(1)

Moltex :

- SMR company that proposes reusing fuel / nuclear waste as fuel vs. digging up more uranium s.20(1)(c) s.20(1)(d)
- Nuclear power hasn't really evolved much over time.
-
-

Not relevant to the request

Though Leadership session – "**Meet New Brunswick green-tech ecosystem players leading our response to climate change"**

Innovate NB Event (Saint John)

Nov. 22nd

Facilitated by on behalf of McKenna Institute

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Not relevant to the request

From:	Laura DeLong
To:	Luke Bulmer
Subject:	FW: SMRs - information
Attachments:	Backgrounder-SMRs.docx;SMR Action Plan Atlantic Context 12.21.2020.docx;
Sent:	5/5/2022 9:35:02 AM

I had promised to send this to Josh - sharing with you, too. I mean to copy you and somehow screwed that up and copied Lindsay instead. Sorry about that!

From: Laura DeLong
Sent: Thursday, May 5, 2022 9:34 AM
To: Josh Jenkins
Cc: Lindsay Walker
Subject: SMRs - information

Josh: it was wonderful to meet you in the Miramichi.

I know you are all likely well informed about SMRs, but as promised, I'm sharing some of the information I have prepared on the topic that I mentioned in conversation to you yesterday. Note that given how quickly things change on this file, some might be outdated now – all was (of course) current at the date it was written.

- A background for the Minister that was drafted on January 27th
- Video on SMRs in New Brunswick – shared at the Canadian Nuclear Association's Conference held (in person) in Ottawa, April 13-15, 2022 https://www.youtube.com/watch?v=c-OB4MMS89U
- SMR Action Plan Atlantic Context from 2020

I have lots of other one pagers, information notes, etc. on various aspect of 'greening' and the 'green economy'.

Happy to share any of that with you too if its of interest.

Laura

CANADA'S SMR ACTION PLAN

Canada's Small Modular Reactor (SMR) Action Plan, Canada's plan for the development, demonstration and deployment of SMRs, was released on December 18, 2020.

The *SMR Action Plan* seeks to advance the safe and responsible development and deployment of SMRs through a pan-Canadian approach in partnership with provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society.

Overview

- The *Action Plan* responds to all 53 recommendations in Canada's SMR Roadmap (2018) and is based around four thematic pillars:
  - Pillar 1: **Demonstration and Deployment**, including risk sharing
  - Pillar 2: **Policy, Legislation, and Regulation,** including nuclear liability, security and waste management
  - Pillar 3: **Capacity, Engagement, and Public Confidence**, with an emphasis on Indigenous engagement
  - Pillar 4: **International Partnerships and Markets**, including international enabling frameworks
- SMRs can support Canada's goal to reach net-zero by 2050; accelerate electricity decarbonization and move Canadians off coal and diesel; drive deep industrial decarbonization; and provide an affordable, reliable and non-emitting alternative to diesel for remote communities.
- The *Action Plan* was developed through consultation with over 100 groups, many of which have authored chapters. A total of 450 action items and expected outcomes are outlined in the *Plan*.
- Significantly, **no new funding was announced** with the release of the *Action Plan*.

Atlantic Context

- Key stakeholders within Atlantic Canada have each contributed a chapter outlining a set of actions they are taking to capitalize on the SMR opportunity. At a high-level, these broadly cover the following areas:
  - working collaboratively amongst stakeholders;
  - increasing the level of understanding of SMR technology;
  - identifying and supporting supply chain opportunities for Atlantic firms;
  - supporting New Brunswick's advanced SMR nuclear research cluster;
  - strengthening Atlantic Canada's capacity within Canada's nuclear community;
  - supporting indigenous engagement in Atlantic Canada; and
  - positioning SMRs within the range of energy options to reduce GHGs in the Atlantic region through the Atlantic Clean Power Roadmap.
- Specific action items and expected outcomes for ACOA, GNB, NBP and the Atlantica Centre for Energy are detailed in the appendices. *UNB's submission is not yet available.*
  - Appendix A: Atlantic Canada Opportunities Agency (ACOA)
  - Appendix B: Government of New Brunswick (GNB)
  - Appendix C: New Brunswick Power (NBP)
  - Appendix D: The Atlantica Centre for Energy
- The development of SMR technology offers a solution for clean, baseload power generation needs and can play a central role in the advancement of the Clean Power Roadmap for Atlantic Canada.
- SMR technologies under development in New Brunswick represent an important opportunity to support Canada's leadership in this global industry, and enable the country to move toward its vision for net zero emissions.

Appendix A: **Atlantic Canada Opportunities Agency (ACOA) planned actions:**

Action	Expected Result
Support the development, commercialization, scale-up and demonstration of SMR-enabling technologies.	Regional businesses and academic institutions are involved in SMR demonstration and deployment projects. Regional firms contribute to SMR supply chains; increased levels of expertise in this high-tech field.
Act as convenors and/or play a role in regional intelligence gathering by providing support for conferences and events, create opportunities for engagement stakeholders related to SMR development, including but not limited to Indigenous businesses and communities; and/or working with stakeholders to identify opportunities and barriers to developing and commercializing SMR technology at the local level.	Regional stakeholders' and Indigenous views, interests, and concerns are voiced; investment decisions are targeted and informed through direct engagement with regional players.
Work with specific vendors and provinces to identify opportunities for broad-based results in the Atlantic region.	Better identification of supply chain opportunities, increased R&D capacity and better coordination among relevant parties/levels of government
Provide direct support, including nuclear industry certifications and registrations, to Atlantic firms identifying business growth opportunities as part of New Brunswick's Advanced SMR Nuclear Energy Research Cluster.	A growing and robust SMR supply chain in Atlantic Canada.
Work with research institutions in Atlantic Canada to identify and take advantage of SMR R&D opportunities in that region, as an essential part of Canada's national nuclear science and technology ecosystem.	Strengthened Atlantic capacity within Canada's nuclear research community.
Encourage and support SMR proponents to engage with Indigenous communities to understand views on nuclear, as well as identifying opportunities for the indigenous community share in the economic benefits.	Ongoing and more inclusive input to decision-making on nuclear energy use in New Brunswick.

Appendix B: **Government of New Brunswick (GNB) planned actions:**

Action	Expected Outcome
GNB is working with Federal Departments to demonstrate the need for Federal support for the development of our advanced nuclear technologies. To complement, GNB, along with the Atlantic Clean Energy Alliance, have given multiple demonstrations to highlight the importance of this initiative to provincial and municipal stakeholders.	Support Advanced Generation IV SMR R&D activities, and expanded due diligence in partnerships with Academia, Canadian labs, and industry. Building on existing strengths, and expanding capabilities where needed.
In 2018, GNB invested $10 million to establish the Advanced Nuclear Research Centre to progress the research and design of two Advanced Generation IV SMR designs. This initial funding was matched by two technology vendors: ARC Nuclear Canada and Moltex Energy.	ARC and Moltex have established offices and staffed up in Saint John, NB. The vendors are progressing through the CNSC's VDR process. The initial investment is now fully allocated and access to funding is needed to progress R&D activities
While the regulatory requirement for NB power to serve 40% of in-province sales from renewable energy sources does not speak to clean energy, public messaging around the progress on the target now includes percentage of sales from clean energy sources, including nuclear.	Greater understanding of the role traditional nuclear has played, and continues to play, and why a cost-effective decarbonized future should not limit potential options, particularly options that could result in significant economic benefits, and reduced long-term waste inventory.
The Department of Natural Resources and Energy Development has begun engaging the provincial Department of Aboriginal Affairs, and the Women's Equality Branch of the Executive Council Office.	Building and strengthening positive relationships with Indigenous groups and position the SMR workforce to continue to be inclusive of women, youth, minorities and Indigenous peoples. Align the development of the NB Advanced SMR workforce with the goals of ensuring gender diversity and inclusion and implementing a gender diversity and intersectional lens into planning and reporting
The province and the vendors have actively engaged with the existing supply-chain to gauge their level of readiness and capabilities to service and support SMR development and commercialization in the province, and to fill any present gaps wherein our supply-chain could pivot or upgrade their infrastructure to support specifics within the required value-chain. Interprovincial MOU with New Brunswick, Ontario and Saskatchewan.	The Atlantic Clean Energy Alliance will work with the value-chain to ensure companies are able to service SMR development and to bridge gaps wherein skills transfer can enable specific vendors to support the value-chain in the future. Studies completed to inform public and policy makers on the feasibility of SMR's, and deployment strategies. • A feasibility study is expected in November 2020, and • A deployment strategy currently expected in winter 2021.

Appendix C: **New Brunswick Power (NBP) planned actions:**

Action	Expected Result
NB Power envisions demonstrating both stream 2 advanced Generation IV SMR technologies at the Point Lepreau site in the early to mid-2030's. NB Power has been working closely with ARC Nuclear Canada Inc. and Moltex Energy Canada to advance the designs and assist them as necessary in the CNSC VDR process. NB Power is working collaboratively with the industry in the overall strategy and plan to develop and deploy SMRs in Canada	If successful, an ARC-100 SMR and a Moltex SSR-W SMR and accompanying WATSS facility will be licenced, constructed and operated at the Point Lepreau Generating Station site. This will lead to subsequent deployments of units (fleet) in Canada and internationally supporting a vibrant supply chain in New Brunswick and elsewhere in Canada.
NB Power is working with each of the stream 2 SMR vendors to explore various strategic partnerships, relationships and business models.	Attract investors and formation of Owner/Operator Consortium and establish EPC contracts to allow for final design, licensing, construction and commercial demonstration of the units.
The Roadmap recommendation suggested interested utilities should lead on the development of a white paper setting out potential fleet deployment pathways. However, the Memorandum of Understanding signed Dec 1, 2019 between the Premiers of Saskatchewan, New Brunswick and Ontario has led to creation of a feasibility report on SMR deployment across Canada. This will replace the need for a white paper.	The Feasibility Report will lead to a subsequent Strategic plan for deployment of SMRs. A key aspect for the long-term success is the fleet concept.
NB Power places great importance on the relationship with the First Nations in New Brunswick. NB Power meets regularly with representatives of the First Nations and engages in two way dialogue on a variety of topics including the development and possible deployment of SMRs. Periodic meetings take place with Chiefs and councils, consultative bodies, economic development representatives as well as other interested parties. Continued engagement and meaningful two-way dialogue on SMRs is an essential element of the SMR program.	Continue on the path to develop an increased level of trust, understanding and inclusion. Have a good understanding of potential issues and opportunities that can be factored into the program. Establish a good two-way dialogue to better understand benefits, economic opportunities and potential risks.

Appendix D: **The Atlantica Centre for Energy planned actions:**

Action	Expected Result
The Atlantica Centre for Energy will continue to support the federal government, through NRCan, to provide funding to one or more SMR development proponents based at the Lepreau site in New Brunswick. The Atlantica Centre for Energy will engage NRCan to support a New Brunswick-based cluster for development of Advanced, fourth-generation SMR technology	• NRCan will support New Brunswick based proponents and NB Power further developing 4th-gen SMR Technology as part of their 2020 funding • At least two SMR demonstration projects will be situated at the Lepreau site by 2021; and constructed and in operation in New Brunswick early to mid 2030's • The technology-readiness of two or more SMR technologies is advanced to the precommercial stage • New Brunswick, and other sites in Canada will be positioned to benefit from research and create value for the domestic supply chain from the development of these SMR technologies
Continue to engage with NRCan, ACEA, and other partners to encourage the timely distribution of funds to support the development and commercialization of 4th-generation SMR technology in New Brunswick.	Public and private decisions are informed by a strategic, action-oriented plan. The plan respects and builds on the respective roles and responsibilities of essential enabling partners and sets out timelines for action to maximize benefits to all regions in Canada.
Meaningful engagement with Indigenous peoples and communities on the subject of SMRs • The Atlantica Centre for Energy has worked with NB Power, proponents, governments, and other interested stakeholders to increase the level of energy literacy regarding SMR technolog. • Webinars, newsletters, one-on-one meetings, and other forms of communication, including social media, have been used to communicate and answer questions regarding 4th generation SMR technology	• Increase the level of understanding of 4th-gen SMR technology • Reduce uncertainty regarding current nuclear technology in Canada • Reduce/eliminate inaccurate/misinformation regarding nuclear technology being developed/deployed in Canada • Establish a resource for accurate SMR information
The Atlantica Centre for Energy will lead in the following activities to ensure energy education programs are created	An inclusive cross section of the community will have an understanding of the technology, the community benefits,

to disseminate accurate information regarding SMR technology in Canada • Atlantica Centre for Energy along with partners in the Atlantic Clean Energy Alliance are continuing their efforts to increase energy literacy in the region, nationally and internationally • Atlantica Centre for Energy includes academia at the University of New Brunswick and the New Brunswick Community College in its efforts to understand and educate on Advanced SMR R&D	the economic impact, and the future potential beyond the Maritime region and nationally. The difference between existing nuclear technology and 4th generation SMR technology will be available. • An increase in support for SMR deployment in New Brunswick and Canada. • An increase in nuclear sector as an option for students and potential workforce.

From:	Luke Bulmer
To:	Heath Johnson; Josh Jenkins;
Subject:	FW: Summary of Relationship between NB Power and Vendors for ACOA
Sent:	8/9/2022 12:05:00 PM

FYI - Some great insight into NB Power's original plan for the two reactor designs in NB, not sure if it is still 100% accurate.

From: Harris, Claire < @nbpower.com>
Sent: Monday, April 13, 2020 12:51 PM
To: Harn, Charles (ACOA/APECA) <charles.harn@canada.ca>
Subject: Summary of Relationship between NB Power and Vendors for ACOA

Hello Charles,

As a follow-up to our discussion last week, I have provided a summary of the relationship between NB Power and the Vendors (ARC Nuclear Canada Inc and Moltex Energy Canada). Please review the summary and let me know if you have any questions. I have also attached a summary of the advantages of SMR development in New Brunswick.

NB Power has been working with the province of New Brunswick, ARC Nuclear Canada, Moltex Energy Canada, and the University of New Brunswick to progress the development of Advanced Generation IV Small Modular Reactors for potential commercial demonstration at the Point Lepreau site.

We work cooperatively and equally with each Vendor to support them as they continue to develop their technology.

New Brunswick could allow the opportunity for both Moltex and ARC to build Small Modular Reactors (SMR) on the PLGS site if both vendors finish the Vendor Design Review Process, Phase I and Phase II and prove that their reactors are viable from both a technical and a financial standpoint.

There is enough room at PLGS to build both reactors. The present goal is not to spend any provincial funds to build either plant. There is no disadvantage to committing to both reactor vendors.

The vendors offer distinct reactor types and fill different sectors of the nuclear energy market.

- **ARC** uses higher enriched uranium to design a reactor core to last 20 years. This concept is considered a "Breeder"

- **Moltex**, on the other hand, converts used oxide fuel to a fissile salt mixture.

s.14
s.19(1)
s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)

NB Power is currently developing the 2020 version of the Integrated Resource Plan (IRP). Although not yet finalized, it is envisioned that the 2020 IRP will identify the potential deployment of advanced SMRs for the "in kind" replacement of PLGS.

As the IRP focuses solely on in-province needs, NB Power is also exploring the potential of additional SMR units at other locations, such as Belledune and Coleson Cove, to service the export market. This could provide a potential for up to an additional 1000 MW(e).
NB Power is working cooperatively with OPG, Bruce Power and SaskPower regarding a Pan Canadian plan for SMR development and deployment. The plan addresses 4 streams.

- Stream-1 pertains to early deployment at the Darlington site with an aspirational goal of 2028 such that additional units can be deployed in Saskatchewan to avoid their need to transition from coal to gas.
- Stream-2, which is being developed in parallel, relates to more advanced designs which can provide additional benefits from that associated with the stream 1 technology
- Streams 3 and 4 relate to the micro SMRs for mineral extraction and for remote communities.

The activities in New Brunswick relate to stream-2 development
I tried to keep the summary brief. Please feel free to reach out anytime to clarify any of the above or to request detail to any of the discussions.

Claire Harris
Senior Advisor
Advanced Modular Reactor Technology Team
Cell:
Desk:

[1] The range reflects the fact that the total reactor output has not yet been finalized in the preliminary design.

s.14
s.19(1)
s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)

and any printout thereof, immediately. Your co-operation is appreciated.
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From:	Kowalsky, Sena (PrairiesCan)
To:	Fox, Joel (PrairiesCan); Dalzell, Matthew (PrairiesCan); Whitson, Matthew (PrairiesCan); Perras, Thomas (PrairiesCan); Luke Bulmer; McCaffery, Tom (PrairiesCan); Cameron, Arla (PrairiesCan); andrea.duncan@ised-isde.gc.ca; Angela.Chen@FedDevOntario.gc.ca; Kaitlyn.Cleary@nrcan-rncan.gc.ca; Laura DeLong; chantel.blanchette@international.gc.ca; tessa.mclean@nrcan-rncan.gc.ca; david.torre2@ised-isde.gc.ca; Sebastian-Tymchak, Wade (PrairiesCan); Ruofan.Lin@ised-isde.gc.ca; meghan.newman@nrcan-rncan.gc.ca; tom.calvert@NRCan-RNCan.gc.ca; natalie.kauf@NRCan-RNCan.gc.ca; tyler.koebel@nrcan-rncan.gc.ca; Janice.Pillon@ised-isde.gc.ca; Lynn Adams; henry.diaz@FedDevOntario.gc.ca; felicia.kislich-lemyre@NRCan-RNCan.gc.ca; Michaud, Jesse (PrairiesCan); nicole.skaf@nrcan-rncan.gc.ca; Lakhani, Shafin (PrairiesCan); antoine.delachevrotiere@NRCan-RNCan.gc.ca; brent.wilhelm@NRCan-RNCan.gc.ca; daniel.brady@NRCan-RNCan.gc.ca; john.stronach@NRCan-RNCan.gc.ca; Isis.Bozzano-bae@FedDevOntario.gc.ca; anita.kuipers@NRCan-RNCan.gc.ca; Peter, Jeffrey (PrairiesCan); tim.gauthier@NRCan-RNCan.gc.ca; Kanwal.Khokhar@nrcan-rncan.gc.ca; cara@naakah.ca; Candice.Jackson@nrcan-rncan.gc.ca; justin.hannah@nrcan-rncan.gc.ca; juliana.rapper@nrcan-rncan.gc.ca; Ramnarine, Kevin (PrairiesCan); darroch.harrop@ised-isde.gc.ca; Perry.Eddy@ised-isde.gc.ca;
Cc:	_____@hatch.com; Lucenko, Jessica (PrairiesCan); Jarosch, Megan (PrairiesCan);
Subject:	SMR Supply Chain Research Report and Presentation
Attachments:	PrairiesCan SMR Supply Chain Report.pdf;PrairiesCan SMR Supply Chain Study Presentation.pdf;
Sent:	6/10/2022 5:32:08 PM

Colleagues,

Thank you for joining us for the research presentation on Small Modular Reactor (SMR) Supply Chain development in Alberta and Saskatchewan. And a big thank you as well to from Hatch for joining us and presenting.

As promised, attached is the SMR Supply Chain research report and presentation for internal use. The presentation and discussion today touched on many critical areas related to SMR development in the west and Canada as a whole. We look forward to continuing to participate in the unfolding SMR discussion across the country.

Have a good weekend!

Sena

Sena Kowalsky
Senior Economist/Policy Analyst | Économiste principale/Analyste des politiques
Alberta Region | Région de l'Alberta
Policy, Planning and External Relations | Politiques, planification et relation extérieures
Prairies Economic Development Canada | Développement économique Canada pour les Prairies

s.19(1)

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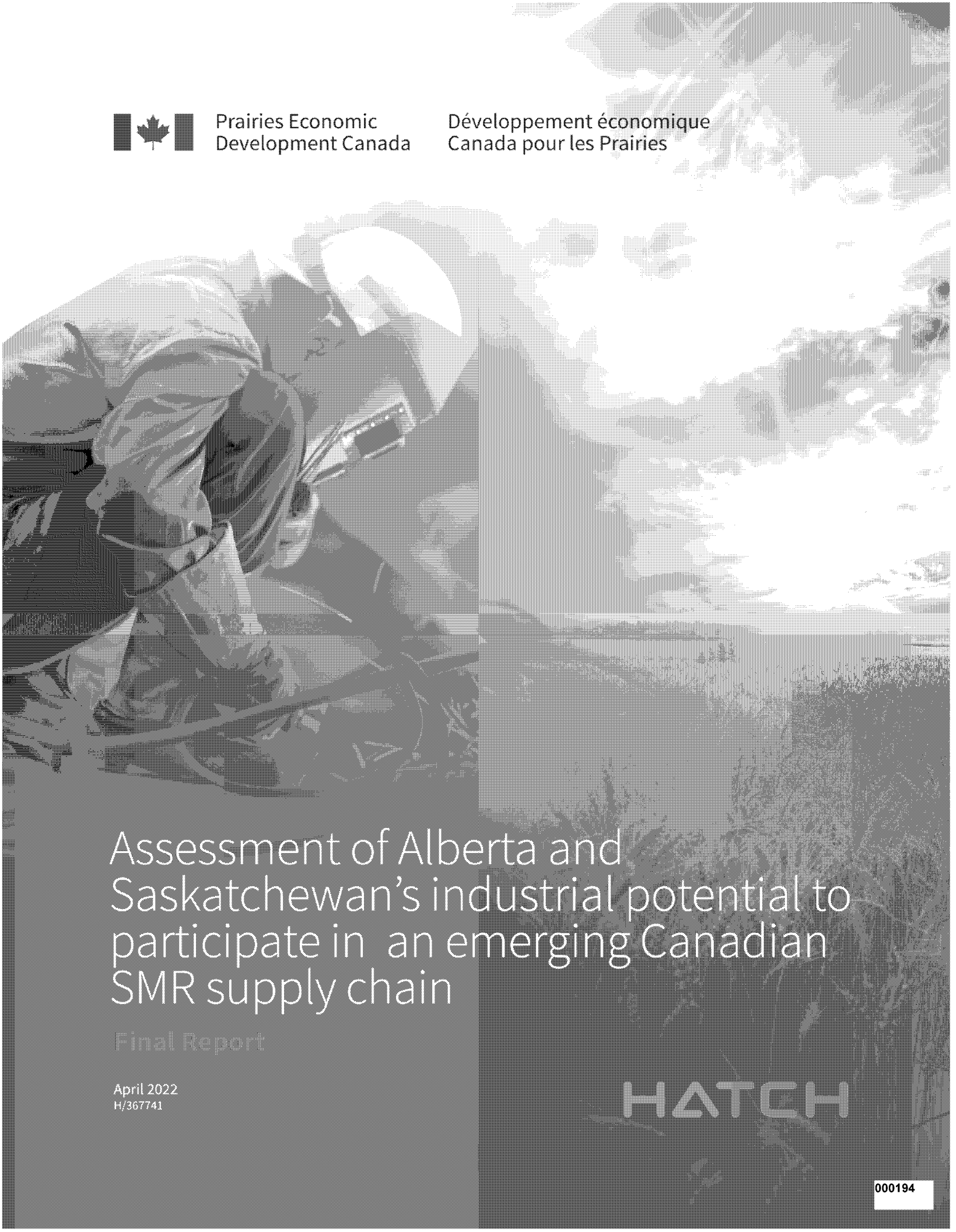

Prairies Economic Development Canada

Développement économique Canada pour les Prairies

Assessment of Alberta and Saskatchewan's industrial potential to participate in an emerging Canadian SMR supply chain

Final Report

April 2022
H/367741

HATCH

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Prairies Economic Development Canada | Développement économique Canada pour les Prairies

Assessment of Alberta and Saskatchewan's industrial potential to participate in an emerging Canadian SMR supply chain

Executive Summary and Key Take Aways

Canada has committed to achieving net-zero emissions by 2050 and has reaffirmed its position to accelerate a path to a 100 percent net zero carbon electricity future. Nuclear, and specifically Small Modular Nuclear Reactors (SMRs), are being evaluated to supplement baseload and firming electricity requirements to achieve Canada's net-zero goals underpinned by policy such as the SMR Roadmap, Action Plan and the Canada Energy Regulator. Canada has a long history as a Tier 1 nuclear country that services the full nuclear fuel lifecycle, including the development of new nuclear technology. The provinces of Alberta and Saskatchewan have signaled their intent to collaborate with other provinces to advance SMRs as a clean energy option. Both provinces have signed on to the SMR Memorandum of Understanding along with Ontario and New Brunswick. This study was commissioned by *Prairies Economic Development Canada* to assess the opportunities and challenges that exist for industries within Alberta and Saskatchewan to participate in a pan-Canadian SMR supply chain. While remaining technology agnostic, the study takes a cross-sectoral approach to summarize emerging and unique requirements for entering the SMR supply chain, provides an assessment of the industry, and reviews the risks and opportunities that are emerging globally and domestically within the nuclear and SMR industry.

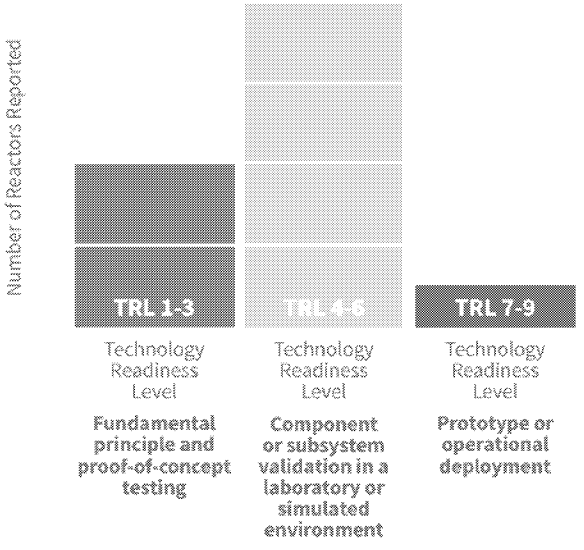
The Opportunity

The global market for SMRs is estimated to reach **$150 billion (CAD)** per year by 2040. This estimate includes deployments for on-and off-grid applications, such as remote mines and remote communities. Canada has conservatively estimated the domestic market to be $5.3 billion (CAD) between 2025 and 2040. Projections and estimates suggest the market could be 35 GWe for off-grid applications and 6.6 GWe for on-grid SMR demand. Currently, the regulator is evaluating 12 SMR technologies through the pre-licensing vendor design review. As per a recent SMR feasibility study, three streams have been identified for initial SMR deployment in Canada. This creates significant opportunity for the Canadian industry to capture a large portion of this emerging market as it grows domestically and abroad through its existing nuclear supply chain, and to leverage our strong manufacturing, construction, and resource-based industries located in Alberta and Saskatchewan.

Both Alberta and Saskatchewan are committed to a low carbon future and have made initial steps to phase out coal power usage by 2030. Furthermore, private industries, including oil and gas, mining, and heavy industry, have also committed to reducing their carbon footprint through emerging and new technologies.

These carbon reduction initiatives include developing SMR technology to boost uranium production, enhance research and development, and promote local economic development.

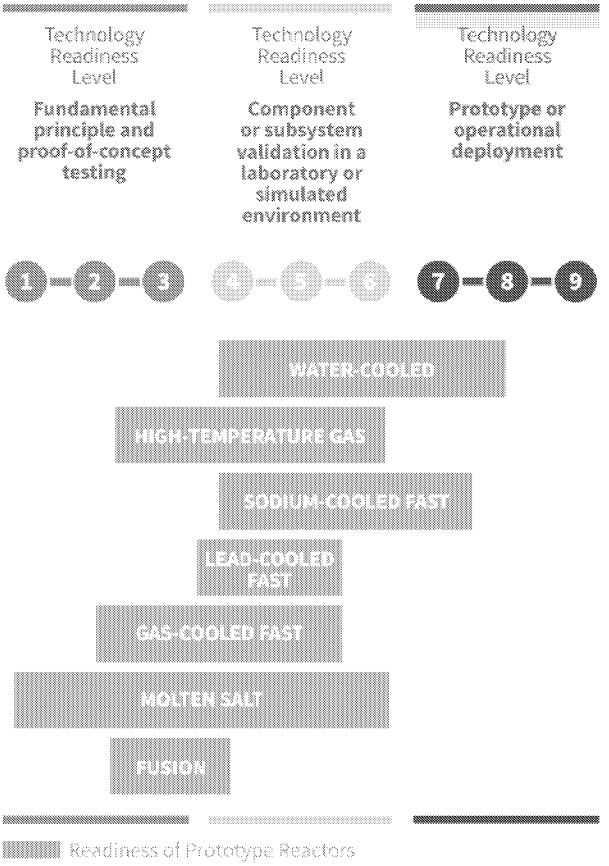
The current Canadian nuclear industry, which is made up of 200+ suppliers, was developed around large nuclear and primarily serviced Pressurized Heavy Water Reactors, developed by Atomic Energy of Canada Ltd. (AECL). SMRs are characterized as nuclear reactors that are less than 300MWe and thus require different approaches to ensure cost competitiveness with other forms of energy. The most significant difference between large nuclear and SMRs is their intent to be almost completely built using traditional serial manufacturing techniques. This involves constructing modules in a controlled factory setting for deployment at site, which drastically reduces on-site labour and installation that would typically expose projects to uncertainty, risk, cost escalations, and delays. Factory manufacturing can reduce costs while increasing quality, which means that the existing Canadian nuclear supply chain will need to assess, re-tool, and re-train to seize emerging opportunities around SMRs as with other Tier 1 countries.



SMR technologies Readiness

(Courtesy Canadian SMR Roadmap On-Grid Applications Workshop Report)

Supply chain readiness will depend on the technologies selected and the maturity of that technology with respect to design.

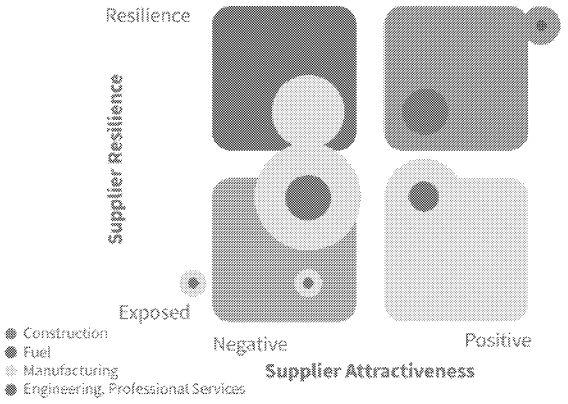


Alberta and Saskatchewan Potential to Support a Pan-Canadian SMR Supply Chain

The following inputs were used to study the industrial potential of Alberta and Saskatchewan in the nuclear supply chain: the PrairiesCan SMR Asset Map, the Hatch Global Procurement Intelligence database of suppliers in Alberta and Saskatchewan, industry profiles including applicable economic data, and the Organization of Canadian Nuclear Industries (OCNI) supplier directory and finally relevant literature. For industry, major categories of typical SMR equipment, materials, and services were mapped to suppliers that could potentially meet this demand within both provinces. Through this assessment, industry was further decomposed and the strengths, weaknesses, threats, and opportunities for industry were highlighted. Stakeholders were also engaged to inform the overall results.

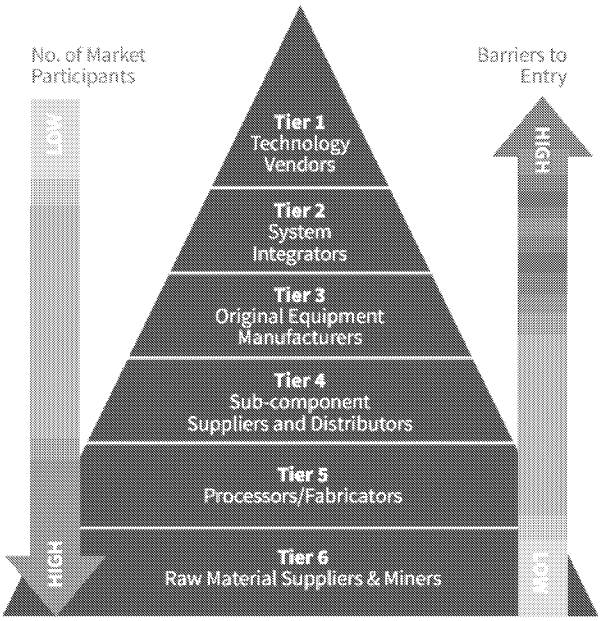
A need to overcome barriers to entry

From the assessment, many suppliers from the sample set did not possess the required certifications, qualifications, or quality assurance management system to support higher tiers of the nuclear supply chain. Therefore, their attractiveness and resiliency to compete in the current environment were limited. However, some industries (such as mining of uranium and construction) have suppliers that possess commensurate management systems and certifications and are well-positioned to access current and future opportunities.



Supplier resilience vs. attractiveness

A desktop assessment of suppliers was undertaken to understand the attractiveness and resilience of industry. Supplier attractiveness increases positively as suppliers implement respective management systems and obtain experience. Supplier resilience increases from the exposure of many global competitors. To be resilient means that there is limited competition outside the region. The size of the bubble corresponds to the magnitude of suppliers in this industry.



Supplier Tiers and Barriers to Entry (Courtesy of IAEA)

Suppliers in higher tiers of the supply chain are subject to higher standards and barriers of entry using a graded approach for quality.

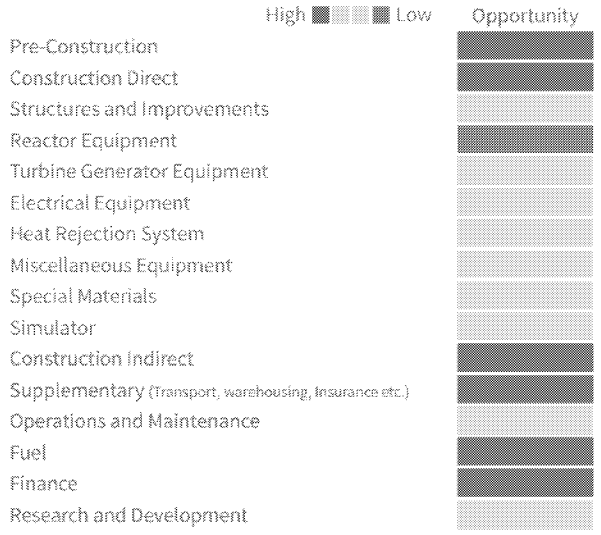
For those suppliers that do not possess the requisite management system, if they overcome the required barriers for entry, industries in Alberta and Saskatchewan will be well positioned to access the potential SMR domestic and global markets.

Opportunity to vertically integrate the fuel supply chain for domestic security and export potential

Canada has the third largest reserve of high-grade uranium and is the second largest producer in the world. The Proterozoic Athabasca Basin contains uniquely rich deposits, which are mostly concentrated in Saskatchewan, where it is mined and milled. Conversion and fuel fabrication are currently undertaken in Ontario, with enrichment completed outside Canada. With Ontario committing to moving forward with a technology that uses enriched uranium, Canada will have to adjust its non-proliferation commitments. This presents an opportunity for Saskatchewan to capture more value in the fuel supply chain. It would be opportunistic to evaluate and site a conversion and fuel fabrication facility in either province. Furthermore, pursuing enrichment of uranium would enable security of Canada's domestic nuclear fuel supply and provide security to other nations. With uranium demand for reactors projected to increase in the next two decades, seizing the opportunity to vertically integrate the fuel supply chain would further increase the economic benefit to the region.

Industry is positioned to support balance of plant

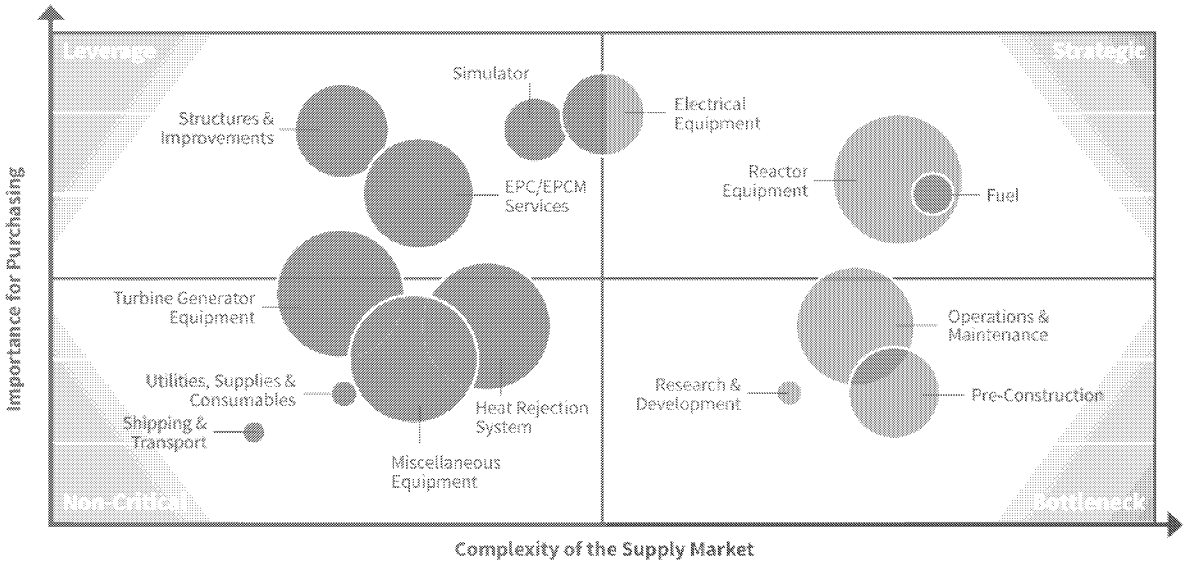
Alberta and Saskatchewan have very strong industrial economies. An analysis of the current economic landscape of the two provinces shows the current industrial capabilities in terms of labour capacity centered around manufacturing, construction as well as oil and gas and mining. These industries have been successful in delivering complex mega projects in adjacent sectors, such as mining and oil and gas. Given many of the aspects associated with the conventional island of nuclear draw synergies and adjacencies to these sectors. Industries within the two provinces are well positioned to support many aspects of a new SMR build, including site infrastructure, buildings, and structures, and balance of plant equipment.



Well positioned for modularization and assembly and creating hubs with further interconnection

The need to produce SMRs in a standardized manner provides a unique opportunity for industries and suppliers of Alberta and Saskatchewan to enter a supply chain that is emerging for the balance of Canada. A key differentiator that separates industries in Alberta and Saskatchewan from the balance of suppliers in Canada is the capability and experience using modularization to achieve schedule improvements. Furthermore, since industrial clusters are centered around both the Saskatoon and Edmonton areas, where modularization facilities are available, there is a strong opportunity to create local industry interconnections through modularization hubs in these regions. Localized hubs would further strengthen ties between manufacturing, wholesale trade, construction, professional services, warehousing and logistics, research and development, and education.

Complexity of purchasing vs. supply market



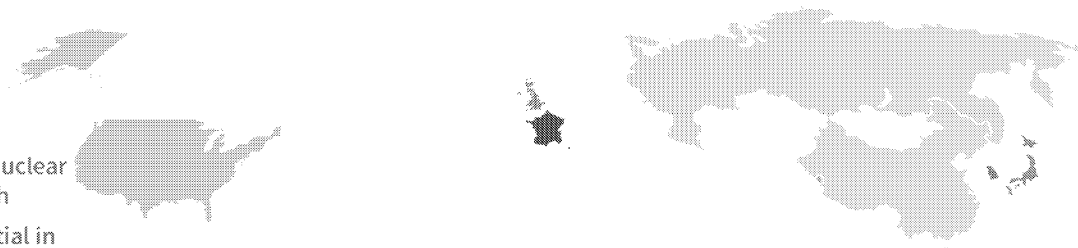
A sample set of suppliers were assigned major categories of typical SMR equipment, material and services that could be supplied to meet demand within the two provinces. These major categories were assessed with respect to the complexity of the supply market and the expected importance for purchasing. Complexity of supply market is gauged by supply scarcity, pace of technology and/or materials substitution, entry barriers, logistics or complexity and monopoly or oligopoly conditions. Strategic importance of purchasing means the value added by product line, the percentage of raw materials in total costs and their impact on profitability or project success. This chart called a Kraljic chart can be sub-divided into 4 quadrants (leverage, non-critical, strategic, bottleneck).
The respective categories of supply together with the number of suppliers represented by the size of the bubbles are plotted to understand 3 dimensions: (a) The size of the supplier market to support SMR equipment, material and services, (b) the presumed importance of these equipment, material and services to buyers within the supply chain and (c) the complexity (e.g. scarcity) of these equipment, material and services to the market.

End-use case for SMRs is different

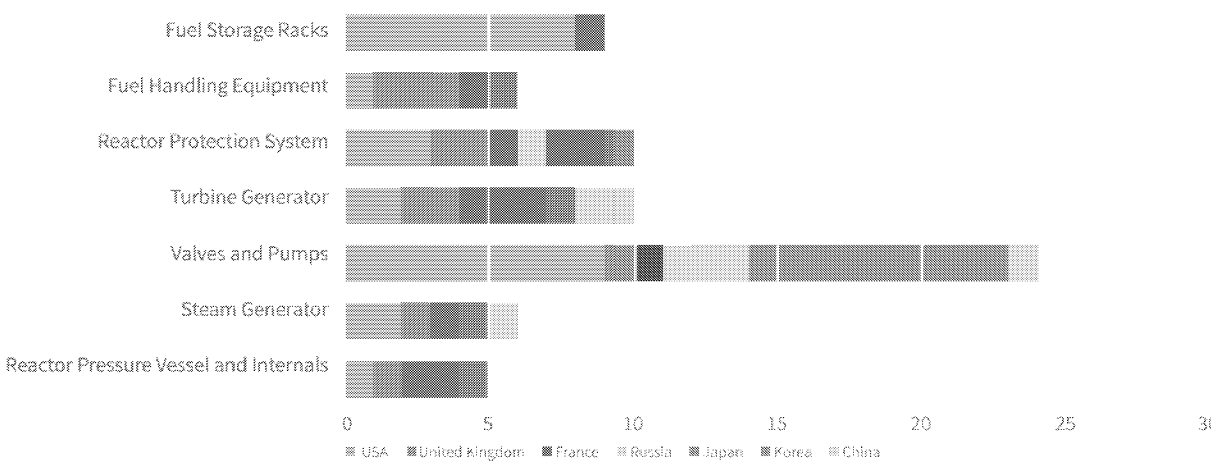
End-use cases for SMRs were studied from the perspective of Alberta and Saskatchewan. The applications for SMRs in both provinces are broad and can be leveraged beyond grid-scale electricity generation. The end-use opportunities that show the most potential over the next 10 years are process heat and power for industrial establishments, and district heating. Applications of these end uses may offer a unique export opportunity for training, development, and perhaps consultancy to countries undertaking similar decarbonization efforts. Canada is currently stewarding a Hydrogen Strategy, which intends to strengthen hydrogen as a key part of Canada's path to net-zero carbon emissions by 2050. Although SMRs can be coupled with various hydrogen technologies, the economics of producing hydrogen via SMRs remains challenging compared to steam methane reforming.

Global risks and opportunities

The global trend is to reduce the role of fossil fuels in electricity generation. Nuclear, and more specifically SMRs, are considered to support this transition, particularly in Asia and Africa. Among the nuclear Tier 1 countries, an evaluation was conducted to assess current nuclear supply chain capabilities, gaps, and export relationships that could challenge a pan-Canadian supply chain. Countries that were studied include the United States, United Kingdom, China, Russia, France, South Korea, and Argentina. Quality assurance barriers aside, many of these countries possess strong capabilities for supplying reactor components and material. Together with their ability to achieve economies of scale, these components will be a challenge for suppliers in Alberta and Saskatchewan to undertake for the initial first-of-a-kind (FOAK) deployments. However, as identified earlier, the export potential for fuel, training, modularization, and services could be leveraged if experience and capability is developed within the two provinces.



Number of Established Nuclear Suppliers with Export Potential in Tier 1 Nuclear Countries



An assessment of Tier 1 nuclear countries was undertaken to understand the supply chain offerings within these countries that could add further competition to the Canadian SMR supply chain and pose as additional threats to Alberta and Saskatchewan suppliers. The majority of these Tier 1 nuclear countries have established mature reactor equipment experience. This further reinforces the conclusion that this area of the supply chain will be difficult to penetrate for new Alberta and Saskatchewan SMR suppliers.

Summary of Key Take Aways

- Optimistically, Alberta and Saskatchewan could supply 68 % of the capital new build of SMRs within the region, such as pre-construction, construction direct and indirect, fuel, structures, turbine generator/balance of plant equipment etc. To achieve the efficiencies required under serial production and modularization, suppliers must build on existing capability and capacity in adjacent industries, and must overcome the barriers to enter, and integrate, into the supply chain.
- Vertically integrating the fuel supply chain within the region would encourage further economic development. Adding enrichment capabilities in Canada would increase the access to the value chain for Low-Enriched Uranium (LEU) by an additional 24%. Canada currently retains approximately 58% of the existing value chain. The ability to produce High-Assay Low-Enriched Uranium (HALEU) would increase access to the value chain in order of magnitude, and expand Canada's energy exports, jobs, and gross domestic product.
- Industries must be agile to policy shifts, changing requirements, and recognize challenges and gaps that need to be overcome to seize the SMR opportunity including:
  - Technical readiness of vendor designs
  - Capacity limitations associated with other industry and infrastructure mega-projects
  - Achieving optimal conditions for Nth-of-a-kind (NOAK) Costs.

Recommendations

The study culminates in a list of recommendations to increase the industrial potential for Alberta and Saskatchewan suppliers to enter the nuclear supply chain. The following is an overview of the recommendations:

- **Industry requires strategic coordination across all provinces.** Specifically:
  - A council operating under a term of reference bringing together federal and provincial governments, owners and operators, end-users, and industrial suppliers.
  - A localization plan developed with targets.
- **Industry needs market certainty and transparency in order to seize the opportunity to leverage.** Specifically:
  - SMR Owners and Operators identified.
  - SMR technologies selected.
  - SMR order backlog identified for applicable end uses.
  - A level 1 schedule developed for all SMR deployments in Alberta and Saskatchewan.
  - Identify needs for selected SMR technologies.
  - A common forum identified to communicate future tenders.
- **Industry needs to be ready to deliver in order to support a Pan-Canadian SMR supply chain.** Specifically:
  - Interest from suppliers to enter the SMR supply chain provided.
  - Implementation of a program to allow suppliers to measure their own operations against standards, and requirements to supply within the nuclear industry, along with support for closing respective gaps.
  - A funding map established to support new suppliers.
  - Enabling new SMR suppliers to gain experience under oversight of qualified mature suppliers.
  - Development of a manufacturing transition plan for selected SMR technologies.
  - Inventory of assets available for SMR supply chain developed.
  - Certification bodies established and resourced to qualify new and existing suppliers.
  - A plan developed to coordinated interim waste management.
- **Government, at a federal level, needs to promote Canada's industrial potential at an international level.** Specifically:
  - A universal set of codes and standards established for Canadian and International SMR deployment.
  - A cluster defined with a purpose and mission.
  - An export policy developed with localization targets.
  - Actions to mitigate global threats and/or seize global opportunities.
- **Canada needs to address obstacles and opportunities for existing industry already engaged in the fuel supply chain to create additional value in both provinces.** Specifically:
  - Canada becomes an enriching nation.
  - Technology is selected for commercial scale enrichment.
  - A business case is developed to vertically integrate the fuel supply chain within Canada, with a focus on siting conversion, enrichment, and fuel fabrication facilities in either province.

HATCH

Page 201

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19(1), 20(1)(a), 20(1)(b), 20(1)(c), 20(1)(d)

of the Access to Information Act

de la Loi sur l'accès à l'information

Pages 202 to / à 412

are withheld pursuant to sections

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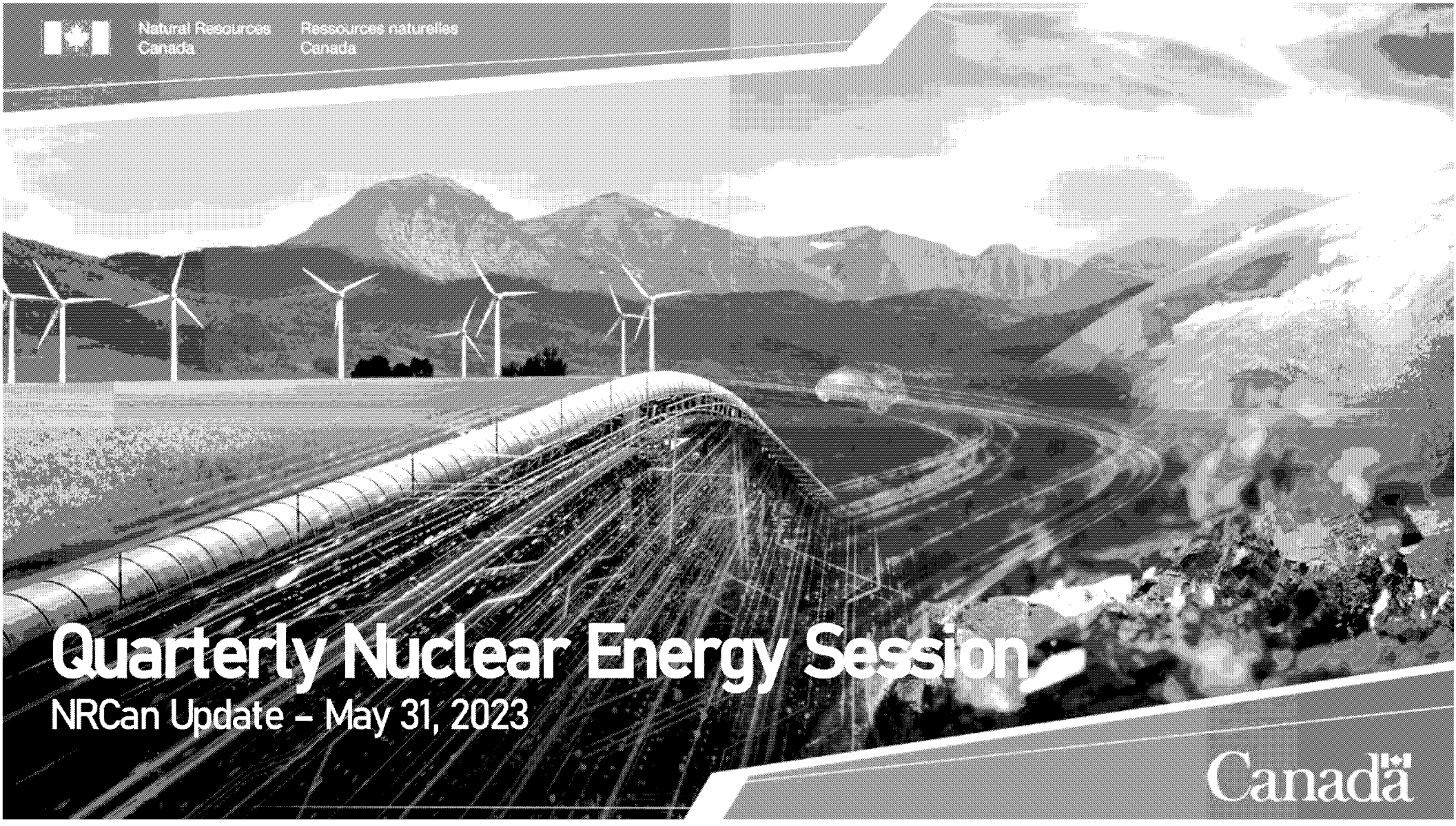
20(1)(a), 20(1)(b), 20(1)(c), 20(1)(d)

of the Access to Information Act

de la Loi sur l'accès à l'information



Quarterly Nuclear Energy Session

NRCan Update – May 31, 2023

Canada

Agenda

1. Budget 2023
2. Recent Events
   President of the U.S. (POTUS) Visit, G7, SMR Action Plan Leadership Table
3. Radioactive Waste Framework
4. Upcoming

Budget 2023 Update

Budget 2023

Budget 2023 introduces tools to put Canada's electricity sector on the path to meet its commitment to a net-zero electricity grid by 2035. This includes:

Clean Electricity Investment Tax Credit	Provides support for clean electricity technologies through a refundable 15% Investment Tax Credit, in which all nuclear energy projects are eligible. Private and public organizations can receive this tax credit. This credit is available beginning Budget day 2024.
Clean Technology Manufacturing Tax Credit	Provides 30% of investment costs in new machinery and equipment. It can be used in the manufacturing of nuclear energy equipment. This credit would apply to property that is acquired and becomes available for use on or after January 1, 2024.
Enhancing the Reduced Tax Rates for Zero-Emission Technology Manufacturers	Extend eligibility for the reduced rates to include the manufacturing of nuclear energy equipment, effective for taxation years beginning after 2023.

Budget 2023

- In addition to expanding tax credit tools to include all nuclear, Budget 2023 also continues awarding financial support for clean electricity and low-carbon projects through:

  - The Canada Infrastructure Bank;
  - Strategic Innovation Fund;
  - Canada Growth Fund; and
  - Natural Resources Canada.

- As part of its clean growth strategy, the government is making it a priority to expedite major project reviews while maintaining strong regulatory standards. Budget 2023 makes a clear commitment to continue improving the efficiency of major project assessments and ensuring the effectiveness of Canada's reviews of major projects.

POTUS Visit

March 23-24, 2023

Joint Statement

Resulted in a joint statement between the DOE and NRCan on nuclear energy cooperation

Global Partnership

Canada will join the Foundational Infrastructure for Responsible Use of Small Modular Reactor Technology (FIRST) program, and Energy Transformation Taskforce

Advanced Nuclear Technologies

Recognized the role of advanced nuclear technologies, including SMRs, committing to promote the use of advanced nuclear power globally

Supply Chain Security

Committed to reduced reliance on Russian nuclear and related goods, and developing secure fuel supply chains (including LEU and HALEU)

Climate Change

Reiterated commitment to promoting the use of advanced nuclear technology to achieve net-zero goals

Nuclear Energy Leadership Table

Nuclear Energy Leadership Table

- On May 9, 2023 NRCan co-chaired the third meeting of the Leadership Table in Gatineau, alongside the Indigenous Advisory Council (IAC).
  - The Leadership Table was composed of multidisciplinary representatives from the federal government, interested provincial and territorial governments, industry and utilities, and Indigenous organizations.

- Key themes included:
  - Regulatory Efficiency and Effectiveness: The critical need for Canada, across all levels of government to streamline large clean energy infrastructure projects to meet net-zero timelines and ambitions, including a need to reduce the time required to complete an Impact Assessment
  - Path Forward - Nuclear Energy in Canada: The evolution of SMR conversations to broader nuclear energy and technology discussions, to reflect the critical role nuclear energy will play in the global net-zero transition and meeting energy security needs. This includes the evolution of the "SMR Leadership Table" table to a broadened nuclear energy title to support the broadened scope of priorities, while not detracting from the advancement of SMRs in Canada and considerable progress to date.
  - Collaboration: NRCan, the CNA, and the CEO SMR Forum will continue to work to advance nuclear energy planning and analysis, including strong collaboration across all initiatives to optimize resources and minimize duplicative efforts.
  - Building a Nuclear Workforce: Canada's nuclear sector presents an opportunity to maintain good careers today, while supporting the workers that will build Canada's future clean economy – including engineers, scientists, construction and tradespeople, and resource workers.

Nuclear Energy Leadership Table

Progress Update

NRCan will be issuing a second edition of the Progress Update in Fall 2023 to reflect the strides made in the development and deployment of SMRs in Canada.

The second edition will capture the voice of the Leadership Table, highlight discussions and action items from the meeting, and ensure action items are publicly available.

Next Leadership Table

The fourth Leadership Table meeting is tentatively scheduled for later this year. Dates for the event will be announced shortly.

G7 Updates

Energy Minister's Meeting

The G7 Energy Ministers Meeting in April 2023 hosted a nuclear energy forum, which brought together industry leaders and senior governmental officials from G7 countries to discuss the contribution of nuclear energy to achieving climate and energy security.

The Energy Ministers Meeting communique recognized the important role of nuclear energy for those countries that opt to use it. The communique supported the development of a working group to reduce reliance on Russian nuclear supply.

Multilateral Statement

At the G7 Energy Ministers Meeting in April 2023, the US, Canada, France, Japan, and the UK issued a multilateral statement.

The statement announced their intent to collaborate to ensure a stable supply of nuclear fuel for current reactors and advance the development of fuels for future reactors.

This collaboration aims to reduce reliance on Russian supply chains.

G7 Summit

At the G7 Summit in Hiroshima, G7 countries using nuclear energy recognized its potential to provide affordable low-carbon energy, a source of baseload energy, grid flexibility, and to ensure global energy security.

G7 countries also recognized the importance of robust and resilient nuclear supply chains (including nuclear fuel), cooperation among like-minded countries with shared values, and the development and construction of nuclear reactors, including SMRs and other advanced reactors.

Radioactive Waste Framework

Radioactive Waste Framework

- In March 2023, the NRCan released *Canada's Policy for Radioactive Waste Management and Decommissioning.*
- Ensures that the government continues to meet international best practices, guidelines, and standards based on the best available science.
- Ensures that Canada's radioactive waste continues to be safely managed, including waste from emerging technologies such as small modular reactors (SMRs).

Key Priorities

Upcoming

Upcoming

- Polish Prime Minister visit to Canada
- 42nd Annual CNS Conference
- Canada- UK Nuclear Dialogue
- COG Innovation and Technology Workshop
- International Markets Working Group
- Enabling SMRs Program (Summer and Fall)

June 2023

- Canadian-Korean Conference on Science and Technology
- 5th Canadian Conference on Waste Management, Decommissioning and Environmental Restoration

July / August 2023

- IAEA Nuclear Harmonization and Standardization Initiative (NHSI)
- International Atomic Energy Agency (IAEA) General Conference
- Generation IV International Forum (GIF) Meetings
- Atoms4NetZero: Second International Conference on Climate Change and the role of Nuclear Power 2023
- NEA Steering Committee Meeting

September / October 2023

Next QNES

We are seeking suggestions on the following for future QNES meetings:

- Themes
- Topics
- Presentations
- Speakers
- Attendees

Questions?

Justin Hannah
Senior Director, Nuclear Energy Division
Natural Resources Canada

Justin.Hannah@nrcan-rncan.gc.ca

From:	Danika LeBlanc
To:	Kafa El Zamer
Cc:	Luke Bulmer
Subject:	FW: Moltex - Kalie is meeting with Rory
Attachments:	Briefing - SMRs - February 2023.docx
Sent:	5/15/2023 10:33:21 AM

Sorry Kafa, Luke sent an attachment as well.
Danika LeBlanc, CPA

From: Luke Bulmer
Sent: Monday, May 15, 2023 10:27 AM
To: Danika LeBlanc
Subject: RE: Moltex - Kalie is meeting with Rory
Bon matin Danika,
Updates on my end:

- ACOA (Luke & Shauna) are meeting with Moltex later this week to discuss project completion.
  - Expected Results: The activities within the scope of this project include the demonstration in low-radioactive environment and the preparation for high radioactive environment demonstration of the Moltex technology.
  - Means of Verification: Site visits, milestone progress reports, final report.
-

- Attached is the most recent note on SMRs from Policy (Feb. 2023)

Happy to discuss further, not much to share from my end of late except for the inquiry re: project completion. There continues to be a strong desire to see who / how SMR development will be funded going forward, and an understanding that between the Canadian Infrastructure Bank and the tax credits available are clear options to assist with funding.
-Luke

From: Kafa El Zamer <Kafa.ElZamer@ACOA-APECA.GC.CA>
Sent: Monday, May 15, 2023 9:13 AM
To: Danika LeBlanc <Danika.LeBlanc@ACOA-APECA.GC.CA>; Luke Bulmer <Luke.Bulmer@acoa-

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apeca.gc.ca>
Subject: Moltex - Kalie is meeting with Rory
Hi Folks,
Kalie is meeting with Rory this afternoon at 2pm

Could I get this by noon today? Nothing formal, just a few bullets.
Thanks,
Kafa El Zamer
Senior Advisor to the Vice President
New Brunswick Regional Office
Atlantic Canada Opportunities Agency (ACOA) / Government of Canada
kafa.elzamer@acoa-apeca.gc.ca / Tel: 506-292-1481
Conseillère principale au vice-présidente
Bureau régional du Nouveau-Brunswick
Agence de promotion économique du Canada atlantique (APECA) / Gouvernement du Canada
kafa.elzamer@acoa-apeca.gc.ca / Tél. : 506-292-1481

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s.21(1)(c)

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

INFORMATION NOTE

To:	Catherine Blewett President	Security classification N/A
From:	Kalie Hatt-Kilburn Vice-President, ACOA New Brunswick	Reference No. Date submitted February 10, 2023

Subject:	Information Note on the Status of Small Modular Reactors (SMR) Development in New Brunswick
Purpose	The purpose of this information note is to highlight key advocacy items important to advance SMR development and deployment in New Brunswick.

Key Advocacy Issues:

1. Importance of regulatory clarity and certainty
2. Funding support for SMR technology development

Background – Government of Canada and SMR Development

- The Government of Canada launched its SMR Action Plan in 2020 to advance the safe and responsible development and deployment of SMRs through a pan-Canadian approach in partnership with provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society.

- The goal of investing in SMR technology is to support Canada's goals to move to non-emitting sources of electricity generation, including phasing out of coal by 2030; becoming carbon net zero by 2050; and providing affordable clean energy to remote communities.

- When the SMR Action Plan was launched, no specific funding was allocated to advance investments to support activities outlined in the plan.

- Some funding for SMR development has been provided by provincial governments, such as New Brunswick, to private entities. Additionally, funding has been provided through ISED's Strategic Innovation Fund to companies such as NB-based Moltex to assist them in developing their technology.

- The development and deployment of new SMR technology still requires significant regulatory clarity and certainty which is time-consuming and expensive. Given the novel nature of SMR technology and the inherent risks involved, the private sector is unlikely to provide the funding to assist in mobilizing this technology until it is proven.

-

Background – New Brunswick and SMR Development

- Two companies are developing SMRs in New Brunswick: ARC and Moltex.

- Both are considered "Generation IV" reactors (See Appendix A)

  - **ARC Clean Energy** is developing an advanced Generation IV SMR, the ARC-100, a 100 MW liquid sodium-cooled fast reactor which is expected to be operational by 2029. The reactor is based on the technology of the EBR-II fast-reactor at the Argonne National Laboratory in Lemont, Illinois, which operated for 30 years.

  - **Moltex Energy** is developing a 300 MW Stable Salt Reactor-Wasteburner. It is also developing technology to recycle used CANDU fuel at the Point Lepreau Nuclear Generating Station, lowering the amount of nuclear waste that will need long-term storage. Both the reactor and spent fuel recovery system are expected to be operational by the early 2030s.

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Advocacy Issue: Importance of Regulatory Clarity and Certainty

- Keeping legislative and regulatory requirements streamlined is key to advancing SMR technology in a timely way. SMRs are smaller and simpler than traditional nuclear generation operations, with enhanced safety features, and industry representatives are advocating that SMRs not be "over-regulated."

- NB Power, Moltex and ARC have expressed a concern regarding the length of time the current Impact Assessment requires for the technology. The utility and both companies will be attending a session in Ottawa as a part of the Canadian Nuclear Association in February 2023 to make the point that assessments need to be expedited so that Canada can remain competitive with other jurisdictions.

- See Annex B for more detail on The Canadian Roadmap for Small Modular Reactors.

Advocacy Issue: Funding

The following projects in New Brunswick require advocacy in order to move forward:

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Additional Information

New Brunswick Power

New Brunswick Power has identified the need for assistance with advocacy on funding with respect to access to:

1. Low interest loans;
2. Tax Credits, including access to equivalent to tax credits for crown corporations; and

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3. Federal grants to offset the extra cost and financial risk of initial deployments, similar to the programs in other countries (like the Inflation Reduction Act in the US)

ARC

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Moltex

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ACOA Investments in SMRs

ACOA has funded a number of investments to assist with SMR technology development, given the importance of increasing non-emitting power generating sources to support the New Brunswick economy. Information on these investments is in Appendix D.

Key Points

- Investment in new clean energy technologies is essential to achieving decarbonization in order to reach Canada's climate goals.

- SMR development and deployment is a strategic advocacy priority for New Brunswick, Regulatory clarity and certainty, and funding are key issues.

- The magnitude of the investments required to develop this sector necessitates funding support from a range of federal departments.

Appendix A: New Brunswick Context

- New Brunswick is part of the pan-Canadian SMR Action Plan initiative.
- The focus for New Brunswick is on Stream 2 which involves two 4th generation, advanced small modular reactor designs that will be developed in New Brunswick through the construction of demonstration units at the Point Lepreau nuclear site in NB.
- By fostering a strong collaboration among the various research, manufacturing, federal and provincial agencies, New Brunswick anticipates that an initial ARC Clean Energy demonstration unit will be completed by 2030, and Moltex Energy's waste recycling facility and reactor will be operational by the early 2030s.
- With these timelines, New Brunswick will be supporting the additional clean energy needs within Atlantic Canada and with partnering jurisdictions starting in 2030.
- New Brunswick is positioned to become the leader in the development and deployment of these 4th generation technologies through its efforts, its partnerships and its support.
- These designs represent a significant opportunity for advancing domestically produced energy within Canada and around the world that is both clean and safe.
- Through ongoing support and collaborations, these advanced technologies can start being deployed as early as 2030 in support of the industrial needs in areas like Saskatchewan and Alberta, and indeed, around the globe.
- The made-in-New Brunswick designs represent significant economic diversification opportunities for the province and will place New Brunswick as a world leader in the deployment of 4th generation advanced SMR technologies.
- With funding from the provincial government, two developers (Moltex Energy and ARC Nuclear Canada Inc.) have opened offices in New Brunswick. Companies are developing delivery capability in New Brunswick with the promise of local economic development.
- These two designs are expected to result in new lower-cost units that recycle nuclear waste, have more inherent safety attributes and are attractive for global deployment.
- Stream 2 can create economic benefits for Canada for demonstration units in New Brunswick (2020 – 2035) of:
    - 21,870 person-years of direct and indirect employment
    - a positive impact on GDP (direct and indirect) of $2.15 billion
    - an increase of government revenue of $198 million

  with the opportunity to expand this through a fleet of both Canadian and export units to 2060 of:
    - 537,000 person-years of direct and indirect employment
    - a positive impact on GDP (direct and indirect) of $59 billion
    - an increase of government revenue of $5.2 billion

Appendix B: A Canadian Roadmap for Small Modular Reactors

- In 2020 the Government of Canada released a document entitled *A Call to Action: A Canadian Roadmap for Small Modular Reactors* where the importance of regulatory clarity and certainty is highlighted as a key issue.
- An interprovincial MOU between Ontario, New Brunswick, Saskatchewan and Alberta was signed to promote the development and deployment of SMR technology and included a feasibility report and strategic deployment plan.
- A *Regulatory Readiness Working Group* made up of experts from across Canada was tasked with a mandate of identifying barriers and challenges to the deployment of SMRs under current regulatory regime. Key activities of this working group included a comprehensive review of federal, provincial, and territorial legislation and regulations for SMR readiness; an analysis of the current Canadian regulatory regime for SMR deployment, and the identification of gaps in regulatory regime, and proposed way forward.

The Regulatory Readiness Working Group, released the following key findings:

- Canada's enabling framework is sound. Existing regulatory and legislative processes are ready for SMR deployment in Canada, although some refinements would improve efficiencies.
- On Canada's nuclear liability framework, the existing legislation is sound and current regulations assign liability limits to existing Canadian nuclear facilities based on the concepts of a graded approach, commensurate with risk. It is anticipated that some revisions to the regulations under the *Nuclear Liability and Compensation Act* will be required in order to apply these same concepts to small power reactors, thereby acknowledging the small size and low inherent risk of many SMR designs.
- On nuclear security, the current regulations would require SMRs to incorporate security infrastructure comparable to today's operating full scale nuclear power plants. Industry stakeholders and the Canadian Nuclear Safety Commission (CNSC) are engaged in discussions about potential changes to these regulations to take a graded approach, commensurate with size and risk, while continuing to ensure appropriate security coverage is maintained. (See Appendix B)
- Some additional refinements have been identified which would improve efficiencies in some existing regulatory control areas such as staff training and emergency response. Due to the consultation already undertaken to date by CNSC on the regulatory framework for SMRs, both industry and the CNSC are aware of and understand these refinement opportunities and are confident they can be resolved. This confidence is based on past experience whereby similar technical regulatory issues have been satisfactorily resolved in the past.

Appendix C: Role of the Canadian Nuclear Safety Commission (CNSC)

The Canadian Nuclear Safety Commission (CNSC) regulates the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public. Any proposed project to build and operate an SMR would require licensing from the CNSC.

Nuclear reactors of varying sizes and power outputs are used in Canada for a range of applications, such as research, materials testing, medical uses, and electrical power generation. The CNSC regulates activities associated with all of these applications.

The Canadian nuclear regulatory framework is comprehensive and in large part technology neutral, which means that that it allows for all types of technologies to be safely regulated. All reactor facilities, including SMRs, are classified as Class IA nuclear facilities under the Class I Nuclear Facilities Regulations. Reactor facilities include:

- nuclear power plants or small reactors for the generation of power or heat for industrial processes
- small reactors for non-power generation uses (e.g., isotope production, and research and development activities)

This means that in regulating SMRs, the CNSC can apply the same criteria used to regulate traditional reactor facilities. This will be done through a risk-informed approach, by applying resources and regulatory oversight commensurate with the risk associated with the regulated activity.

As the CNSC continues to prepare for the regulation of SMRs, it is committed to informing Canadians and potential licensees about any changes, applications, and notable updates. A vendor design review (VDR) is an optional service provided by the CNSC at the vendor's request. A VDR does not result in any decision by the Commission under the *Nuclear Safety and Control Act*. However, it allows a reactor vendor to receive preliminary CNSC staff feedback on a reactor technology.

This includes:

- whether the applicant is addressing Canadian regulatory requirements in its design and safety analysis activities
- whether the applicant is developing the necessary evidence to support the adequacy of the proposed design.

The CNSC is currently engaged in many pre-licensing vendor design reviews for SMRs.

Appendix D: ACOA investments in the SMR technology cluster in New Brunswick

$3 million – Moltex (conditionally repayable)

- This project has helped Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low cost.

$5 million – NB Power (non-repayable)

- This project is enabling NB Power to prepare for the deployment and demonstration of SMR technologies at its approved nuclear site. The project is focusing on foundational activities such as establishing baseline site designs and addressing environmental and regulatory requirements. NB Power is also engaging with First Nations and the public as part of this project.

$561,750 – University of New Brunswick's Centre for Nuclear Energy Research (CNER) (non-repayable)

- This project expanded CNER's capacity to support SMR technology cluster development in New Brunswick. The activities included hiring an Innovation Officer and engaging a consultant to develop a quality management system that would meet industry certification standards. This investment boosted the centre's capacity to partner with private industry in research and development.

$13,750 – North Shore Micmac District Council (non-repayable)

- This project supported strategic planning for Indigenous involvement in SMR development in New Brunswick.

$786,250 – Organization of Canadian Nuclear Industries (non-repayable)

- This project supported SMEs looking to enter, or expand, their role in the SMR Supply Chain in New Brunswick, through work with OCNI to map out their current abilities, nuclear certifications, and develop partnerships within the nuclear industry.

$38,225 – Atlantica Centre for Energy Inc. (non-repayable)

- This project assisted in hosting an SMR Supply Chain event in New Brunswick, for SMEs interested in entering, or expanding, their role in the SMR Supply Chain

$1,928,005 – University of New Brunswick's Centre for Nuclear Energy Research (CNER) Phase II (non-repayable)

- Establish an Advanced Nuclear Reactors Laboratory (ANRL) to support the development and design of first-of-a-kind commercial demonstrations of small modular reactors (SMRs). Modernize and update key systems, equipment, and test processes in order to allow CNER to pursue its work with the legacy nuclear industry and expand its mandate within a growing New Brunswick SMR nuclear energy cluster.

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Pages 443 to / à 445

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20(1)(b), 20(1)(c), 20(1)(d), 21(1)(b), 21(1)(c)

of the Access to Information Act

de la Loi sur l'accès à l'information

From:	Luke Bulmer
To:	Danika LeBlanc
Subject:	Moltex Notes
Attachments:	20220916 Overview.pdf;SMR Update Atlantic Canada revised 01.13.23.docx;
Sent:	1/13/2023 3:12:00 PM

Moltex Energy is developing a 300 MW Stable Salt Reactor-Wasteburner. It is also developing technology to recycle used CANDU fuel at the Point Lepreau Nuclear Generating Station, lowering the amount of nuclear waste that will need long-term storage. Both the reactor and spent fuel recovery system are expected to be operational by the early 2030s.

ACOA QAccess - QA File ID: 217315 / GX Number: 7046960 1 (acoa-apeca.gc.ca)
"Demonstrate the Moltex SMR technology

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s.20(1)(c)

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s.21(1)(c)

https://www.moltexenergy.com/technology-suite/
"Moltex's Stable Salt Reactor – Wasteburner (SSR-W), WAste To Stable Salt (WATSS) recycling process, and GridReserve thermal energy storage tanks together allow the generation of inexpensive electricity that can be dispatched as needed, complementing intermittent renewable sources such as wind and solar."

Thank you,
-Luke

Luke Bulmer, CPA
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Agence de promotion économique du Canada atlantique / Gouvernement du Canada
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Canada

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s.21(1)(c)

moltex
clean energy

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Pages 449 to / à 451

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20(1)(a), 20(1)(b), 20(1)(c), 20(1)(d)

of the Access to Information Act

de la Loi sur l'accès à l'information

BACKGROUNDER

Security classification N/A
Reference No. DT
Prepared by Laura DeLong
Date submitted January 12, 2023

Subject: Small Modular Reactor (SMR) landscape in Atlantic Canada and Investments in SMRs by the Government of Canada.

Background

- Canada is targeting to have 100% of its power generation from non-emitting sources by 2035 and net-zero emissions across the country by 2050 under the Paris Agreement.
- SMRs are a new class of nuclear reactors of 300 megawatt or less which are designed with modular technology, resulting in enhanced safety, economies of scale and expected shorter construction schedule compared to traditional nuclear generating stations
- Canada is in a global race with other major nuclear nations seeking to capitalize on the SMR opportunity. Early-mover advantage is critical is Canada is to become a global SMR technology hub and capture a significant share of the supply chain opportunities, increased jobs, and economic benefits.
- NRCan recently announced (Dec. 2022) a reorganization and the creation of a new Nuclear Energy and Infrastructure Security Branch.
    - The branch includes four divisions – Uranium and Radioactive Waste, Cyber and Energy Security Policy and Outreach, Energy Infrastructure Security and Nuclear Energy and NRCan shared that the branch 2023 priorities include: Regional Energy Table discussions, development of a domestic strategic approach to ensure nuclear energy helps Canada achieve its climate and energy security goals, continued collaboration with like-minded partners on fuel supply chain security and supporting emerging and experienced international markets in meeting their energy security and climate goals through nuclear.

<u>New Brunswick</u>

- New Brunswick is currently home to the development of two reactor designs undertaken by ARC and Moltex. Both are considered "Generation IV" reactors, which are attractive to the market because they are safer than earlier versions, effectively mitigating the risk of a thermal nuclear incident.
    - **ARC Clean Energy** is developing an advanced Generation IV SMR, the ARC-100, a 100 MW liquid sodium-cooled fast reactor which is expected to be operational by 2029. The reactor is based on the technology of the EBR-II fast-reactor at the Argonne National Laboratory in Lemont, Illinois, which operated for 30 years.
    - **Moltex Energy** is developing a 300 MW Stable Salt Reactor-Wasteburner. It is also developing technology to recycle used CANDU fuel at the Point Lepreau Nuclear Generating Station, lowering the amount of nuclear waste that will need long-term

storage. Both the reactor and spent fuel recovery system are expected to be operational by the early 2030s.

- New Brunswick Premier Blaine Higgs has underscored his commitment to non-emitting sources of energy and announced:
  - a $20 million investment in ARC (with $30 million in matching private funds)
  - a continued partnership with the federal government to support Moltex; and
  - the activation of an underutilized supply chain to participate in a worldwide SMR market.
- In the 2022 Speech from the Throne, the Government of New Brunswick launched an Energy Secretariat to coordinate the various stakeholders and opportunities and to elevate NB's asset on a national and global stage. The Secretariat is led by Mr. Wayne Power and encompasses nuclear, hydrogen, natural gas/LNG and other energy sources.
- In November 2022 Kinectrics Inc. announced the grand opening of office space in Saint John, New Brunswick. Kinectrics aims to invest in the province and will help build capacity and increase capability of the local supply chain in support of the Point Lepreau Nuclear Generating Station, and for new advanced reactor development and deployment in the province
- ACOA has made significant investments in the SMR technology cluster in New Brunswick. (*See Appendix A*).

Current Status

Budget and Funding Updates

Canada Infrastructure Bank (CIB)

- In October 2022 the CIB signed an agreement with Ontario Power Generation (OPG), pledging $970 million for the construction of the GE-Hitachi BWRX-300 Small Modular Reactor (SMR) at the Darlington Nuclear Generating Station in Clarington, Ontario. This is CIB's largest investment in clean power generation to-date.

2022 Fall Economic Statement (FES)

- The FES proposes a refundable tax credit equal to 30% of the capital cost of investments in clean energy systems, including SMRs.

ARC

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New Brunswick Power (NBP)

- NBP has also indicated that they are interested in understanding the 30% investment tax credit since they think this could impact the work underway to establish an owner/operator consortium for First of a Kind (FOAK) reactor implementation. It is anticipated that this consortium will also approach the Canada Infrastructure Bank for funding.

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Moltex

Additional Context:

- In December the Minister of Environment and Climate Change determined that the Small Modular Reactor Demonstration Project proposed by NB Power does not warrant designation under the *Impact Assessment Act*. The rationale provided for the determination is that the legislative and regulatory processes that are currently in place are sufficient to address the potential adverse effects and impacts.

s.14

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

From:	NuclearEnergy / ÉnergieNucléaire (NRCAN/RNCAN)
To:	Newman, Meghan (she, her | elle, la)
Subject:	Quarterly Nuclear Energy Session QNES Report, May 31st 2023
Attachments:	REPORT - Meeting - Quarterly Nuclear Energy Session - 2023-05-31.docx;1.1 DECK - QNES - NRCan update - 2023-05-31.pdf;DECK - OCNI QNES May 2023 - 2023-05-31.pdf;
Sent:	6/28/2023 12:19:51 PM

Good morning,

Thank you to everyone for attending the most recent Quarterly Nuclear Energy Session (QNES) on May 31st, 2023. Please accept our apologies for the delay in sharing this report. Please find attached the report and all supporting materials. To continue to improve these sessions moving forward, we are also including a link to a short two-minute survey where participants can suggest topics for the next session, discuss what worked well or needs improvement, as well as provide other feedback. We would greatly appreciate any feedback provided through the form and will implement this feedback into the next session to make a more collaborative and effective space for discussion.

Survey link:

Attached Materials:

- QNES Report
- NRCAN Update Deck
- OCNI Update Deck

Thank you,

Max Blair
(he/him/il/lui)
Junior Policy Analyst, Nuclear Energy Division
Natural Resources Canada | Government of Canada
maxwell.blair@nrcan-rncan.gc.ca
Analyste des politiques subalterne, Division de l'énergie nucléaire
Ressources naturelles Canada | Gouvernement du Canada
maxwell.blair@nrcan-rncan.gc.ca

"Respectfully acknowledging that I live and work on the traditional, ancestral and unceded territory of the Algonquin Anishinabe People / "Reconnaissant respectueusement que je vis et travaille sur le territoire traditionnel, ancestral et non cédé du peuple algonquin anishinabe"

s.16(2)

Report of the
Quarterly Nuclear Energy Session
May 31st, 2023
Natural Resources Canada, via MS Teams

I. SUMMARY

- Justin Hannah, Senior Director of the Nuclear Energy Division (NED) at Natural Resources Canada (NRCan), chaired the Quarterly Nuclear Energy Session (QNES) on May 31st, 2023, via videoconference. The themes of this session were International Cooperation & Export Markets. Other agenda items were:
  - Budget 2023 Updates
  - POTUS Visit
  - SMR Action Plan Leadership Table
  - G7 Updates
  - URWD Updates on the Radioactive Waste Framework
  - Upcoming Events
  - Stakeholder roundtable updates

II. BACKGROUND

- The purpose of QNES, convened by NED at NRCan, is to bring together **stakeholders from across Canada's nuclear energy sector** – *including, but not limited to, industry associations, companies, laboratories, academia, and utilities* – as well as **federal departments and agencies, and provincial and territorial counterparts** for updates and discussions on current initiatives and upcoming events and to foster collaboration and information sharing to support policy coherence on nuclear matters.
- The previous QNES was held on December 1st, 2022 and focused on Canada's role in global nuclear supply chain security.

III. REPORT BY AGENDA ITEM

1. Opening Remarks and NRCan Update

- **NRCan/Hannah** opened the session and **Frédéric Beauregard-Tellier** , Director General of the Nuclear Energy and Infrastructure Security Branch introduced himself and provided opening remarks.
- **Budget 2023 Updates:** Nuclear energy has received strong supporting signals from the federal government with the launch of Budget 2023. Dialogue is continuing with the Department of Finance on definitions and clarification of terms which is likely to continue over the coming months. Budget 2023 announced significant new tax measures to support the deployment of non-emitting technologies including:
  - The Clean Energy 15% Refundable Investment Tax Credit, for which nuclear refurbishment projects, as well as new builds of both large-scale and small modular reactors, are eligible. Available beginning Budget day 2024,
  - A refundable tax credit equal to 30% of the cost of investments in new machinery and equipment used to manufacture or process key clean technologies, and extract, process, or recycle key critical minerals, including the manufacture of renewable or nuclear energy equipment.

- Extended eligibility for reduced rates for corporate income tax rates by half for zero-emission technology manufacturers, including the manufacturing of nuclear energy equipment, effective for taxation years beginning after 2023.

- In addition to expanding tax credit tools to include all nuclear, Budget 2023 also continues awarding financial support for clean electricity and low-carbon projects through:
  - **The Canada Infrastructure Bank (CIB)** which received $35 billion to attract private capital to major infrastructure projects and build more infrastructure across the country.
  - **Strategic Innovation Fund (SIF)** which received $500 million over ten years to support the development and application of clean technologies in Canada. The Strategic Innovation Fund will also direct up to $1.5 billion of its existing resources towards projects in sectors including clean technologies, critical minerals, and industrial transformation.
  - **Canada Growth Fund (CGF)** is a $15 billion arm's length public investment vehicle that will help attract private capital to build Canada's clean economy by using investment instruments that absorb certain risks in order to encourage private investment in low carbon projects, technologies, businesses, and supply chains.
    - These contracts would backstop the future price of, for example, carbon or hydrogen, providing predictability that helps to de-risk major projects that cut Canada's emissions.
    - The federal government will consult on the development of a broad-based approach to carbon contracts for difference that aims to make carbon pricing even more predictable, while supporting the investments needed to build a competitive clean economy and help meet Canada's climate goals.
  - **Natural Resources Canada** was given $3 billion over 13 years starting in 2023-2024 to:
    - Recapitalize funding for the Smart Renewables and Electrification Pathways Program
    - Renew the Smart Grid program to continue to support electricity grid innovation; and
    - Create new investments in science-based activities to help capitalize on Canada's offshore wind potential.
  - Multiple participants requested a timeline or enhanced clarity on expected timeframes for the ITCs and other financial instruments being introduced to better understand the roll out of these credits and other financial instruments. There is currently discussion of pre-announcement meetings and post-announcement meetings to help facilitate this information sharing and enable industry to be involved in the roll out.
  - **COG/** equested that in any discussions regarding the implementation of tax credits that the government ensure that R&D organisations such as COG are included in any such exercises.

- **POTUS Visit:** Nuclear energy cooperation was a topic of key importance during the visit of U.S. President Joe Biden in March. This meeting resulted in a joint statement on nuclear energy cooperation and has enabled Canada to participate more actively in global partnerships. There will be further discussion on the agreements and programs facilitated by this meeting at the next international markets working group meeting (IMWG).
  - **The Joint Statement** on nuclear cooperation between NRCan and the DOE recognized the role of SMRs, committed to promote the use of advanced nuclear power globally. Committed to reduced reliance on Russian nuclear and related goods, and developing secure fuel supply chains (including LEU and HALEU). Affirmed that consent-based siting of nuclear fuel waste management facilities is part of the U.S. and Canada's common vision. As well as reiterated both Canada and the US' commitment to net-zero goals.

- **Canada will join the Foundational Infrastructure for Responsible Use of Small Modular Reactor Technology (FIRST) program**, providing funding and in-kind support. The United States and Canada will also coordinate efforts to develop secure and reliable North American nuclear fuel supply chains and build broader partnerships with longstanding allies and partners, both of which will help to ensure access to low enriched uranium, including High-Assay Low Enriched Uranium.
- **The one-year Energy Transformation Task Force** will be chaired by the U.S. Special Presidential Coordinator for Global Infrastructure and Canada's Deputy Prime Minister to work across the spectrum of the clean economy. The task force will accelerate cooperation on critical clean energy opportunities and supply chains, including nuclear energy.
- The NWMO and the DOE signed a statement of intent on May 16, 2023 to cooperate on information-sharing for nuclear fuel waste management.

- **Nuclear Energy Leadership Table:** On May 9, 2023 NRCan co-chaired the third meeting of the Leadership Table in Gatineau, alongside the Indigenous Advisory Council (IAC). At the most recent meeting the TOR and name have been changed to reflect the broad support for nuclear, as such the table will now be named the "Nuclear Energy Leadership Table" (previously the SMR Action Plan Leadership Table). This will not detract from SMR discussions but rather avoid having to setup a parallel discussion for large scale. Key themes included:
  - **Regulatory Efficiency and Effectiveness:** The critical need for Canada, across all levels of government to streamline large clean energy infrastructure projects to meet net-zero timelines and ambitions, including a need to reduce the time required to complete an Impact Assessment.
  - **Path Forward - Nuclear Energy in Canada:** The evolution of SMR conversations to broader nuclear energy and technology discussions, to reflect the critical role nuclear energy will play in the global net-zero transition and meeting energy security needs. This includes the evolution of the "SMR Leadership Table" table to a broadened nuclear energy title to support the broadened scope of priorities.
  - **Collaboration:** NRCan, the CNA, and the CEO SMR Forum will continue to work to advance nuclear energy planning and analysis, including strong collaboration across all initiatives to optimize resources and minimize duplicative efforts.
  - **Building a Nuclear Workforce:** Canada's nuclear sector presents an opportunity to maintain good careers today, while supporting the workers that will build Canada's future clean economy – including engineers, scientists, construction and tradespeople, and resource workers.
- The next Leadership Table meeting is tentatively scheduled for later this year. NRCan will be considering new participants for the next Nuclear Energy Leadership Table. Additionally, the co-chair position is currently open for submissions of interest to co-chair the next event.
- **CNA/** Noted that the CNA would like to better understand the links to energy security and critical minerals with respect to the Canada U.S. relationship. Specifically in regards to extracting and exporting critical minerals related to nuclear technologies. Particularly of note was ensuring that nuclear is included in discussions of critical mineral trade at the federal level as well as advocating for how nuclear can play a role in these developments and discussions.
  - **NRCan/Hannah** acknowledged CNA's position on the role of nuclear technologies and critical minerals. NRCan's DM, John Hannaford has recently been appointed the new Clerk of the Privy Council. NRCan's DMA, Mollie Johnson, will be acting DM in the interim. These changes will enable NRCan to continue to maintain its knowledge and expertise on the nuclear file, as both John Hannaford and DMA Johnson are well versed on the nuclear file and its opportunities.

- **G7 Updates**

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- **Energy Ministers Meeting:** Nuclear energy was a key issue at the G7 Energy Ministers Meeting in Sapporo, Japan. The Energy Ministers Meeting communique recognized the important role of nuclear energy for those countries that opt to use it. The communique supported the development of a working group to reduce reliance on Russian nuclear supply.
- **Multilateral Statement:** In April 2023, a Multilateral Statement was issued at the G7 Energy Ministers Meeting, in which the US, Canada, France, Japan, and the UK announced their intent to collaborate to ensure a stable supply of nuclear fuel for current reactors and advance the development of fuels for future reactors. This collaboration aims to reduce reliance on Russian supply chains.
  - The aforementioned Joint Statement between Canada and the U.S. works in tandem with this commitment through the Energy Transformation Task Force and Canadian participation in the FIRST program.
  - An upcoming visit from the U.K., building on the Canada-UK Action Plan workstreams, will also focus on fuel supply chain cooperation.
- **G7 Summit:** During the G7, it was affirmed that members that opt to use nuclear energy recognize its potential to provide affordable low-carbon energy that can reduce dependence on fossil fuels, to address the climate crisis and to ensure global energy security as a source of baseload energy and grid flexibility. Those G7 countries also emphasized the importance of building robust and resilient nuclear supply chains, including nuclear fuel, while maintaining and strengthening nuclear technology and human resources. They committed to supporting the development and construction of nuclear reactors, including small modular reactors and other advanced reactors with advanced safety systems.
  - The G7 Leaders summit in Hiroshima reinforced the importance of robust nuclear fuel supply chains in relation to SMRs and advanced reactors. NRCan's focus now is on operationalizing these statements and having working level dialogues with these countries to develop these supply chains.

- **URWD Update on the Radioactive Waste Framework**
  - **URWD/** , provided an update on the Radioactive Waste Policy Framework. Highlighting that the policy builds on views and perspectives heard from many different stakeholders including industry, Indigenous partners, and more, spanning over two years of engagement. Modernizing the 1996 Radioactive Waste Policy to the new Policy for Radioactive Waste and Decommissioning was an important step in ensuring that the government continues to meet international best practices, guidelines and standards based on the best available science, reflects the values and principles of Canadians, while continuing to ensure that Canada's radioactive waste is safely managed, including waste from emerging technologies such as small modular reactors (SMRs). There are four key priorities in the new Radioactive Waste Policy Framework:
    1. Protection of health, safety, security of people and the environment, and ensuring nuclear non-proliferation;
    2. Inclusive engagement, openness, and transparency on radioactive waste management and decommissioning matters;
    3. Recognition of Canada's deep commitment to building partnerships and advancing reconciliation with Indigenous peoples related to the management of radioactive waste and decommissioning, based on the recognition of rights, respect, collaboration and partnership; and

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4. Global excellence in the fields of radioactive waste management and decommissioning.

- While the previous policy focused on roles and responsibility and long-term disposal plans and independent regulator, the new policy is significantly longer and broader in scope, covering the key themes mentioned, and elaborating and providing clarity on the expectations of engagement and transparency surrounding radioactive waste solutions. Something heard during the rounds of engagement was the need for Indigenous groups to be involved in discussions around radioactive waste, and as such, there is a section dedicated to this in the new policy. The last section is now on global excellence, and Canada's role as a leader in nuclear energy and waste management. Most importantly the fundamental principles of the 1996 policies haven't changed, especially in regards to the legal responsibilities of waste producers, operators and so on, the policy has been expanded on and elaborated on to clarify the roles and responsibilities associated with the 1996 framework.

- **Upcoming Events**
  - **June Events**
    - The **Polish Prime Minister**, Mateusz Morawiecki will be visiting Canada in June.
    - The **42nd Annual CNS Conference** will be held June 4-7. Held in New Brunswick, the theme of this year's conference is "Shifting the paradigm of thought to bridge current nuclear practices with leading-edge innovation", which reflects the global transition into a new nuclear renaissance.
    - **The Canada-UK Nuclear Dialogue**, June 20-21, consisting of primarily government to government relations. Delegates will be returning to the Canada-UK Action Plan workstreams with a focus on fuel supply chain cooperation.
    - **The COG Collaboration Week** will be taking place June 25-29, and Justin Hannah will be presenting during the **COG Innovation and Technology Workshop** on June 26.
    - **International Markets Working Group's** next session is planned for the last week of June, date to be confirmed.
    - The **Enabling Small Modular Reactors (SMRs) Program** launched in February 2023. The Program will provide $29.6 million over four years, to: develop supply chains for SMR manufacturing and fuel supply and security, and fund research on safe SMR waste management solutions. The application deadline was April 21, 2023; a Review Committee is reviewing the Expressions of Interest and NRCan aims to share the results in June. Successful submissions will be invited to submit a Full Project Proposal. Tentative timelines for the next steps are provided in the program Applicant Guide.

  - **July / August Events**
    - The **Canadian-Korean Conference on Science and Technology** will take place in Ottawa July 17-21
    - The **5th Canadian Conference on Waste Management, Decommissioning and Environmental Restoration** will take place in Niagara Falls in August 2023.

  - **September / October Events**
    - The **IAEA Nuclear Harmonization and Standardization Initiative (NHSI)** will take place virtually at the beginning of September

- The **International Atomic Energy Agency (IAEA) General Conference** will take place in Vienna September 25-29, 2023.
- The **Generation IV International Forum** (GIF) will take place in Ottawa this coming September and October.
- The **Atoms4NetZero: Second International Conference on Climate Change and the role of Nuclear Power 2023** will take place in Vienna in early October.
- The **NEA Steering Committee Meeting** will take place in late October in Paris.

Supporting Materials: NRCan Update Presentation

2. Stakeholder Roundtable

OPG, CNA, OCNI, Cameco, SNC-Lavalin, NB Power, COG, CNS, Kinetrics, and the NEA provided updates.

- **OPG/** provided an update on nuclear projects in Ontario starting with the large-scale sites. Unit 2 at the Bruce nuclear plant has returned to service, operational testing is underway for unit 3, ahead of schedule. Unit 4 will begin once Unit 3 has concluded. Current progress on the Darlington SMR site includes site grading and basic construction within the limits of the current licence. Site workshops and two CNSC hearings will occur in 2024 covering the environmental impact and the licence to construct respectively. OPG is seeking to begin plant construction in early 2025.

- **CNA/** discussed that industry is making a pivot away from attempting to get a seat at the table for renewable energy and green designation and is now moving towards actualizing climate goals and grid decarbonization. The CNA is supporting this pivot. The nuclear for net-zero workshop's recommendations are soon to be reviewed by the industry and is a CNA led activity which is in collaboration with the other organizations. Some observations provincially are that the CNA is witnessing as the math becomes clear for energy generation, they are seeing that nuclear has to be part of the mix. To meet a 2035 clean electricity grid is becoming apparently difficult, and even places that were once more skeptical are becoming more open to nuclear

  Therefore, there is a large opportunity for nuclear to move into these spaces and demonstrate how nuclear can support these jurisdictions and what nuclear can offer.

- **OCNI/** There is a growing need across Europe for nuclear energy, particularly in eastern Europe. The OCNI trade missions with Poland and Estonia are growing, and OCNI is beginning to also turn back to more traditional markets. Romania is progressing past some key requirements for the Cernavoda project to move forward.

  Apart from these export trade missions there are many incoming ones, such as the Polish PM visit soon, other visiting delegations soon include the Czech Republic, UAE, Brazil, Business France, with most of these being SMR or clean energy related. An incoming Japanese Delegation will be attending the CNS conference. OCNI is happy to continue to support that as the lead of workstream three under the Canada UK Nuclear Action Plan which is the advanced manufacturing workstream. OCNI also continues work to pursue Canadian participation in ITER.

- **Cameco/** Cameco is maintaining the supply discipline approach, this year they are on track to produce 20 million pounds of Uranium, production is slated to increase slightly through to the end of

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2024. The Uranium spot market is thinning with prices rising to roughly $50/lb which is better than they have been for much of the past decade. This is causing many utilities around the world to contact Cameco for long-term contracts. Due to the war in Ukraine, new markets are opening in Eastern Europe. Additionally, Cameco is on track to close the Westinghouse transaction in early September or Late August. Energy security is moving to the top of mind in particular how it relates to enrichment and SMRs.

- **SNC-Lavalin/** Internationally, negotiations are continuing on the Cernavoda retubing and refurbishment. SNC is working closely with SNN to ensure that the Canadian supply chain is well poised to win contracts for this work. Cernavoda 3 and 4 discussions are continuing with support from both Canada and the US. Limited notice to proceed work has been moving forward and a decision is expected next year. SNC is looking for a visit to Romania for their leadership in June. Commercial discussions are underway in respect to both China and for the refurbishment projects. SNC has started discussions with Argentina as well. SNC continues to be closely involved with the US in partnership on Cernavoda and the Italian export-import agency. SNC-Lavalin is developing an

  Domestically the joint venture with Aecon and Aecom in relation to Bruce for the refurb of units 4, 5, 7, and 8 is continuing well. Large reactor nuclear discussions are underway with key clients,

- **NB Power/** provided an update that he licence to prepare site at Point Lepreau is about to be submitted next month for the Point Lepreau SMR. This is quite a significant milestone for SMRs both in Canada and globally.

- **COG/** discussed how COG is launching their workshop series which includes supply chains, industry, and academia to come together to develop a better understanding in the sector and encourage technology acceptance. The industry is developing a briefing book to highlight key elements of policy wanted across the sector. Internationally, Romania is moving forward on a huge growth plan with hopes of announcements on the CANDU refurbishment.
  but they are planning to become a hub of nuclear for their neighbours which continues to pose opportunities for Canadian industry and CANDU technology.
  and China refurbishment of CANDU units is being planned. India is planning to get 10 PHWRs refurbished and are attempting to develop an SMR based on CANDU technology and are considering opening their policy which limits international investment and participation. Recently there has been articles in India which suggests they are moving towards opening up that policy to open up SMR design specifically.

- **CNS/** CNS is working on a communications program which is looking in two directions, the first one is that the industry is not all that good at communicating its issues to people within the industry. A lot of CNS members are unaware of issues and therefore more communications such as blogs are being made to help communicate with the public and industry at large. The second is that

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there is a series of "lunch and learns" where people in the industry trying to get a message out to the public and CNS membership can provide briefings. The most recent lunch and learn was quite successful with the NWMO providing updates. CNS cannot stress enough the great opportunity to talk with people in the industry, but the CNS has limited resources and therefore will need support from industry to continue to facilitate this communication channel. The CNS' external communications can be seen through the response to misinformation which is a reactive enterprise. Therefore, the CNS is producing a series of policy statements which addresses what might come up rather than responding to the misinformation after it has appeared. In the very near future, there will be committee members being drawn from the membership of CNS to help develop these policy statements, they are looking to create diverse committees to ensure a good breadth in coverage.

- **Bruce Power/**

- **Indigenous Advisory Council (IAC)/** eported that the IAC is meeting on the margins of the CNS conference, the group is looking at moving forward two key initiatives. Capacity development for Indigenous peoples and looking at equity participation.
- **Kinetrics/** informed the session that a partnership with X-Energy for building a test facility for high temperature gas has gone through. Kinetrics acquired a company called Easel in the UK for analysis of HTGR and this company has also done some work at ITER. Kinetrics is also very appreciative of the fusion reach out from OCNI and Kinetrics continues to have a lot of interest along those areas. Industry needs to keep an eye on how Fusion sits in relation to the new ITCs and other renewable or green classifications. Kinetrics also has a new facility in Saskatchewan to complement their existing facilities elsewhere.
- **NEA/'** provided brief NEA SMR strategy updates. The NEA SMR dashboard is an assessment of all the SMRs under development across six different areas. The 22nd version will be launched at the CEM in July. The second program being launched is the accelerating SMRs for Net Zero program which is meant to facilitate SMRs internationally. Letters for this will be sent out in the first week of June, but the program will launch at COP28. The NEA is working on a roadmap for a new nuclear initiative for countries returning to nuclear who have been away from the supply chain for some time.

3. **Questions and Comments**

Questions and comments were incorporated into the roundtable discussions and updates during this session.

4. **Closing Remarks**

- **NRCan/Hannah** requested updated email lists for the distribution of future QNES invites then closed the meeting and thanked everyone for attending.

Drafted: NED/Blair and NED/Manuel
Consulted: NED/Newman
Approved: NED/
Date: June 1, 2023

PARTICIPANTS

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INDUSTRY

AECOM

-| Nuclear
- Nuclear

AlbertaInnovates

- Renewable and Alternative Energy - Clean Resources

Automation Tooling Systems (ATS)

- Nuclear

ARC Nuclear Canada Inc.

Corporate Affairs and Human Resources

Atlantica Centre for Energy

- Strategic Energy

Arcadis

- Senior Scientist Risk & Radioactivity and Director
- Health

Bird Construction

- Project Development

Bruce Power

-| Government and Stakeholder Relations

BWXT Canada Ltd

- Marketing and Sales

Calian Groupbr

Nuclear and Environmental Services

CAMECO

- Government Relations

Canadian Nuclear Association (CNA)

-| Government Affairs
-| Policy and Research at the Canadian Nuclear Association
- Operations

Canadian Nuclear Society

Communications

Canadian Nuclear Labs (CNL)

- – Hydrogen and Tritium Technologies
- Energy R&D (Chief Science Advisor's Office, Special Science)

Canadian Manufacturers and Exporters (CME)

Policy & Ontario Government Relations

Canadian Space Agency

- , Space Exploration Planning, Coordination & Advanced Concepts
- (Logistic & Sustaining Engineer)

Candu Owners Group (COG)

- Nuclear Safety and Environmental Affairs

Cenovus Energy

- , Government Affairs Sustainability & Stakeholder Engagement
- Clean Energy Innovation

CSA Group

- , Power Generation and Delivery Standards
- Power Generation

Fluor Canada

-| Operations

Henderson Robb Marking

- Marketing Consultant

ION Nuclear Consulting Limited

-|

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Kinetrics
-

Mirarco
-

Moltex Energy
- Corporate Development
- Communications
-

Organization of Canadian Nuclear Industries (OCNI)
- Business Development and SMR Supply Chain
- Stakeholder Relations

PCL Industrial Constructors Inc.
- Power Generation

Power Workers Union
- Tactix Government Relations and Public Affairs Inc.

Paradymshyft Nuclear Advisory Ltd.
-

Prodigy Clean Energy
- Business Development

Promation Nuclear
- Research and Development

Querencia Partners
-
Communications and Policy

Saskatchewan Mining Association
- Environment, Safety and Regulator Affairs

Sylvia Fedoruk Canadian Centre for Nuclear
- Marketing and Sales for Japan and the Middle East

SNC-Lavalin
- Government Relations and Multilateral Development Institutions

Terrestrial Energy
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U-Battery
- U-Battery, URENCO

X-Energy
-

Westinghouse
- Strategy and Government Relations

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-Nafi-Louise Diagne, Trade Commissioner

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-Candice Jackson, Deputy Director, NED
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-Leah Ronayne, Policy Analyst, NED
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-Anna Manuel, Junior Policy Analyst, NED
-Michelle Dich, Junior Policy Analyst, NED
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-Sara Arab, Science and Technology Advisor, NED
-Madeline Belanger Trottier, Economic Analyst, NED
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PrairiesCan
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-Canute Rosaasen

Innovation, Science, and Economic Development Canada (ISED)
-Tenzing Kuyee, Policy Analyst
-Anik Laferrier, Manager, Energy Team, Advanced Manufacturing and Industrial Strategy

PROVINCIAL AND TERRITORIAL GOVERNMENTS

Durham Region
- Corporate Initiatives

Government of Ontario
Business Development
Production Industries Unit

Government of Alberta
- Electricity and Sustainable Energy Division
Emerging Resources
Emerging Resources

Government of New Brunswick
- Nuclear Preparedness, Emergency Management Office
Department of Energy and Mines

Government of Nunavut
Mineral Development

North Shore Micmac District Council (NSMDC)
- , Housing an Infrastructure

New Brunswick Power
- Advanced Reactor Development
- Energy Branch, SMRs
- Safety, Security and Emergency Response

Ontario Power Generation

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- Federal Relations
- SMR Growth
-

SaskPower
- Generation Asset Planning

Town of Deep River
-

Wild Matriarch
-

FedNOR
- Gilles Brunet, Manager

LABS AND ACADEMIA

Canadian Nuclear Laboratories (CNL)
- Directorate, Advanced Reactors
-
-

CANADA-UK Colloquium on the Nuclear Agenda
- CUKC

Conference Board of Canada
-
Energy, Environment and Transportation Policy

McMaster University
- Research (Nuclear)

University Network for Excellence in Nuclear Engineering (UNENE)
-

University of Ontario, Institute of Technology
- Faculty of Energy Systems and Nuclear Science
-

Canadian Nuclear Isotopes Council
- Policy and Energy Innovation

Wolastoqey Nation in New Brunswick
- Environmental (Nuclear Projects

INDEPENDENT/CONSULTANT

Atunda Inc.
- CEO

Burns & McDonnell
- Nuclear Directoral

Citizens Coalition for Clean Air
- Primary Contact

Electric Power Management Consultant
-

e4 Strategies Inc
-

L3Harris Technologies, Inc.
- Business Development - Power Systems and Simulation

Magnetic Media NYC
-

Worley
- Business Development - Low Carbon Energy

Independent
- Toronto

INTERNATIONAL ORGANIZATIONS

Nuclear Energy Agency (NEA)
- Nuclear Energy Policy

International Union of Operating Engineers
Canadian Government Affairs

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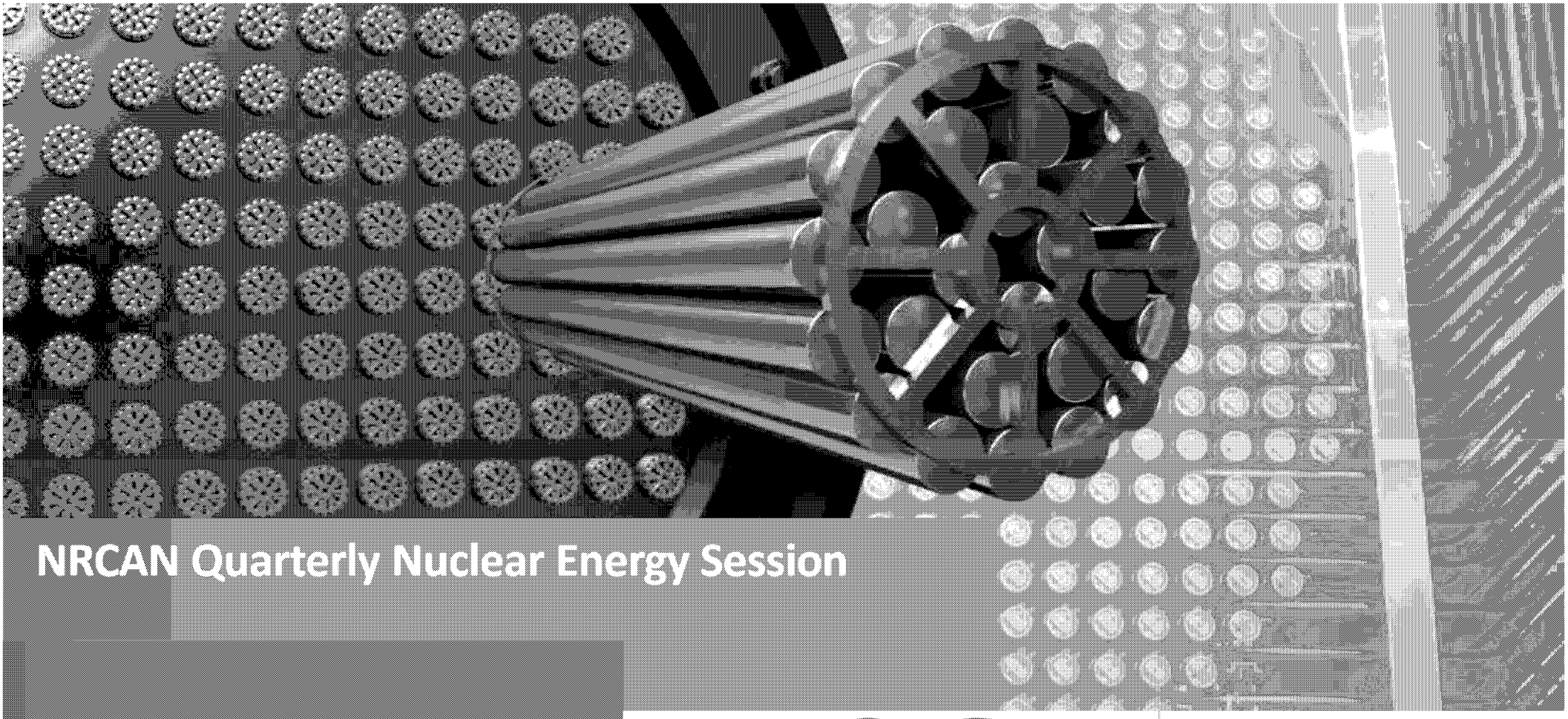

NRCAN Quarterly Nuclear Energy Session

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May 31, 2023

ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES

Clean Energy for a Low Carbon Economy

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OCNI

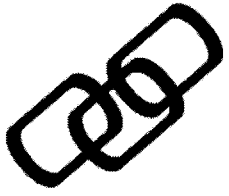
The Organization of Canadian Nuclear Industries (OCNI) represents a broad range of Canadian nuclear suppliers – majority of members are SME's

Vision

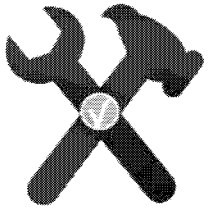
To drive and strengthen a thriving Canadian nuclear supply chain through innovation and leadership

Mandate

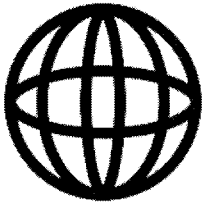
To deliver value to our members through programs and initiatives that support success in the domestic and international nuclear markets



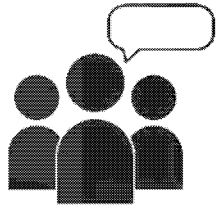
CONNECTION
Linkages between suppliers & utilities .



CAPABILITY
Increase supplier skills and resources



GLOBAL REACH
Develop international opportunities.



ADVOCACY
"Ontario Nuclear Advocacy Team"

241 member companies / 15,000 highly skilled people increasing to 20,000 while Ontario refurbishment projects are underway

OCNI ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES

Clean Energy for a Low Carbon Economy

OCNI International Markets

2022 CanExport Trade Missions

Market	Focus
Romania	Skills & Jobs #2 / Training for Refurb Agenda toured the major Canadian refurbishment companies in preparation for the upcoming Cernavoda 1 and potentially Cernavoda 2 refurbishments, with 21 Romanian delegates attending.
UK	Mission visited potential SMR sites in Wales and then DECOM2022 and NIA Supply Chain conference in Telford. Welsh government released a Request for Information from potential SMR vendors for Trawsfynydd site during the mission, and Sizewell C was also confirmed that week.
Poland	Trade Mission to respond to significant SMR interest from several Baltic states (Latvia, Estonia) who joined the agenda in Warsaw.

2023 Potential Trade Missions

Market	Focus
Romania	Follow up mission to Romania to provide information and training to Romanian companies about how to qualify/ready to support Cernavoda refurbishment.
South Korea	Focus on future potential for Canadian scope at Wolsong 1 decommissioning and life extension / refurbishment of Wolsong 2/3/4
[redacted]	[redacted]
France	World Nuclear Expo 2023 and ITER site visit to follow up on Team Canada's proposal

ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES

Clean Energy for a Low Carbon Economy

OCNI International Markets - Incoming

- Japanese SMR study delegation March 2023
- Czech Republic Minister of Energy visit June 2023
- UAE / ENEC Visit June 2023
- Brazilian nuclear energy visit planned for September 2023
- Business France / French nuclear delegation September 2023

The global SMR market is expected to reach US $150B by 2040.

OCNI ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES

Clean Energy for a Low Carbon Economy

CanTrit - ITER Team Canada

FUSION ENERGY COUNCIL OF CANADA / CONSEIL DU CANADA

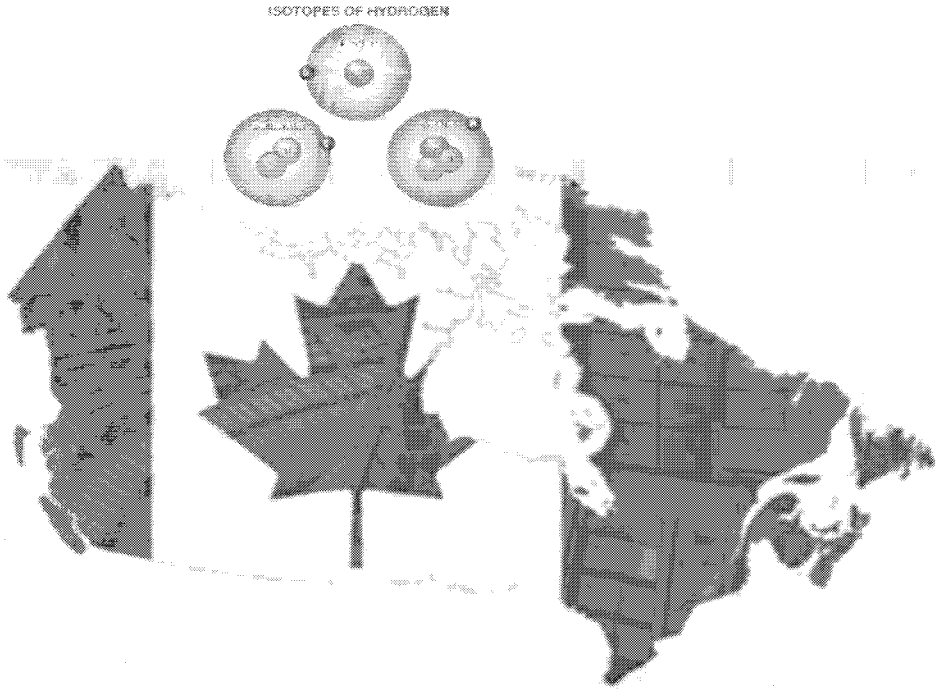
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

OCNI ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES
Clean Energy for a Low Carbon Economy

ONTARIO POWER GENERATION

Laurentis Energy Partners
AN OPG COMPANY

UNENE



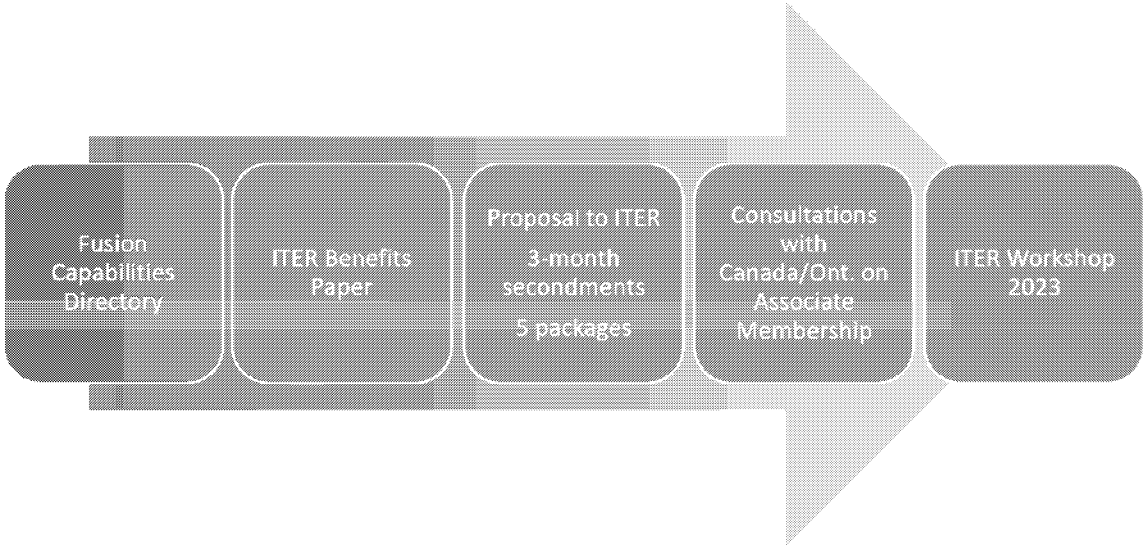
Canadian Tritium & Remote Handling Technology Packages

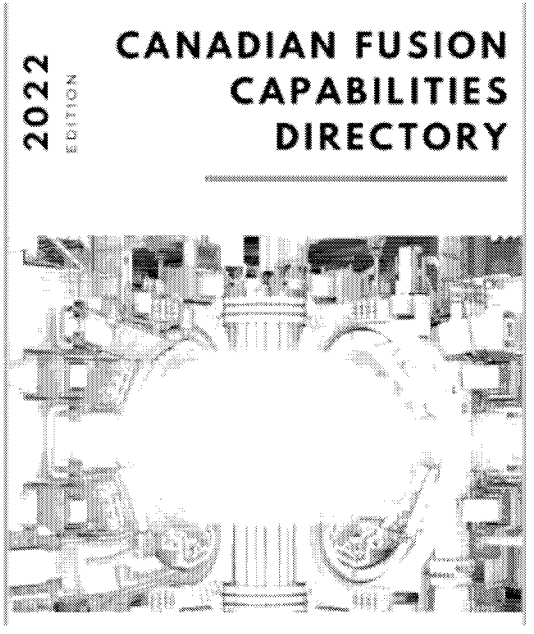
Advancing Canadian Associate Membership in ITER

OCNI ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES
Clean Energy for a Low Carbon Economy

ITER Team Canada

2022 - 2023 Planned Activities





OCNI ORGANIZATION OF CANADIAN NUCLEAR INDUSTRIES

Clean Energy for a Low Carbon Economy


OCNI
CAPACITY
ADVOCACY
CONNECTION
GLOBAL
REACH
www.ocni.ca

From:	Kalie Hatt-Kilburn
To:	Patrick Lacroix; Laura DeLong;
Cc:	Luke Bulmer
Subject:	RE: Canada Launches New Small Modular Reactor Funding Program - Canada.ca
Sent:	2/27/2023 9:14:16 AM

I think this one is already on their radar screens. It looks like it relates to the earlier request for a national framework to secure a supply of HALEU fuel, which Canada does not currently have the capacity to refine. Laura, I think we covered that issue, maybe 4-5 briefings ago
K.

From: Patrick Lacroix
Sent: Friday, February 24, 2023 10:16 AM
To: Laura DeLong ; Kalie Hatt-Kilburn
Cc: Luke Bulmer
Subject: Canada Launches New Small Modular Reactor Funding Program - Canada.ca

FYI, launched yesterday. It is not a lot of dollars,

The new program will provide $29.6 million over four years, to:

- *develop supply chains for SMR manufacturing and fuel supply and security to support the crucial elements necessary for Canada's SMR industry to thrive; and*
- *fund research on safe SMR waste management solutions to ensure that SMRs, and the waste they generate, will be safe now and into the future.*

Eligible applicants could include private companies, utilities, provinces and territories, universities and Indigenous groups.

Canada Launches New Small Modular Reactor Funding Program - Canada.ca
https://www.canada.ca/en/natural-resources-canada/news/2023/02/canada-launches-new-small-modular-reactor-funding-program.html

s.21(1)(b)

From:	Poupore, Jessica
To:	Josh Jenkins
Cc:	Beauregard-Tellier, Frédéric; Luke Bulmer; Josh Waite; Marie Thibeault; Brady, Daniel; Jackson, Candice; Robibero, Erica; Ottaway, Chelsea;
Subject:	RE: Request for review and advice -
Sent:	10/19/2023 4:59:01 PM

UNCLASSIFIED - NON CLASSIFIÉ

s.20(1)(b)

s.21(1)(b)

Hi Josh,

I trust this is helpful. Happy to answer questions or provide clarification.
Best regards,
Jessica

Jessica Poupore
(she/her/elle)
A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire
Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca **Mobile: 613-292-8981**

From: Jackson, Candice
Sent: Wednesday, September 27, 2023 3:49 PM
To: Josh Jenkins
Cc: Beauregard-Tellier, Frédéric ; Luke Bulmer ; Josh Waite ; Marie Thibeault ; Brady, Daniel ; Poupore, Jessica ; Robibero, Erica ; Ottaway, Chelsea
Subject: RE: Request for review and advice -

UNCLASSIFIED - NON CLASSIFIÉ

Hi Josh,
Thank you for reaching out and for our continued dialogue. This email serves to acknowledge your request for the Nuclear Energy Division to support ACOA New Brunswick

We have quite a few folks out of office this week, but we will circle back next week with next steps.
Thanks again for the continued collaboration!
Candice

From: Josh Jenkins <[redacted]>

s.20(1)(b)

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

Subject: Request for review and advice -

Hi Candice,
As we've previously discussed,

s.20(1)(b)

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

We look forward to receiving a review and will make ourselves available for any discussions or clarifications needed in order to facilitate a timely response, noting the pace which is required to support the ongoing development of the technology,

Thank you very much,
Josh Jenkins

s.20(1)(b)

s.21(1)(a)

s.21(1)(b)

s.21(1)(c)

From:	Laura DeLong
To:	Kalie Hatt-Kilburn; Patrick Lacroix;
Cc:	Laura DeLong; Luke Bulmer;
Subject:	SMR file
Sent:	3/29/2023 10:48:46 AM

Good morning folks – I've shared this already with Josh, but figured it may also be of interest to you both. While I know all of our minds are into Budget 2023, I wanted to highlight the following on the SMR file – I will update our SMR note accordingly:

1. Last week, President Joseph Biden and Prime Minister Justin Trudeau, meeting at Ottawa, affirmed their intent to promote enhanced collaboration on nuclear energy and technology between their two countries. The two leaders commit to work together to develop a secure and reliable nuclear fuel supply of Low Enriched Uranium (LEU) fuel for existing reactors and High Assay Low Enriched Uranium (HALEU) fuel for advanced reactors, and to explore enabling frameworks with like-minded allies and partners.
   JOINT STATEMENT BETWEEN THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA AND THE DEPARTMENT OF NATURAL RESOURCES OF CANADA ON NUCLEAR ENERGY COOPERATION - Canada.ca
2. On Tuesday, March 28, 2023, **Moltex Energy** announced SNC-Lavalin will take a minority ownership position to continue the development of Moltex's aSMR, SSR-W, and the WATSS waste recycling technology.
3. On Wednesday, March 23, 2023, **ARC Clean Technology** and Invest Alberta agreed to pursue activities to support commercialization of ARC's aSMR ARC-100 technology in Alberta.

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Moltex Energy

75 Prince William Street | Unit 102 | Saint John | New Brunswick | Canada | E2L 2B2

+1 506 214 8551 | info@moltexenergy.com | **www.moltexenergy.com**

s.20(1)(b)
s.20(1)(c)
s.20(1)(d)

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Thank you

s.19(1)

moltex
clean energy

Appendix

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GridReserve

A series of tanks used to store thermal energy from the reactor and dispatch it to the grid when needed.

WATSS
(WAste To Stable Salt)

A facility in which nuclear waste is recycled to produce fuel suitable for a fast reactor.

SSR-W
(Stable Salt Reactor - Wasteburner)

A fast neutron 300-500 MW reactor that uses recycled nuclear waste as fuel.

moltex
energy

s.20(1)(a)
s.20(1)(b)
s.20(1)(c)
s.20(1)(d)

Management

Rory O'Sullivan, CEO

Joined Moltex in 2015 at inception as Chief Operations Officer, CEO since 2018. Previously with Bouygues (U.K.) where his last position was Site/Project Manager.

John Mauti, CFO

Joined Moltex as Chief Financial Officer in 2023. Previously with Ontario Power Generation, where he was CFO and SVP, Finance.

Tristan Jackson, VP Corporate Development

Joined Moltex in June 2022 as VP Corporate Development. Previously Chief Strategy Officer & Co-Founder at VECKTA, Global Director of Smart & Distributed Energy at Worley, VP at Dialogos, co-founder of UpGrid (acquired).

Erin Polka, VP Communications

Joined Moltex in May 2020 and is responsible for strategic communications, media relations and stakeholder management. Previously with the Canadian Nuclear Association.

Robert Mallozzi, Technical Director

Joined Moltex in January 2023. Previously at Candu Energy and AECL. 20+ years managing international/domestic power projects.

Directors

José Emeterio Gutiérrez

Chair | CEO, Westinghouse (retired)

Ian Scott

Co-founder, Director

Rory O'Sullivan

CEO, Director

Xabier Ruiz

Non-Exec Director | COO, IDOM

John Mauti

Non-Exec Director | CFO, OPG (retired)

Joe St. Julian

Non-Exec Director | President, Nuclear, AtkinsRealis

moltex clean energy

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From:	Campbell2, James (ISED/ISDE)
To:	Luke Bulmer
Subject:	RE: Moltex discussion
Attachments:	Overview .pdf
Sent:	3/7/2025 12:27:28 PM

Hi Luke,

Thanks again for meeting yesterday. This is the document that I was referring to I wasn't sure if I had permission to share it, but I confirmed this morning that it is OK. Apologies, I should have looked into this a little sooner! Hope it helps.

Happy to discuss as needed.

Thanks!

From: Luke Bulmer <Luke.Bulmer@acoa-apeca.gc.ca>
Sent: March 6, 2025 9:28 AM
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Cc: Adeboye, Leye (ISED/ISDE) <Leye.Adeboye@ISED-ISDE.GC.CA>
Subject: RE: Moltex discussion

Yes – we met yesterday afternoon. We do plan on connecting again It might make sense for us to connect jointly at that time?

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Sent: Thursday, March 6, 2025 10:21 AM
To: Luke Bulmer <Luke.Bulmer@acoa-apeca.gc.ca>
Cc: Adeboye, Leye (ISED/ISDE) <Leye.Adeboye@ISED-ISDE.GC.CA>
Subject: RE: Moltex discussion

Thanks Luke,

Looking forward to touching base. Just wondering – have you had your meeting with the NRCan group yet?

From: Luke Bulmer <Luke.Bulmer@acoa-apeca.gc.ca>
Sent: March 6, 2025 8:33 AM
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Subject: RE: Moltex discussion

Great – would 3:15 Atlantic work for you?

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Sent: Thursday, March 6, 2025 9:32 AM

s.20(1)(b)

s.21(1)(b)

To: Luke Bulmer <Luke.Bulmer@acoa-apeca.gc.ca>
Subject: RE: Moltex discussion

Hi Luke,

Always happy to connect. I might not have the expertise you are looking for, but let's touch base and have a look. I will ask Leye to join as well, he might be able to provide some context.

I am pretty free today actually. Just let me know what works for you.

Thanks!

From: Luke Bulmer <Luke.Bulmer@acoa-apeca.gc.ca>
Sent: March 6, 2025 8:29 AM
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Subject: Moltex discussion

Good morning James,

Do you by chance have any availability over the coming days to connect and discuss

Thank you,
-Luke

Luke Bulmer, CPA
Atlantic Canada Opportunities Agency / Government of Canada
Luke.Bulmer@ACOA-APECA.gc.ca / Tel : (506) 282-2621

Agence de promotion économique du Canada atlantique / Gouvernement du Canada
Luke.Bulmer@ACOA-APECA.gc.ca / Tél : (506) 282-2621

Canada

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

moltex
clean energy

s.19(1)

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

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Moltex WATSS – Website Version

Embargoed until 0630 ET, Monday 3 March 2025

Moltex Energy Achieves Breakthrough in Nuclear Fuel Recycling with WATSS Technology

Saint John, NB, 3 March 2025 – Moltex Energy Canada Inc. (Moltex) is shaking up nuclear waste management with its revolutionary Waste to Stable Salt (WATSS) process. This innovative technology is set to transform nuclear waste management by providing economically viable solutions, addressing one of the biggest challenges facing the nuclear sector as it responds to increased global demand.

Moltex has successfully validated WATSS on used fuel bundles from a commercial reactor in Canada through state-of-the-art hot cell experiments executed by Canadian Nuclear Laboratories marking a pivotal moment in closing the nuclear fuel cycle and advancing next-generation nuclear sustainability.

WATSS: A Game-Changer for Nuclear Energy

The WATSS process marks a significant leap forward by converting used nuclear fuel into an asset through an efficient 24-hour chemical process. Moltex has demonstrated that it can extract 90% of the transuranic material in 24-hours, with greater efficiency over longer periods of time.

This advancement not only vastly reduces nuclear waste volumes but also unlocks fresh economic opportunities for waste owners and utilities —options previously deemed unfeasible because of financial constraints and the availability of waste management capabilities following nuclear's increased role in the global energy mix. With 66 reactors currently under construction and more than 80 SMR designs being progressed across the world, WATSS offers a financially attractive pathway to managing higher waste volumes more sustainably.

Rory O'Sullivan, Chief Executive Officer, Moltex said:

> *"It's crucial that increased demand for nuclear energy is matched by increased back-end fuel cycle capabilities. WATSS is a transformative solution that not only reduces liabilities but also adds value, turning waste into a valuable energy asset."*

Global Solutions to Nuclear's Waste Challenge

WATSS provides a robust, commercially viable alternative to conventional direct disposal methods. By coupling WATSS with Moltex's Stable Salt Reactor – Wasteburner (SSR-W), the technology not only reduces waste volumes dramatically but also transforms nuclear waste into clean, dispatchable energy, permanently eliminating long-lived transuranic elements like plutonium. WATSS can produce fuel for other reactor types also.

Unlocking Investment

The development of WATSS, supported by entities such as the Government of Canada, Province of New Brunswick, NB Power, and Ontario Power Generation, underscores the confidence in its potential to revolutionize the industry. Moltex's collaboration with

engineering partners like IDOM and CANDU Energy Inc., an AtkinsRéalis company, showcases the extensive expertise backing the technology.

Indigenous communities in New Brunswick are also supportive of the technology having invested in its development.

Jim Ward, General Manager, North Shore Mi'kmaq Tribal Council said:

> *"Our investment in Moltex was driven by the potential to make nuclear more sustainable and reduce nuclear waste liability. Moltex also engaged with us at the earliest stages of the project. We are pleased to see this important milestone being met and look forward to more to come."*

Enhancing Value through Consultancy Services

In addition to its technological breakthroughs, Moltex is offering consultancy services that present nuclear waste owners with essential solutions to assess and mitigate their liability risks effectively. This service is crucial for waste owners seeking expert guidance to navigate and explore whether their used fuel liabilities can be turned into an asset.

To explore how WATSS can transform nuclear waste management, download our full report: [give link]

Media Contact:

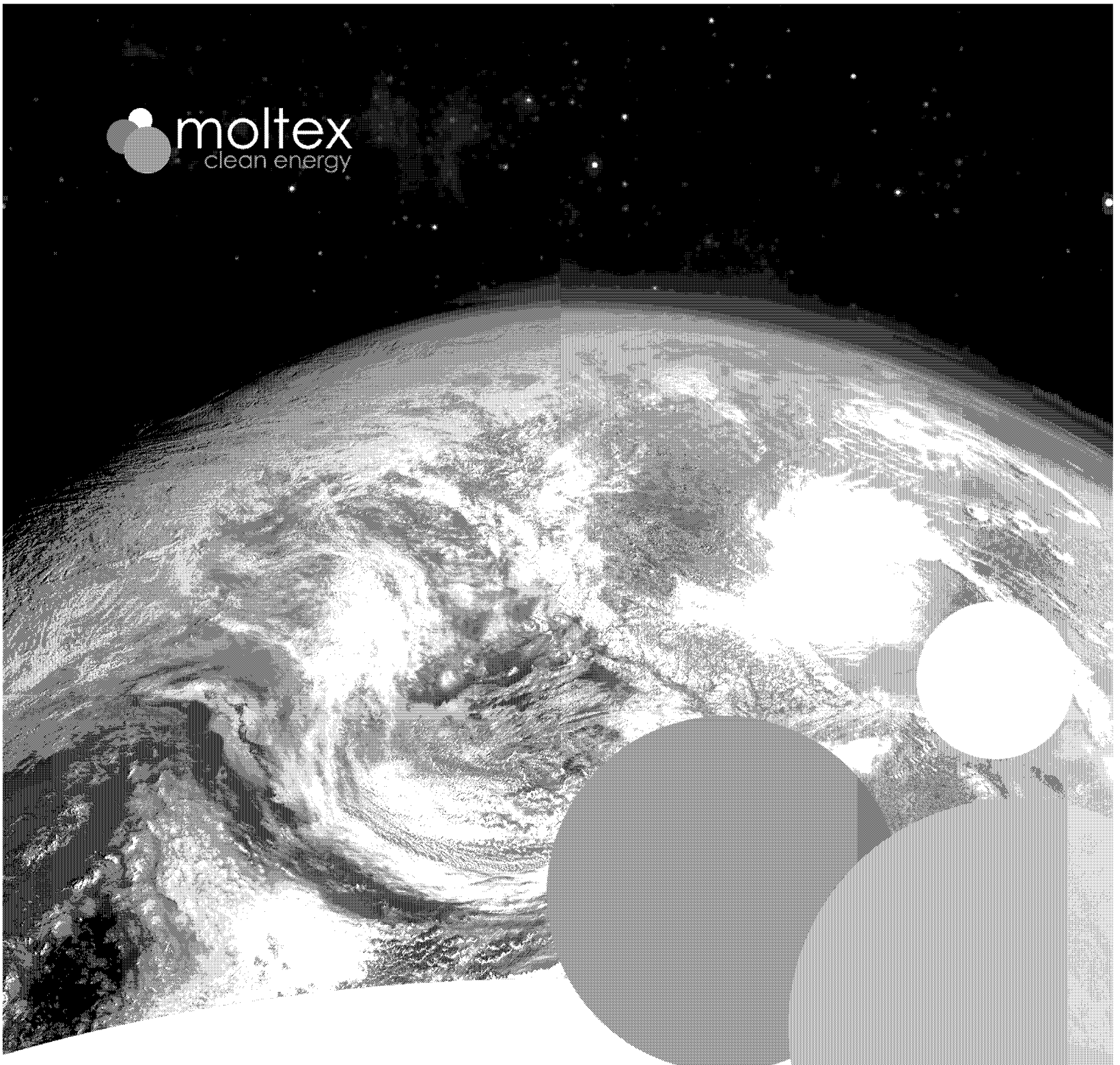
Betty Draper
Moltex
bettydraper@moltexenergy.com

-ENDS-

About Moltex

Moltex is an IP company and nuclear technology leader at the forefront of developing breakthrough technologies for nuclear energy. These include the Stable Salt Reactor – Wasteburner (SSR-W) which uses recycled nuclear waste as fuel; a Waste To Stable Salt (WATSS) process for recycling nuclear waste to produce new fuel; and GridReserve thermal energy storage tanks, which enable the SSR-W to act as a peaking plant. In addition to these technologies, Moltex's UK based sister company, MoltexFLEX, has advanced the FLEX reactor – a modular molten salt reactor designed for low-cost, flexible operation across electricity generation, hydrogen production and industrial heat.

Moltex was selected by NB Power to progress the development of its reactor technology in New Brunswick, Canada, with the goal of deploying first-of-a-kind SSR-W, WATSS and GridReserve units at the Point Lepreau site.



MARCH 3, 2025

Unlocking the Future of Nuclear Fuel Recycling

The Waste to Stable Salt Solution

moltex
clean energy

The Waste to Stable Salt Solution

The WAste To Stable Salt (WATSS) process is a groundbreaking nuclear waste recycling technology designed with versatility and efficiency in mind. Developed by Moltex Energy, a leader in advanced nuclear technology, the WATSS process reduces waste liabilities while unlocking unmatched value from existing fuel resources.

The WAste To Stable Salt process recycles used nuclear waste into fuel.

The WATSS advantage

- Simple, reliable, and widely compatible used fuel recycling process
- Commercially and economically viable alternative to conventional recycling and disposal strategies
- Delivers greater energy security and fuel independence
- Reduces waste volumes

Alone, WATSS delivers major reductions in nuclear waste volume. When paired with Moltex's Stable Salt Reactor – Wasteburner (SSR-W), the recycled fuel can be converted into clean energy, while permanently destroying long-lived transuranic elements, including plutonium—the ultimate closed fuel cycle.

Top Photo© Canadian Nuclear Laboratories

Message from the Chairman and CEO

The world today stands at a pivotal juncture, requiring both clean and affordable energy as we grapple with the pressing challenges of climate change. This complex equation demands innovative solutions capable of combining both environmental sustainability and economic viability. With WATSS, we have solved that equation by creating a simple and cost-efficient technology that transforms used nuclear fuel into a valuable energy asset.

WATSS transforms nuclear waste into an asset, providing a cost-effective, adaptable, and safe pathway for waste owners to reduce long-term liabilities while enhancing energy security. For industry leaders seeking practical solutions to long-lived waste challenges, WATSS delivers immediate impact and a future-proof strategy for nuclear fuel management.

Building on seven years of rigorous testing and development, Moltex has successfully validated WATSS using real used nuclear fuel pellets, marking a step change in the viability of closing the nuclear fuel cycle with a practical and scalable solution.

Turning your nuclear waste into an asset is possible with WATSS. Step into the future of nuclear waste management with Moltex.

Rory O'Sullivan
Chief Executive Officer

José Emeterio Gutiérrez
Chair, former CEO, Westinghouse

The Science Behind WATSS

Unlike traditional methods, WATSS extracts valuable materials and radioactive byproducts in a single, streamlined 24-hour chemical process, significantly reducing waste volumes and creating a valuable energy asset.

Made up of one pre-treatment phase followed by three main treatment stages, the WATSS process extracts transuranic elements directly into molten salt, significantly streamlining the fuel cycle. Designed for universal compatibility, it is capable of processing all commercial reactor fuels—as well as historical research and advanced reactor fuels.

Pre-treatment

After arriving at the WATSS facility, which is preferably co-located with existing nuclear power plants to minimize transportation requirement and associated risk, used fuel is stripped of its cladding. During pre-treatment, the irradiated oxide fuel is subjected to a sequence of controlled oxidation and reduction steps. This process reduces the particle size of the oxide matrix and adjusts its oxidation state to the level required for subsequent processing, all according to the Oxidation-Reduction of Oxides (OREOX) process.

Stage one

In stage one, transuranic elements are separated from uranium through direct extraction into a molten salt. The controlled addition of a reducing metal converts the transuranic elements into a salt-soluble species—either trichlorides or oxychlorides—while uranium remains as an insoluble dioxide phase.

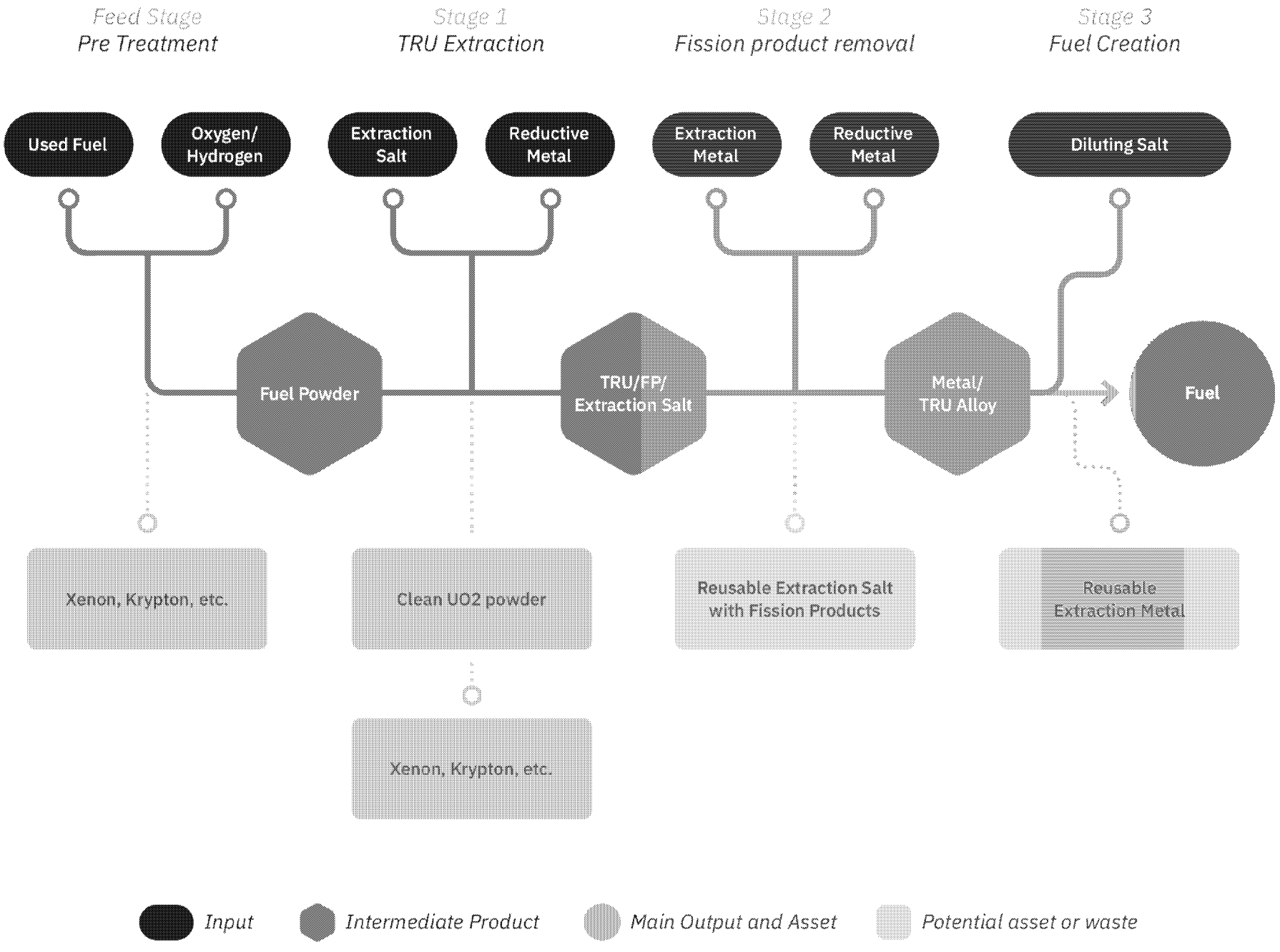
From this stage, different processing pathways can be applied to produce various fuel types.

Stages two and three

In stages two and three of the WATSS process, the extracted transuranic elements are concentrated to produce molten salt fuel, while separating out the fission products. The actinides are first reduced in liquid bismuth, followed by chlorination with bismuth chloride in the presence of magnesium chloride. This yields a magnesium chloride-based salt infused with actinide trichlorides, serving as a precursor for reactor fuel salt.

For use in molten salt reactors, precursor salts with precisely characterized elemental and isotopic compositions are stored and blended to achieve the desired actinide ratio. Conventional salts are then added to reach the eutectic point, tailored to the specific reactor's requirements and producing either chloride- or fluoride-based fuel salts.

A demonstration of flowing molten salt.


Feed Stage
Pre Treatment
Stage 1
TRU Extraction
Stage 2
Fission product removal
Stage 3
Fuel Creation
Used Fuel
Oxygen/ Hydrogen
Extraction Salt
Reductive Metal
Extraction Metal
Reductive Metal
Diluting Salt
Fuel Powder
TRU/FP/ Extraction Salt
Metal/ TRU Alloy
Fuel
Xenon, Krypton, etc.
Clean UO2 powder
Reusable Extraction Salt with Fission Products
Reusable Extraction Metal
Xenon, Krypton, etc.
Input
Intermediate Product
Main Output and Asset
Potential asset or waste

What used fuels can WATSS recycle?

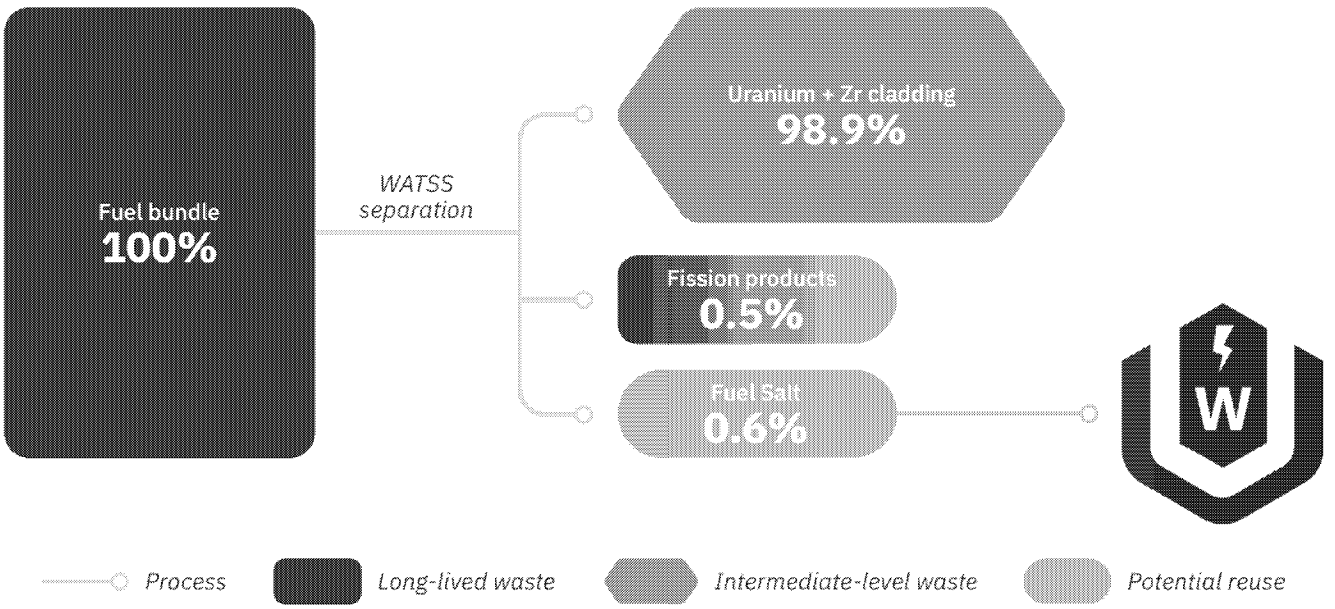
The WATSS process is designed to treat used nuclear fuels in oxide form, including CANDU, Light Water Reactor (LWR), and certain fast reactor fuels, such as mixed oxide (MOX) fuels. The Moltex fuel pretreatment process is highly versatile and can accommodate exotic, experimental, or advanced reactor fuels, including metallic, nitride, carbide, and silicide fuels.

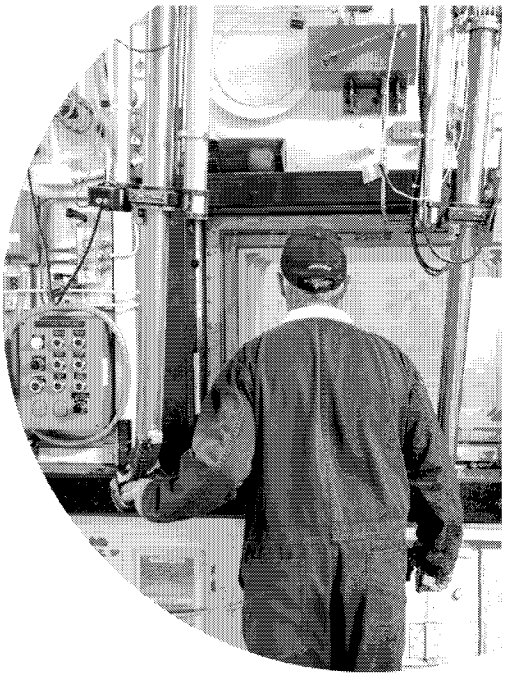
Together, the WATSS process and the SSR-W create a closed fuel cycle. WATSS and the SSR-W can infinitely recycle used MOX fuel, continuously extracting transuranic elements for reuse and preventing their accumulation in waste streams.

What fuels does the WATSS process create?

WATSS, as currently designed, produces fuel for molten salt reactors in either chloride or fluoride form. Stages two and three of the process developed by Moltex converts separated actinides into a new salt fuel, initially in the form of solid pellets for ease of handling and transportation.

This process is adaptable and can be optimized to meet the specific fuel requirements of different molten salt reactor configurations. For instance, with further development, WATSS-derived fuel could serve as a practical alternative to high-assay low-enriched uranium (HALEU), offering customized solutions for reactor developers seeking reliable, high-quality fuel sources.



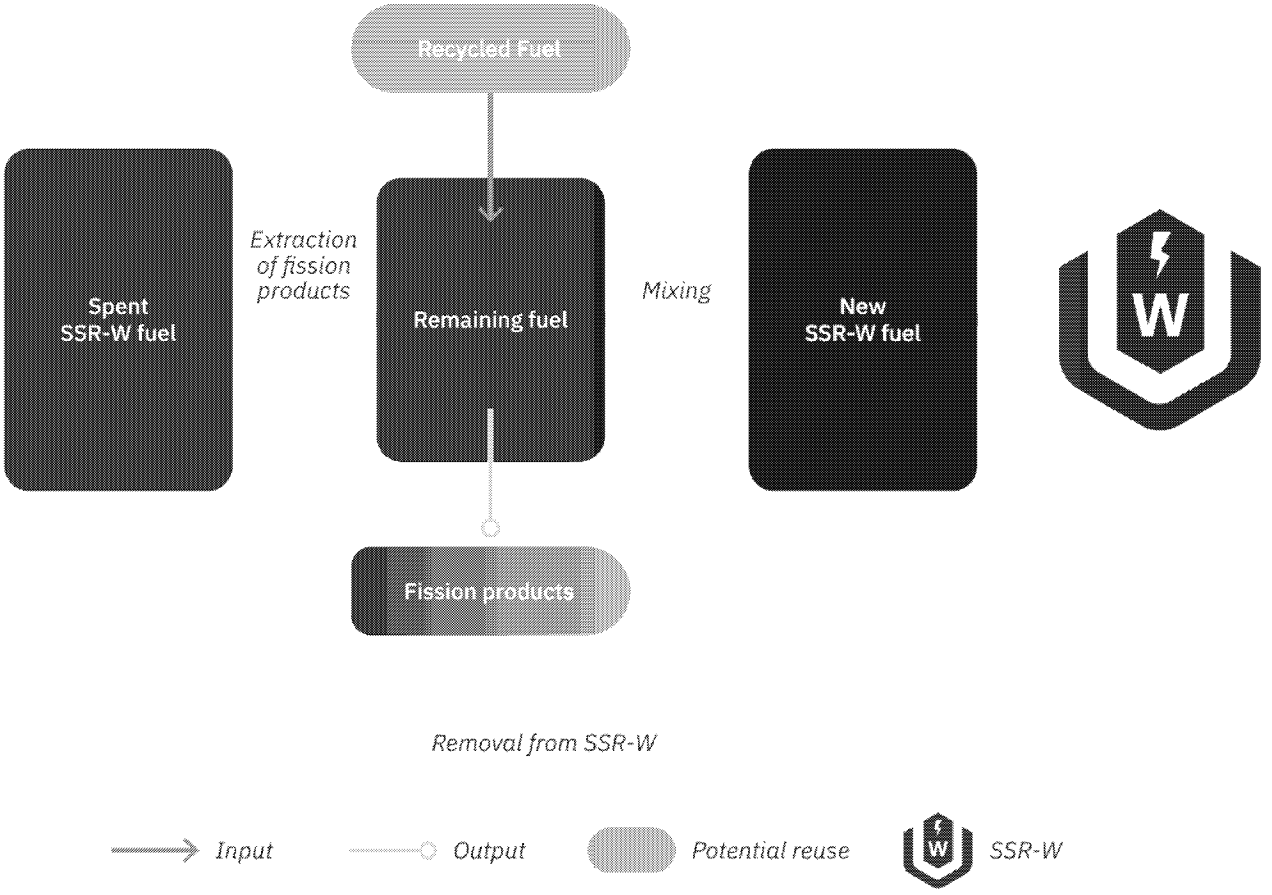


Long-term energy potential combined with immediate waste reduction

Potentially endless energy potential

Combined with Moltex's SSR-W reactor, which is specifically designed to destroy all man-made long lived radioactive elements, the WATSS process enables continuous recycling and energy generation.

In practical terms, the used fuel from the current fleet of nuclear reactors in the United States could power at least 25,000 MW of SSR-Ws for 60 years. At the end of their lifecycle, the only remaining transuranic waste would be the used fuel sitting in the core of these reactors, which could be used to start new reactors, enabling continuous recycling. Looking to the future, instead of presenting a disposal challenge, additional nuclear waste from potential new nuclear power plants, would be an opportunity to generate even more clean energy.



Top Photo© Canadian Nuclear Laboratories

Enhancing supply security and environmental sustainability

Recycling existing used fuel through WATSS provides a stable and predictable supply of fissile material, insulating reactor operators from uranium market fluctuations. As the nuclear renaissance progresses, the volume of available used fuel is expected to grow, further enhancing supply security.

Beyond economic and supply considerations, multiple studies have highlighted the environmental impact of mining lower-grade uranium ores and the emissions associated with fuel enrichment.[1] By eliminating the need for fresh uranium mining and enrichment, WATSS removes these environmental impacts entirely, making nuclear energy even more sustainable.

Minimizing nuclear waste

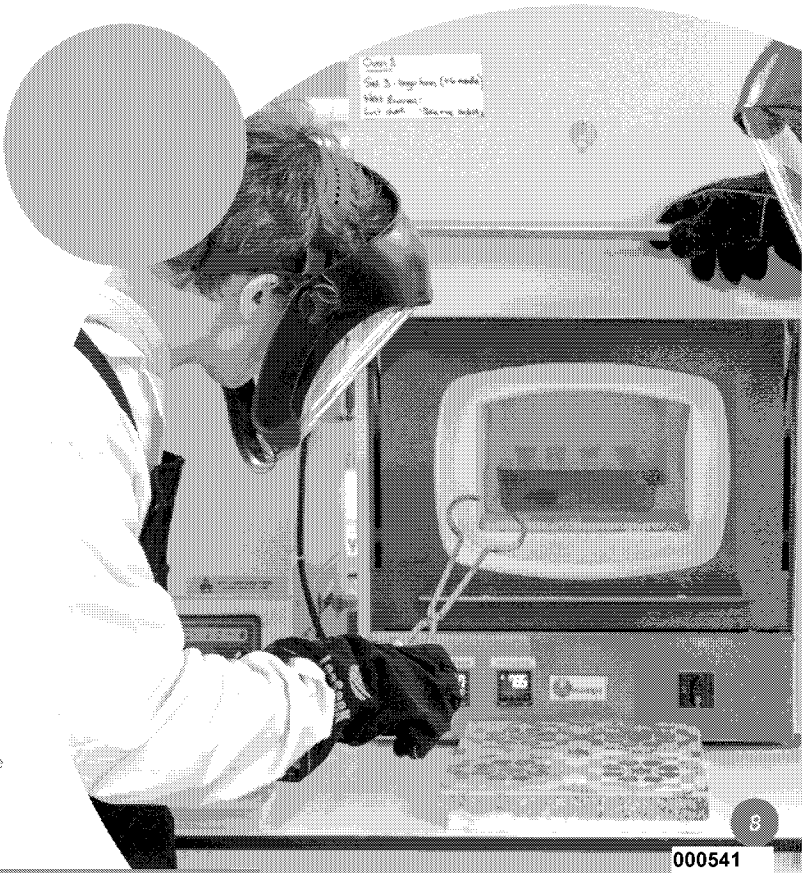
The WATSS process has the potential to halve the footprint of a required repository, while supporting fast reactors that generate 50% more energy without additional fuel needs or repository expansion. Over its 60-year lifetime, a 500 MW electricity generating SSR-W can destroy approximately 25 metric tons of actinides.[2]

By removing most heat-generating isotopes and utilizing interim storage, the majority of used fuel recycled through the WATSS process qualifies as Intermediate Level Waste. This classification enables more efficient canister filling, optimizing storage capacity. As a result, the final repository footprint for this type of waste stream is approximately three times less than that required for direct disposal of used fuel.

Recovered transuranic elements can serve as fuel in advanced reactors, generating substantial energy while simultaneously eliminating long-lived radioactive isotopes. Other elements and isotopes present in the spent fuel can also be valuable and be extracted for industrial and medical applications, transforming waste liabilities into usable assets.

The remaining high-level waste represents roughly 3% of the initial used fuel mass and about 5% of its volume. After stabilization, this material can be safely disposed of in a Deep Geological Repository, yielding a smaller overall repository footprint than an open fuel cycle without recycling.

In countries lacking a centralized national repository, or as a complementary solution, the relatively low volume of high-level waste makes Deep Borehole Disposal (DBD) a viable option, even for non-stabilized waste. DBD offers exceptional long-term isolation, ensuring superior safeguards against both deliberate and accidental access.



[1] E. Schneider, B. W. Carlsen & E. Tavrides, "Measures of the Environmental Footprint of the Front End of the Nuclear Fuel Cycle," INL/EXT-10-20652, 2010
T. Norgate, N. Haque, P. Koltun, "The impact of uranium ore grade on the greenhouse gas footprint of nuclear power," Journal of Cleaner Production, 2014, 84, 360-367

[2] T. Taylor, O. Gregoire, P. Haigh, S. Boddington & R. O'Sullivan, "Waste Burning Performance of the Moltex SSR-W," 5th Generation IV and Small Reactors (G4SR) Conference, 2024.

Inherently proliferation resistant

Historically, concerns around used fuel recycling and reprocessing have centered on the separation of plutonium, which can potentially be diverted for military use.

Molten salt reactors do not require this separation, and the WATSS process fundamentally prevents it, as all transuranic elements are managed collectively without the ability to isolate plutonium.

More importantly, WATSS not only enables continuous recycling but also the destruction of plutonium and other transuranic elements through the waste-burning reactor. This ensures that weapons-usable material is permanently eliminated, neutralizing proliferation concerns, regardless of future technological advancements.

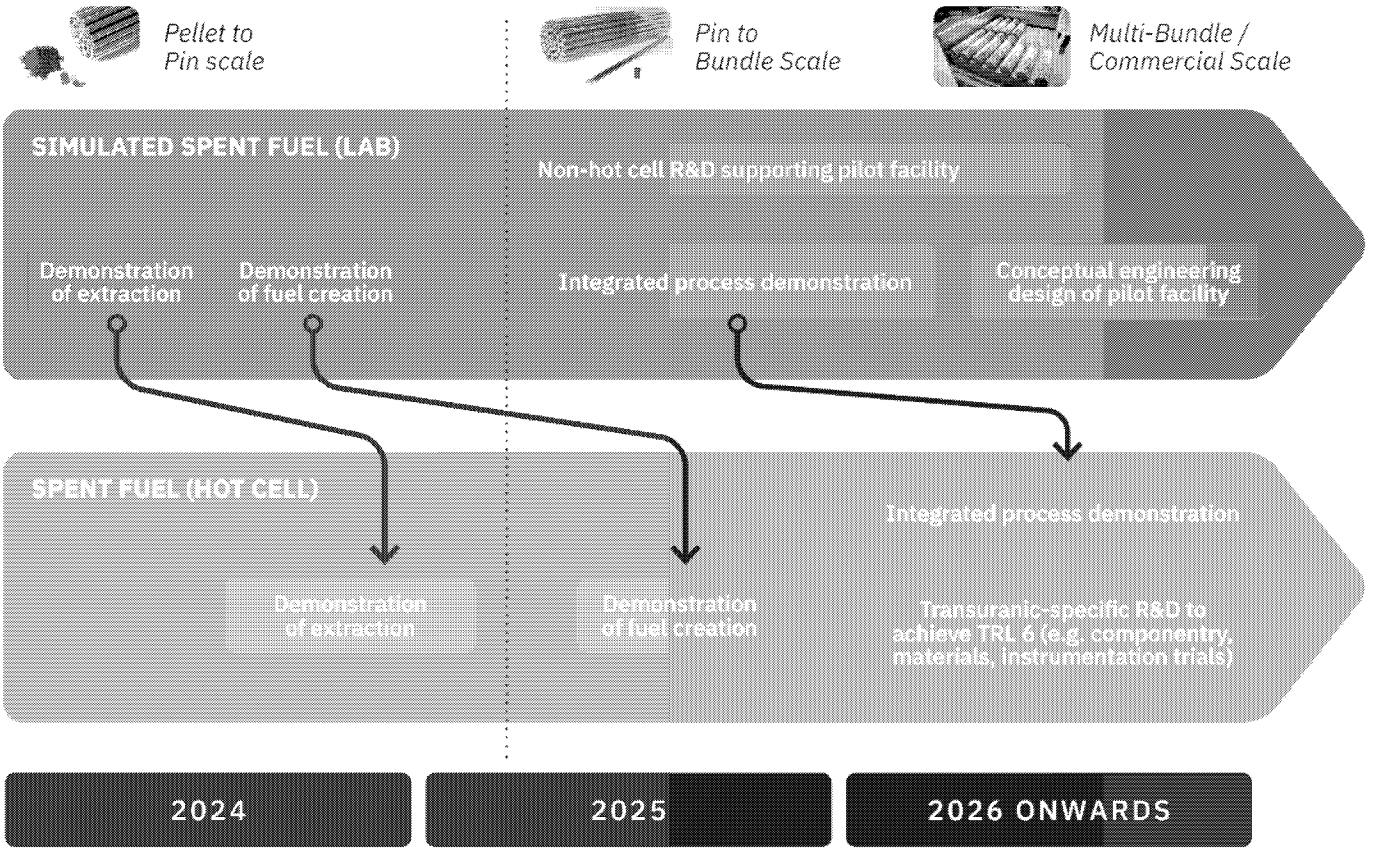
Top Photo© Canadian Nuclear Laboratories

A proven breakthrough

Driven by a bold vision to revolutionize used nuclear fuel management, Moltex has been at the forefront of developing a groundbreaking recycling process for seven years. Through rigorous testing and development, we pursued a solution that could go beyond conventional recycling methods and redefine nuclear waste recycling. WATSS stands apart as the first entirely new technology developed in over three decades and the first ever created by a private enterprise.

In early 2025, through work executed by the Canadian Nuclear Laboratories (CNL)—the only institution in Canada equipped to handle used nuclear fuel—Moltex achieved a pivotal milestone: the successful demonstration of the WATSS process at pellet scale with real used nuclear fuel. This groundbreaking achievement validated WATSS's ability to extract the majority of valuable transuranic material from used nuclear fuel with unparalleled efficiency.

Before reaching this milestone, Moltex dedicated four years to exploring and trialling reprocessing technologies widely regarded in the industry as the most promising solutions, including pyroprocessing and electrorefining. None could deliver in the same way that the WATTS process does on efficiency, proliferation resistance, or cost-effectiveness.



Backed by leading authorities

Independent assessments by experts Robert Holmes, former Chief Scientist, Canadian Nuclear Laboratories and British Nuclear Fuels and Adrian Simper, former Chief Scientist of the UK Nuclear Decommissioning Authority and Chief Nuclear Advisor to the UK government, have been influential in assessing the technology's viability and readiness.

"The WATSS process [...] is based on demonstrated science and reflects established custom and practice for radiochemical plants [....] The science both of individual process steps and the way they are combined, appears sound."

— Adrian Simper and Robert Holmes

Engineering partners, IDOM, and Candu Energy Inc., an AtkinsRéalis company, have provided critical expertise in advancing this groundbreaking process from concept to demonstration.

The development of WATSS has been made possible by CNL's Canadian Nuclear Research Initiative, and through the generous financial support of Canada's Strategic Innovation Fund, Atlantic Canada Opportunities Agency, the Province of New Brunswick, Ontario Power Generation, and Canadian Nuclear Laboratories as well as investors, IDOM, Candu Energy Inc, North Shore Mi'kmaq Tribal Council, and many other private individuals.

IDOM

Candu
An AtkinsRéalis company

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

NORTH SHORE
Mi'kmaq Tribal Council

Pathway to full-scale operations

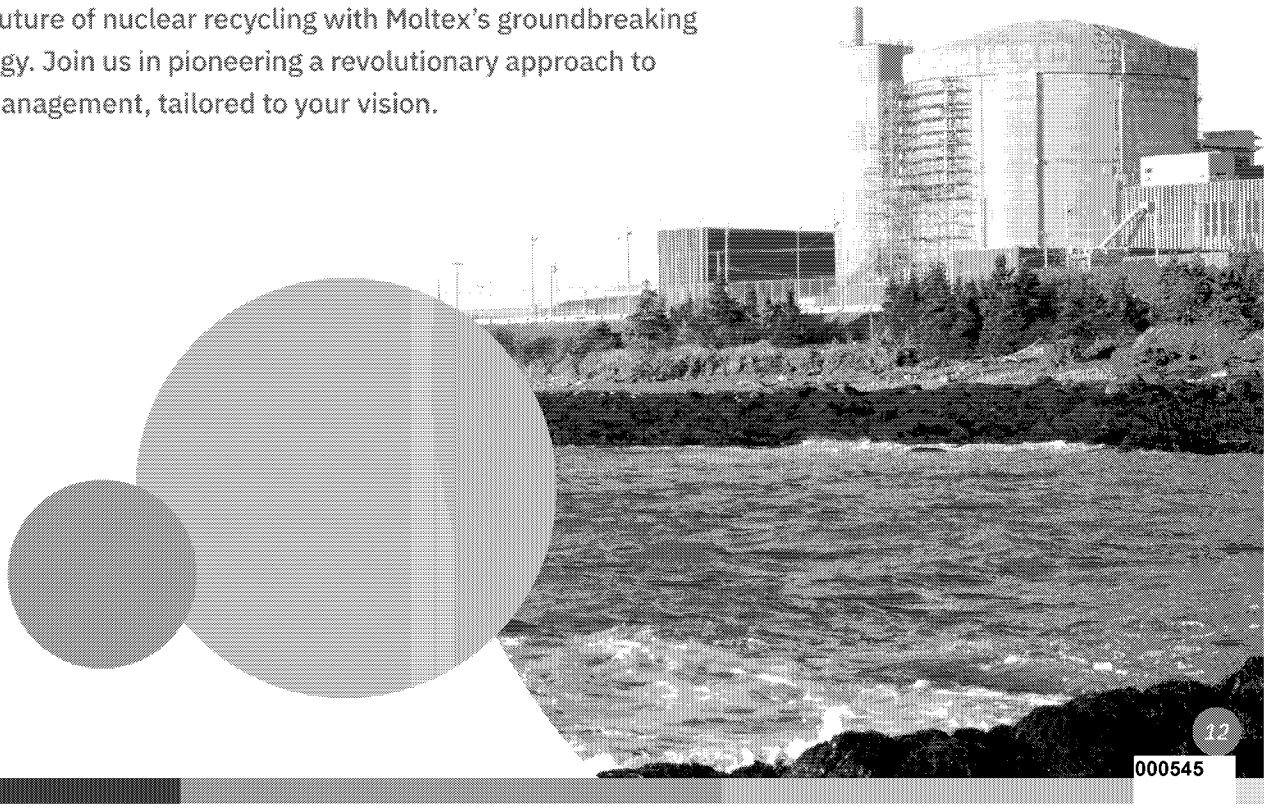
Over the next two years, Moltex intends to continue to expand its simulated used fuel operations, while refining and optimizing the integrated WATSS process, demonstrating its scalability to a variety of different contexts and ensuring a seamless transition to commercial deployment. This will include the development of a large-scale simulated fuel version of the entire WATSS process as well as larger integrated rig that uses real used fuel. The latter will be housed in a shielded hot cell facility that has yet to be selected.

In partnership with New Brunswick Power, Moltex plans to build a commercial-scale demonstration facility at the Point Lepreau Nuclear Generating station site. The facility will recycle an anticipated 260,000 used fuel bundles from the existing CANDU reactor and create recycled fuel for the entire 60-year lifespan of one 300MW demonstration Stable Salt Reactor-Wasteburner.

Future WATSS facilities will be designed with flexibility in mind, optimized to meet the unique requirement of different jurisdictions and customers, while also balancing cost-efficiency resulting from scaling up the technology's deployment. Funding for these activities is anticipated to come from a combination of private financing, government funding, and customer financing through a consortium of end-users.

This collaborative and iterative approach provides an unprecedented opportunity for customer and end-users to shape the development of the technology, ensuring it aligns with their specific needs. From facility design to process optimization, your input will be invaluable in guiding WATSS toward solutions tailored to your operations.

Experience the future of nuclear recycling with Moltex's groundbreaking WATSS technology. Join us in pioneering a revolutionary approach to nuclear waste management, tailored to your vision.



Point Lepreau: A national project in New Brunswick

Representative Moltex site layout

moltex
clean energy

This brochure is published by Moltex Energy Canada Inc., an intellectual property developer and nuclear technology leader. Headquartered in Canada with development activities across Canada, the UK, and the USA, Moltex has a portfolio of patents on both nuclear waste recycling and molten salt reactor technologies. Moltex is a proud partner of NB Power, working alongside the utility to advance reactor technology in New Brunswick Canada, with the goal of deploying first-of-a-kind nuclear recycling and energy conversion technologies.

FOR FURTHER INFORMATION

Visit moltexenergy.com

Contact info@moltexenergy.com

Pages 548 to / à 550

are withheld pursuant to sections

sont retenues en vertu des articles

14, 21(1)(b), 21(1)(c)

of the Access to Information Act

de la Loi sur l'accès à l'information

From:	Kalie Hatt-Kilburn
To:	Sharon Stanford-Rutter; Kevin Dubé;
Cc:	Ann Kenney
Subject:	RE: March 18 event in Saint John
Sent:	3/16/2021 4:24:00 PM

Perfect! Wouldn't hurt to double check. There are a lot of editors on this one, so would be good to get him to review just to be sure.

From: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Sent: Tuesday, March 16, 2021 4:23 PM
To: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>
Subject: RE: March 18 event in Saint John

Yes, Ted has reviewed the release. We did not have ample time to run it by him again post OT Comms review – but can do so now, to see if any flags are raised.

Thanks,
Sharon

From: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Sent: Tuesday, March 16, 2021 4:20 PM
To: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>
Subject: RE: March 18 event in Saint John

Looks good to me and is consistent with my knowledge of the project.

Just a quick flag – Ann has likely run this by him, but I trust that Ted has had a look as well, just to be comfortable that description is consistent with the project scope/outcomes. The PAF is very technical and this is a much more straightforward way of communicating the project. Always good to double check that in the simplification process, we haven't taken too many liberties in describing the project though. There will be a lot of eyes on this announcement.

From: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Sent: Tuesday, March 16, 2021 4:05 PM
To: Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>; Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>
Subject: RE: March 18 event in Saint John

We did originally have a short backgrounder planned, which went into a bit more detail on the projects and included the information below. But we can still include in the quick facts instead…we can amend the quick fact to this:

- $3 million to Moltex Energy Canada Inc. to help Moltex demonstrate the commercial viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology will reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

Sound ok?

From: Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>
Sent: Tuesday, March 16, 2021 3:57 PM
To: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>; Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>
Subject: RE: March 18 event in Saint John

Maybe in the NR quick fact – where we mention ACOA's component. Would be an easier sell for an addition at this point.

Kevin Dubé

Director General, Communications
Atlantic Canada Opportunities Agency (ACOA) / Government of Canada
kevin.dube@canada.ca / Tel.: 506-851-7632 / TTY: 1-877-456-6500

Directeur général des communications
Agence de promotion économique du Canada atlantique (APECA) / Gouvernement du Canada
kevin.dube@canada.ca / Tél. : 506-851-7632 / TTY : 1-877-456-6500

From: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Sent: March 16, 2021 3:54 PM
To: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>; McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>
Subject: RE: March 18 event in Saint John

I think it would be good to suggest that we include it. It is referenced in the speaking notes and the media lines, but not in the news release. Given the national interest on the SMR file, it is possible that we'll get media coverage based on the pickup of the news release only. The fuel recycling is an important piece and a key differentiator for this technology on the global SMR scene. NRCan has highlighted fuel recycling as a key feature to help encourage social license in this area.

From: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Sent: Tuesday, March 16, 2021 3:51 PM
To: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>; Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Subject: RE: March 18 event in Saint John

The materials have gone to ISED now for them to review and finalize – but we can make the suggestion.

From: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Sent: Tuesday, March 16, 2021 3:27 PM
To: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>; Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Subject: RE: March 18 event in Saint John

I note that we don't mention that Moltex intends to recycle used nuclear bundles. This is the focus of our assistance to Moltex and it is an important "green" feature of our support. Is it too late to add a sentence or two??????

From: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Sent: Tuesday, March 16, 2021 2:43 PM
To: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>; Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Subject: RE: March 18 event in Saint John

Here are the draft materials – plus Qs and As that we are still working on. These will be ready this afternoon.

Media Advisory, Scenario, News Release, emcee notes, and Minister LeBlanc's notes are all on their way to ISED.

Thanks.
Sharon

From: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Sent: Tuesday, March 16, 2021 1:30 PM
To: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>; Dubé, Kevin (ACOA/APECA) <kevin.dube@canada.ca>; Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Subject: RE: March 18 event in Saint John

Sure but we should check with Kevin

Can I get the material this PM (even if it a draft).

Kalie has worked hard on this and I wonder if she wants to come???

From: Stanford-Rutter, Sharon (ACOA/APECA) <sharon.stanford-rutter@canada.ca>
Sent: Tuesday, March 16, 2021 12:56 PM
To: McGuire, Francis (ACOA/APECA) <francis.mcguire@canada.ca>
Cc: Kenney, Ann (ACOA/APECA) <ann.kenney@canada.ca>
Subject: March 18 event in Saint John

Hi Francis – are you able to attend the SMR announcement with Minister LeBlanc on Thursday morning? It is at 10:00 am.

s.21(1)(b) Let us know and thanks – we are hoping you can lead the pre-event briefing at 9:50.

Sharon Stanford-Rutter
Director, Communications/Directrice, Communications
ACOA New Brunswick-APECA N.-B.
506-451-2677
Cell: 506-260-2301
Sharon.stanford-rutter@canada.ca

From:	Sharon Stanford-Rutter
To:	Kalie Hatt-Kilburn; Peta Fussell; Ted Parisé; Ann Kenney;
Subject:	FW: FOR ACTION: Media Call - / Globe and Mail / Moltex / Reporter's DL: May 25, 5 pm / Category 4
Sent:	5/25/2021 2:48:17 PM

From ISED below, FYI

From: Media Room/Salle des médias (ACOA/APECA) <mediaroom-salledesmedias@acoa-apeca.gc.ca>
Sent: Tuesday, May 25, 2021 2:46 PM
To: Sharon Stanford-Rutter <Sharon.Stanford-Rutter@ACOA-APECA.GC.CA>
Cc: Media Room/Salle des médias (ACOA/APECA) <mediaroom-salledesmedias@acoa-apeca.gc.ca>
Subject: FW: FOR ACTION: Media Call - / Globe and Mail / Moltex / Reporter's DL: May 25, 5 pm / Category 4

Hi Sharon,

Please see the email thread below.

Jen

Jennifer McGrath

Senior Communications Officer
Atlantic Canada Opportunities Agency (ACOA)/Government of Canada
Jennifer.McGrath@ACOA-APECA.gc.ca / Tel: 506-850-6942 TTY: 1-877-456-6500

Agente principale des communications
Agence de promotion économique du Canada atlantique (APECA) / Gouvernement du Canada
Jennifer.McGrath@ACOA-APECA.gc.ca / Tél : 506-850-6942 ATS: 1-877-456-6500

From: Zeroual, Erika (IC) <erika.zeroual@canada.ca>
Sent: Tuesday, May 25, 2021 2:27 PM
To: Lambert-Racine, Sophy (IC) <sophy.lambert-racine@canada.ca>; IC.F SCMS Industry & Innovation Programs / Programmes industrie & innovation SCSM F.IC <ic.scmsindustryinnovationprograms-programmesindustrieinnovationscsm.ic@canada.ca>
Cc: IC.F SCMS Media Relations / Relations avec les médias SCSM F.IC <ic.scmsmediarelations-relationsaveclesmediasscsm.ic@canada.ca>; Media Room/Salle des médias (ACOA/APECA) <mediaroom-salledesmedias@acoa-apeca.gc.ca>
Subject: RE: FOR ACTION: Media Call - / Globe and Mail / Moltex / Reporter's DL: May 25, 5 pm / Category 4

Hi there,

I'm on it. SIF will likely not get back to us by 3 but I'll do my best.

Thanks,

Erika Zeroual
(She|Her|Elle)

A/Sr Communications Advisor, Strategic Communications and Marketing Sector
Innovation, Science and Economic Development Canada / Government of Canada
Erika.Zeroual@Canada.ca /Tel : 613-330-6849

Conseillère princ. en communications p. int, Secteur des communications stratégiques et du marketing
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
Erika.Zeroual@Canada.ca /Tél: 613-330-6849

From: Lambert-Racine, Sophy (IC) <sophy.lambert-racine@canada.ca>
Sent: May 25, 2021 1:26 PM
To: IC.F SCMS Industry & Innovation Programs / Programmes industrie & innovation SCSM F.IC <ic.scmsindustryinnovationprograms-programmesindustrieinnovationscsm.ic@canada.ca>
Cc: IC.F SCMS Media Relations / Relations avec les médias SCSM F.IC <ic.scmsmediarelations-relationsaveclesmediasscsm.ic@canada.ca>; Media Room/Salle des médias (ACOA/APECA) <mediaroom-salledesmedias@acoa-apeca.gc.ca>
Subject: FOR ACTION: Media Call - / Globe and Mail / Moltex / Reporter's DL: May 25, 5 pm / Category 4

Good Day,

We received a media request from with the Globe and Mail.

Context: Today, a group of American non-proliferation experts sent a letter to Prime Minister Trudeau complaining about the recent federal financial support to Moltex Energy. The main allegation is that the government's support for reprocessing of CANDU spent fuel for plutonium extraction presents a proliferation risk and "will undermine the global nuclear weapons non-proliferation regime." The letter also says that "like other reprocessing efforts, Moltex, even in the R&D stage, would create a costly legacy of contaminated facilities and radioactive waste streams and require substantial additional government funding for cleanup and stabilization prior to disposal."

The reporter has some questions about ISED's due diligence process for this investment. The questions are below. Though the reporter is inquiring about SIF, I'm looping in ACOA as well.

@ACAO please take a look at the questions below and let us know if you have input. I'm pasting below preapproved language used for calls about Moltex as an FYI, though the angle is not the same. Let me know if this call should be shared with GAC, perhaps.

Let me know if the following deadlines are feasible. If not, I can try to renegotiate.

DEADLINE
SECTOR May 25, 3 PM
REPORTER May 25, 5 PM

- Please let us know if there are capacity issues/delays in your Sector

s.19(1)

- Please note that as part of the triage process the Media Relations team always negotiates deadlines

Thanks!

Sophy Lambert-Racine (she/her/elle)
Media relations advisor | Conseillère en relation avec les médias
Strategic Communications and Marketing Sector (SCMS) | Secteur des communications stratégiques et du marketing (SCMS)
Innovation, Science and Economic Development Canada |Innovation, Sciences et Développement économique Canada
sophy.lambert-racine@canada.ca | Cell. 438-364-8023

MEDIA: / Globe and Mail
SUBJECT: Moltex
CATEGORY: 4
REQUEST :

1) Prior to providing support to Moltex through the Strategic Innovation Fund, what due diligence did ISED perform regarding the non-proliferation risks associated with Moltex's reprocessing process? Please describe.
2) What were ISED's findings regarding the non-proliferation risks (if any) and why were they acceptable to ISED?
3) Prior to providing support to Moltex through the SIF, what due diligence did ISED perform on the environmental consequences of Moltex's reprocessing process? Please describe.
4) What were ISED's findings regarding the environmental consequences of Moltex's reprocessing process, and why were those risks deemed acceptable?
5) If ISED is aware of any other due diligence by the federal government on the non-proliferation and/or environmental implications of Moltex's proposed reprocessing process, please identify—this would be helpful. I request related materials (reports etc.) if they exist.

PREVIOUS RESPONSES

(I 03/19/2021)

REQUEST AND RESPONSE:

1. The $50.5 million from the government to **Moltex** is for **Moltex** to advance design and commercialization of its molten salt reactor and spent fuel facility technology. Is that correct? (SIF)
2. The $47.5 million from the Strategic Innovation Fund and the $3 million from the Atlantic Canada Opportunities Agency will be used toward development of the 300 MW small modular reactor at Point Lepreau Generating Station. Is that correct? (SIF)
PROPOSED RESPONSE FOR Q 1&2:
Moltex is receiving $47.5 million the Strategic Innovation Fund (SIF) and $3 million through the Regional Economic Growth through Innovation (REGI) towards the same project. This contribution will help to develop a Stable Salt Reactor (SSR) that will produce emissions-free energy through the Waste to Stable Salts (WATSS) conversion process that recycles existing

nuclear waste to fuel the production of clean energy. This technology has the potential to reduce storage needs of existing nuclear waste and could lead the way in establishing a first-of-its-kind world-class clean-energy system for Canada and the world.

3. **Moltex** will match the money from the Strategic Innovation Fund dollar-for-dollar. Is that correct? (SIF)
PROPOSED RESPONSE:
The company is responsible for securing the remaining funding required to successfully complete the project.

4. The funds from the Atlantic Canada Opportunities Agency will be used toward reactor design and support of the Canadian Nuclear Safety Commission's Pre-Licensing Vendor Design Review Phase 2. Is that correct? Atlantic region (ACOA)
PROPOSED RESPONSE:
The funds from the Atlantic Canada Opportunities Agency will be used to help **Moltex** demonstrate in a low-radioactive setting the foundational viability of its proprietary technology to convert used CANDU fuel into recycled fuel for SMRs. This technology aims to reduce the cost, volume and toxicity of spent nuclear waste while producing clean electricity at low-cost.

(**12/02/2020)**

The Government of Canada does not comment on whether specific applications may be under consideration. Details related to applicants and/or applications are subject to commercial confidentiality and cannot be disclosed.
Strategic Innovation Fund (SIF) projects are highly complex and large in scale, and require significant due diligence on the part of the program to assess the risks, feasibility and benefits of a project before a funding decision is made. A full assessment of projects can take a number of months to complete, and timelines can vary according to the availability of SIF funds, the financial health of the applicant, and the complexity of the project. The timelines can also be affected by the ability of the company to provide complete information in the early stages of the application, as well as the ability of the company to respond to SIF requirements for additional information, in a timely manner.
The process of SIF projects can consulted on the program web site: https://www.ic.gc.ca/eic/site/125.nsf/eng/00023.html

s.19(1)

From:	Kalie Hatt-Kilburn
To:	Tristan Hovey; Ted Parisé; Sharon Stanford-Rutter; Peta Fussell;
Cc:	Ann Kenney
Subject:	RE: FOR APPROVAL ASAP | Media call - Moltex
Sent:	5/25/2021 3:59:00 PM

Agreed, thank you Ted. This looks good to me. And if they press on the question of proliferation, I would recommend that we suggest they reach out to NRCan, who is the federal policy lead on SMRs.

From: Tristan Hovey <Tristan.Hovey@ACOA-APECA.GC.CA>
Sent: Tuesday, May 25, 2021 3:56 PM
To: Ted Parisé <Ted.Parise@ACOA-APECA.GC.CA>; Sharon Stanford-Rutter <Sharon.Stanford-Rutter@ACOA-APECA.GC.CA>; Peta Fussell <Peta.Fussell@ACOA-APECA.GC.CA>; Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Cc: Ann Kenney <Ann.Kenney@ACOA-APECA.GC.CA>
Subject: RE: FOR APPROVAL ASAP | Media call - Moltex

Thanks Ted, looks good from my end with your updates to the context

From: Ted Parisé <Ted.Parise@ACOA-APECA.GC.CA>
Sent: Tuesday, May 25, 2021 3:47 PM
To: Sharon Stanford-Rutter <Sharon.Stanford-Rutter@ACOA-APECA.GC.CA>; Tristan Hovey <Tristan.Hovey@ACOA-APECA.GC.CA>; Peta Fussell <Peta.Fussell@ACOA-APECA.GC.CA>; Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Cc: Ann Kenney <Ann.Kenney@ACOA-APECA.GC.CA>
Subject: Re: FOR APPROVAL ASAP | Media call - Moltex

See my comments / suggestions in **GREEN**

De : Sharon Stanford-Rutter <Sharon.Stanford-Rutter@ACOA-APECA.GC.CA>
Envoyé : 25 mai 2021 15:19
À : Tristan Hovey <Tristan.Hovey@ACOA-APECA.GC.CA>; Ted Parisé <Ted.Parise@ACOA-APECA.GC.CA>; Peta Fussell <Peta.Fussell@ACOA-APECA.GC.CA>; Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Cc : Ann Kenney <Ann.Kenney@ACOA-APECA.GC.CA>
Objet : FW: FOR APPROVAL ASAP | Media call - Moltex

Please review and approval ASAP. Thanks.

For approval – a note that the reporter has asked ISED the same questions below.

Approval Yellow

Subject | Sujet : ACOA support to Moltex – due diligence

Language of the request | Langue de la demande : English

Media | Média : The Globe and Mail,

Deadline | Échéance : Tuesday, May 25 @ 5:30 pm EDT (working on extending this deadline)

Questions:
Today, a group of American non-proliferation experts sent a letter to Prime Minister Trudeau complaining about the recent federal financial support to Moltex Energy. The main allegation is that the government's support for reprocessing of CANDU spent fuel for plutonium extraction presents a proliferation risk and "will undermine the global nuclear weapons non-proliferation regime." The letter also says that "like other reprocessing efforts, Moltex, even in the R&D stage, would create a costly legacy of contaminated facilities and radioactive waste streams and require substantial additional government funding for cleanup and stabilization prior to disposal."

I have some questions about ACOA's due diligence process for this investment:

Response:

- ACOA approved a contribution of $3M to Moltex Energy Canada Inc. under its Regional Economic Growth through Innovation Program, toward demonstrating Small Modular Reactor technology. This was announced on March 18, 2021. ACOA's support to Moltex will contribute to the company's research, primarily in a lab setting.

- All project proposals submitted to ACOA are carefully reviewed and assessed through a stringent due diligence process.
- ACOA's funding is consistent with Canada's Action Plan on SMRs. In terms of your questions related to non-proliferation and environmental impacts, we suggest you direct these questions to Natural Resources Canada.
- ACOA's mandate is to work with businesses, communities, academic institutions, researchers and other levels of government to help build a strong, inclusive economy in Atlantic Canada

Background | Contexte :

ACOA has provided $3M conditionaly repayable contribution to Moltex under the Regional Economic Growth through Innovation (REGI) to develop SMR technology. This was announced by Minister LeBlanc on March 28, 2021 as part of a larger bundle. Moltex is receiving $47.5 millions from Innovation, Science and Economic Development Canada through the Strategic Innovation Fund (SIF) and $3 million through the Regional Economic Growth through Innovation (REGI) towards the same project. THIS IS A BIT OF A REPETE OF THE FIRST SENTENCE This contribution will assist Moltex achieve the required R&D toward developing a Stable Salt Reactor (SSR) that will produce emissions-free energy through the Waste to Stable Salts (WATSS) conversion process that recycles existing nuclear waste to fuel the production of clean energy. This technology has the potential to reduce storage needs of existing nuclear waste and could lead the way in establishing a first-of-its-kind world-class clean-energy system for Canada and the world.

Call to be returned by | Appel sera répondu par: Ann Kenney by email

s.19(1)

Status: New Call / For approval

From:	Kalie Hatt-Kilburn
To:	Ted Parisé
Cc:	Debbie McKinnon; Peta Fussell; Laura DeLong;
Subject:	RE: ACOA - ARC & PPT (8/25)
Sent:	8/30/2021 11:52:00 AM

From: Ted Parisé <Ted.Parise@ACOA-APECA.GC.CA>
Sent: Monday, August 30, 2021 10:07 AM
To: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Cc: Debbie McKinnon <Debbie.McKinnon@ACOA-APECA.GC.CA>; Peta Fussell <Peta.Fussell@ACOA-APECA.GC.CA>; Laura DeLong <Laura.DeLong@ACOA-APECA.GC.CA>
Subject: RE: ACOA - ARC & PPT (8/25)

Merci d'avoir partagé cette présentation.

From: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Sent: Monday, August 30, 2021 9:37 AM
To: Ted Parisé <Ted.Parise@ACOA-APECA.GC.CA>
Cc: Debbie McKinnon <Debbie.McKinnon@ACOA-APECA.GC.CA>; Peta Fussell <Peta.Fussell@ACOA-APECA.GC.CA>; Laura DeLong <Laura.DeLong@ACOA-APECA.GC.CA>
Subject: FW: ACOA - ARC & PPT (8/25)

FYI – Sharing this presentation that Francis and I received last week from ARC.

From: Bill Labbe <blabbe@arcenergy.co>
Sent: Friday, August 27, 2021 5:30 PM
To: Kalie Hatt-Kilburn <Kalie.Hatt-Kilburn@ACOA-APECA.GC.CA>
Cc: Francis McGuire <Francis.McGuire@ACOA-APECA.GC.CA>;

Subject: ACOA - ARC & PPT (8/25)

Kalie,

Good afternoon

s.19(1)
s.20(1)(b)
s.20(1)(c)
s.20(1)(d)
s.21(1)(b)
s.21(1)(c)

I have attached the PPT used during the discussion for you files

A couple of items of follow-up were mentioned during this meeting time:

-
-
- HALEU Fuel Supply – An opportunity to create security of Fuel Supply in Canada should be considered; to this end, ARC has initiated discussions with Canadian firms and will continue this effort in the weeks ahead (Labbe)

Thank you for your time and looking forward to our next conversation

Bill

William Labbe
President & Chief Executive Officer
ARC Clean Energy Canada
Brunswick Square, Suite 900
1 Germain St, Saint John, NB E2L 4V1
(207) 751-4605
www.arcenergy.co

s.20(1)(b)

s.20(1)(c)

s.20(1)(d)

s.21(1)(b)

s.21(1)(c)

From:	Kalie Hatt-Kilburn
To:	Hicks, Hugh (ACOA/APECA)
Cc:	Matthew English
Subject:	RE: Follow-up ACOA/NB Power
Sent:	10/22/2019 1:48:00 PM

Thank you for this, Hugh. Brett is going to give me a call on the 28th so this will be good to have on hand. We agreed to hold a regular call every couple of weeks to keep abreast of their progress. I think that it would be good after the meeting with ARC this week to circle back with Sam to give him an update on where things are. Let's chat after the ARC meeting about next steps.

Thanks,
K.

From: Hicks, Hugh (ACOA/APECA) <hugh.hicks@canada.ca>
Sent: Tuesday, October 22, 2019 12:41 PM
To: Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>
Cc: English, Matthew (ACOA/APECA) <matthew.english@canada.ca>
Subject: FW: Follow-up ACOA/NB Power

Hey Kalie - let me know if you want me to seek a follow-up meeting for clarification of anything noted below.
Thanks,
Hugh

Matt - FYI

From: Thompson, Paul <[redacted]@nbpower.com>
Sent: Tuesday, October 22, 2019 12:07 PM
To: Hicks, Hugh (ACOA/APECA) <hugh.hicks@canada.ca>
Cc: Plummer, Brett <[redacted]@nbpower.com>; Hatt-Kilburn, Kalie (ACOA/APECA) <kalie.hatt-kilburn@canada.ca>; Woodworth, Wayne <[redacted]@nbpower.com>; Taylor, Dean <[redacted]@nbpower.com>; Harris, Claire <[redacted]@nbpower.com>
Subject: RE: Follow-up ACOA/NB Power

Hi Hugh, please see the responses to your questions embedded in your original email below. We look forward to further discussions and might want to tie them into the regular meetings Brett and Kalie are having.
Thanks
Paul

PS... my contact numbers are;
Office
Cell

s.19(1)

Pages 565 to / à 566

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14, 21(1)(b), 21(1)(c)

of the Access to Information Act

de la Loi sur l'accès à l'information

Pages 567 to / à 570

are withheld pursuant to sections

sont retenues en vertu des articles

21(1)(b), 23

of the Access to Information Act

de la Loi sur l'accès à l'information

Page 571

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est retenue en vertu des articles

19(1), 20(1)(a), 20(1)(b), 20(1)(c), 20(1)(d), 21(1)(b), 23

of the Access to Information Act

de la Loi sur l'accès à l'information