



April 16, 2018

INVITATION FOR SMALL MODULAR REACTOR (SMR) DEMONSTRATION PROJECTS

Canadian Nuclear Laboratories Ltd. (“CNL”) has outlined in its 2016-2026 10-Year Integrated Plan Summary its vision to be a global leader in nuclear science and technology: an organization that is commercially successful, respected for its scientific capabilities, and home to world-leading expertise based out of a modern, efficient and collaborative campus environment. As part of this, CNL has set a goal to demonstrate the commercial viability of SMRs by 2026, with a view to positioning Canada to take a leadership role in this emerging nuclear technology with CNL recognized globally as a leader in SMR prototype testing and Science and Technology (S&T) support.

Given the smaller physical size and electrical output, SMRs could be suitable for applications that require a small footprint or a relatively small power source. As a low-carbon energy source, SMRs have the potential to bring positive economic benefits to Canada, align with Canada’s commitment to fight climate change, could have important applications for remote communities, and have the potential to enhance nuclear safety through next-generation nuclear technology.

CNL has been working with its client, Atomic Energy of Canada Limited (“AECL”), to develop a process by which CNL could recommend the establishment of one or more SMR demonstration projects (“SMR Project”) on one or more sites owned by AECL (including Chalk River Laboratories and Whiteshell Laboratories).

As a result, CNL is pleased to announce this invitation (“Invitation”) to proponents of SMR demonstration projects (“Proponents”) who wish to be considered for inclusion in the evaluation process for an SMR demonstration project. There are several potential SMR sites available (each, an “SMR Site”), to potentially allow multiple Proponents, with key partners as applicable, to license, construct and operate demonstration SMRs on established nuclear sites with many operational, technical and licensing benefits. While CNL acknowledges that there are potentially multiple sites available, some of these sites may ultimately be more suitable for certain SMR Projects than others.

Proponents are invited to submit a response to this Invitation. Responses will be assessed against pre-determined criteria set out in the Evaluation Question Set.

This Invitation consists of the following documents:

- Part 1: Instructions to Proponents (including conditions relating to this Invitation)
- Part 2: Evaluation Question Set (including evaluation criteria, response requirements and assessment basis)
- Part 3: Response Template

Responses received by May 28, 2018 will be assessed in the first round. Responses may be submitted any time thereafter, and may be assessed upon receipt, but no later than the next assessment round, at CNL’s discretion. Assessments are expected to occur at least semi-annually.

All responses will receive a reply from CNL.



Proponents wishing to receive the documents comprising this Invitation in French can submit a request to smr@cnl.ca.

It is important that Proponents understand that this is an Invitation in respect of which neither CNL nor AECL has any legal obligation or liability, including without limitation, with respect to how, whether or to what extent it reviews a response or recommends an SMR Project or continues with a recommended SMR Project. For clarity, this Invitation is not a procurement process, but rather, a process to help CNL advance its demonstration initiative.

CNL is a contractor of AECL and is not acting as AECL's agent in issuing this Invitation. CNL may, in its sole discretion, and at any time:

- suspend, revoke, or terminate this Invitation, including CNL's review of any response to this Invitation, and its recommendation of any SMR Project;
- alter, amend or modify the content and requirements of this Invitation and CNL's consideration/review of any responses received to this Invitation, including revising (a) the schedule(s) associated with the Invitation and review of responses, (b) the requirements and criteria used by CNL in connection therewith, and (c) its recommendation of any SMR project; and
- decide not to recommend the establishment of any SMR Project(s) whatsoever or decide to recommend the establishment of one or more SMR Project(s) on the basis of criteria or information that is in some or all respects different from, or inconsistent with, those set out in this Invitation.

By submitting a response, Proponents acknowledge and agree to the foregoing and that these conditions form an integral part of the Instructions to Proponents. To the extent that there is any conflict between the content of the Instructions to Proponents and this paragraph, this paragraph shall supersede and govern.

We thank you for your interest in the Invitation and look forward to receiving your response.

Regards,

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Invitation for SMR Demonstration Projects

Part 1: Instructions to Proponents

Revision 0

UNRESTRICTED

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1. INTRODUCTION

This is an invitation (“Invitation”) by Canadian Nuclear Laboratories (“CNL”) to proponents (“Proponents”) of SMR demonstration projects (“SMR Projects”) who wish to be considered for inclusion in the evaluation process for a SMR demonstration project. A Proponent is the party on the SMRs who will be the lead respondent to this Invitation. The Proponent may or may not be the developer of the technology, the operator of the SMR, or the project manager, but rather is the entity responsible for organizing the response to this Invitation to site the SMR Project. For clarity, this Invitation is not a procurement process, but rather a process to help CNL advance its demonstration initiative.

CNL has established a process whereby CNL will set criteria and evaluate responses against those criteria. CNL may recommend as acceptable and warranting further development to Atomic Energy of Canada Limited (“AECL”), as the owner of the land, those responses that CNL believes will be:

- feasible (technically and socially, looking at safety, security, environmental and other factors);
- of benefit to CNL and to Canada; and
- financially viable.

2. BACKGROUND

CNL is a site operating company owned by Canadian National Energy Alliance (hereinafter “CNEA”), which is comprised of CH2M HILL Canada Limited / Jacobs Engineering Group Inc., Fluor Government Group – Canada, Inc., Atkins Energy Canada Group Limited and SNC-Lavalin Inc. CNL is a world leader in nuclear science and technology offering unique capabilities and solutions across a wide range of industries. CNL manages AECL’s sites under a Government-owned, Contractor-operated model.

CNL has outlined in its long-term plan¹ its strategy to enhance CNL’s role as a global leader in nuclear science and technology: an organization that is commercially successful, respected for its scientific capabilities, and home to world-leading expertise based out of a modern, efficient and collaborative campus environment. As part of this strategy, CNL aims to demonstrate the commercial viability of SMRs by 2026, positioning Canada to take a prominent role in this emerging nuclear technology with CNL recognized globally as a leader in SMR prototype testing and S&T support.

Increasingly over the past decade, SMRs have been recognized as a potential alternative to large-scale nuclear reactors a contributor to achieving low-carbon energy production and a significant contributor to a sustainable energy system. Given their smaller physical size and electrical output, SMRs could be suitable for applications that require a small footprint or a

¹ Canadian Nuclear Laboratories, “2016-2026 10-Year Integrated Plan Summary,” CRL-502000-PLA-001, Revision 0, 2017 April 18, available at http://www.cnl.ca/site/media/Parent/Long_Term_Strategy_2017April18.pdf.

relatively small amount of power. As a low-carbon energy source, SMRs have the potential to bring positive economic benefits to Canada, align with Canada's commitment to fight climate change, enable important applications for remote communities, and enhance nuclear safety through next-generation nuclear technology.

SMRs may offer several advantages over traditional technologies, notably: reduced size more suitable for some applications; the ability to purchase and construct in a modular way, which decreases up-front capital costs; simpler, less complex plants; and reduced staff complement. In addition to electricity generation, SMRs can be part of an overall energy scheme that could include applications such as district heating, co-generation, energy storage, desalination, or hydrogen production.

Building on decades of experience in supporting and deploying numerous prototype, demonstration, research and power reactors, CNL is well equipped to support the development and deployment of SMRs, including hosting a demonstration facility. The long-term vision is for CNL to be a recognized hub for SMRs, where multiple vendor-supported prototypes or demonstrations are built and tested. As part of this long-term vision, CNL's goal in the next 10 years is to host one or more prototype SMRs.

CNL manages several well-characterized sites licensed by the Canadian Nuclear Safety Commission (CNSC), with multiple siting opportunities and the required supporting services and general infrastructure. As such, CNL can offer support in all aspects, from technology development through to deployment, including demonstration on one of its sites, with support for regulatory considerations. The integrated nature of the sites in supportive host communities creates a collaborative environment where stakeholders, students, visiting scientists, operators, regulators and the supply chain can meet, discuss technical aspects of the SMRs, and advance and understand the technologies.

CNL offers a world-class S&T team with comprehensive experimental and modeling facilities, underpinned by a complete roster of support services, such as radiation protection, health physics, security, safeguards and nuclear material management, decommissioning and waste management and emergency planning. CNL has commercially available research facilities and scientists to perform discovery Research and Development (R&D), and to solve key technology challenges, along with integrated fuel manufacturing, testing and examination, and waste solutions.

New capital investments in facilities, equipment and infrastructure are underway at the Chalk River Laboratories as part of a \$1.2 billion investment by AECL and the Government of Canada. In addition to infrastructure upgrades, such as a new switchyard, municipal services, and a tri-generation plant, the largest single capital investment currently planned is the construction of an advanced nuclear materials and fuel research centre. This new facility will be the foundational element supporting the broader S&T program, including the SMR program. This facility is anticipated to strengthen our existing capabilities in nuclear fuels and materials testing and characterization, with a suite of new, world-class hot cells, shielded facilities, and flexible laboratories.

While the Whiteshell site is currently undergoing decommissioning (the planned closure date is 2024), it is possible that some site support infrastructure will remain available for use, including power, fibre optic cable and access roads.

3. DISCLAIMER

Neither CNL nor AECL shall be bound by any response provided by a Proponent, or by any discussions with any Proponent unless and until terms and conditions of various agreements respecting the disposition or use of a site and provision of site services agreements have been negotiated by the Proponent and CNL/AECL. Issues that would be addressed by these agreements include items such as the following:

- site use, access, and control, including during all phases of project development;
- project approval rights of CNL/AECL; interplay between SMR demonstration site licence and CNL Site licence;
- conditions precedent to the agreements, including material changes to the project, changes within CNL/AECL and Proponent, changes in law/regulatory framework;
- force majeure, including impacts and responsibilities;
- environmental due diligence, investigation and responsibility;
- site services (emergency management/fire/protection services, utilities/internet, and security screening) provided by CNL, and cost of same; and
- termination rights of the parties, and impacts of termination for cause and convenience.

This list is neither exhaustive nor determinative, but merely an indication of some of the issues that may arise during contract negotiations.

4. INVITATION STAGES

The SMR Project sited at CNL will proceed through four (4) main stages:

1. Pre-qualification;
2. Due diligence;
3. Negotiation of land arrangement and other contracts; and
4. SMR Project execution.

This Invitation and the accompanying Evaluation Question Set provide the information for Proponents to advance through Stages 1 and 2. An overview of Stages 3 and 4 is also provided for information.

If a Proponent provides sufficient information, they may be passed through Stage 1 and 2 simultaneously.

Under certain circumstances, CNL may elect to put on hold review and evaluation of one or more SMR Projects submitted within a given intake period. The selection of which SMR Projects to put on hold will be made based on the scores received through the evaluation process and the overall interests of CNL and AECL.

4.1 Stage 1: Pre-Qualification

Stage 1 is a pre-qualification stage. The focus of Stage 1 is to consider the extent to which the Proponents meet national security and integrity requirements, assess technical and business merits of the SMR Project and assess the financial stability of the Proponent. Responses are invited regardless of a lack of financial readiness of the project; however, financial readiness will be specifically assessed at Stage 2 and a Project will not pass Stage 1 without achieving a level of financial readiness. In this stage, responses must meet mandatory criteria, and will then be assessed against rated criteria. CNL's decision to accept or reject the SMR Project will be based on the completeness of the response, and the assessment against the mandatory and rated criteria. Stage 1 is not intended to fail SMR Projects. Proponents that do not meet the criteria to proceed to Stage 2 will receive feedback and input from CNL and may be invited, at CNL's discretion, to resubmit their response at any time. If a Proponent provides adequate information, the SMR Project may be passed through Stages 1 and 2 simultaneously.

Proponents must provide information regarding any gaps they currently have in their SMR Project plan, particularly in financing, waste management and decommissioning. There is also opportunity to indicate types of support, both direct and indirect, that could allow their SMR Project to be successful on a shorter timeline. CNL will use this information to inform SMR strategy in Canada, and will share this information with AECL.

4.1.1 Successful Outcome of Stage 1: Pre-Qualification

SMR Projects that pass Stage 1 are considered to be pre-qualified by CNL to advance toward a potential SMR site ("SMR Site"). A letter will be provided to the Proponent documenting that the SMR Project is pre-qualified, that the SMR Project can enter Stage 2, and that CNL is committed to working with the Proponent to advance the SMR Project on a commercial basis subject to conditions established by CNL.

The outcome of this stage does not guarantee or reserve an SMR site, nor does it in any way commit AECL or CNL to do anything for a pre-qualified Proponent/SMR Project.

4.2 Stage 2: Due Diligence

Stage 2, the due diligence phase, will require Proponents to meet more stringent financial requirements, including an assessment of full lifecycle costs of the SMR Project and the Proponent's current anticipated funding of those costs. Stage 2 is to consider the extent to which the Proponent has both the financial standing to execute the SMR Project, and the technical readiness and feasibility, within a timeline acceptable to CNL.

Proponents entering Stage 2 must agree to provide CNL updated responses as applicable, including any changes to any of the information provided in their initial response. Failure to do so may result in disqualification.

4.2.1 Successful Outcome of Stage 2: Due Diligence

A successful outcome of Stage 2 is a recommendation from CNL to AECL, and a potential subsequent acceptance by AECL, of the SMR Project. If AECL accepts CNL's recommendation, it is anticipated that AECL will provide the Proponent with a letter of support for the SMR Project, which includes AECL's support of the Proponent in advancing towards a demonstration reactor on an SMR Site, subject to certain terms and conditions (T&Cs) defined by AECL. The intent of the letter of support is to support the Proponent, or the relevant partner, in pursuing site licensing processes² with the regulatory authority. It is important to understand, however, that a recommendation from CNL to AECL does not guarantee acceptance of the response or SMR Project by AECL. Furthermore, a recommendation from CNL to AECL does not in any way commit AECL to proceed with the Proponent; AECL in its sole discretion may accept or reject SMR Projects at later dates.

4.3 Stage 3: Negotiation of Land Arrangement and Other Contracts

Upon acceptance by AECL of CNL's recommendation, and the satisfaction of any conditions placed on the Proponent as part of AECL's acceptance, the Proponent enters Stage 3. In Stage 3, CNL and the Proponent, with AECL engaged as appropriate, will begin negotiations for a land arrangement and other contracts. When the Proponent has funding, resources, key SMR Project partners, a compelling business case and has made progress toward obtaining the required regulatory approvals, CNL will recommend to AECL that it enter into a site disposition or use agreement with the Proponent. This agreement is subject to conditions precedent / conditions subsequent that, among other things, allows CNL to oversee the contracts through to completion, or terminate for material changes or breach. Further stringent evaluation against mandatory criteria and rated criteria will be performed during Stage 3. Details on these criteria will be communicated at a later date.

CNL and the Proponent may also enter into a site services agreement and other agreements during this phase, which support the completion of the SMR Project from licensing through to decommissioning.

4.3.1 Successful Outcome of Stage 3: Negotiation of Land Arrangement and Other Contracts

A successful outcome of Stage 3 is a recommendation from CNL to AECL, and potentially subsequent acceptance by AECL, that it enter into a site disposition or use agreement with the Proponent, subject to conditions precedent / conditions subsequent. CNL will provide oversight of the signed contracts through to completion of the SMR Project, or expiration or termination for material changes or breach.

² Class 1 Nuclear Facilities Regulations clause 3c) states that a licence application must include *evidence that the applicant is the owner of the site or has authority from the owner of the site to carry on the activity to be licensed.*

Other contracts, such as a site services agreement, will also be negotiated and signed, with either CNL or AECL, as appropriate.

4.4 Stage 4: SMR Project Execution

Stage 4 is the SMR Project execution phase. Licence conditions as well as the terms and conditions in the site disposition or use agreement and other contracts with CNL or AECL, establish the SMR Project's path through licensing and the construction, testing and commissioning, operation and decommissioning phases of the SMR Project.

5. RESPONSE FORMAT

Responses shall be in the form set out in the Invitation Part 3: Response Template and will follow the progressive structure of the criteria as identified in the document "Invitation for SMR Demonstration Projects, Part 2 – Evaluation Question Set".

Responses shall consist of four (4) separate sections consisting of General Information, Integrity and Security Requirements, Economic and Financial Standing, and Technical Requirements, each corresponding to the sections of the Evaluation Question Set.

Additional response materials, as identified in the individual criteria requirements, shall be supplied separately as required to support the response.

The maximum length of the response document for Stage 1 or Stage 2 is 130 pages, of which 80 pages are set aside for the technical criteria. Response documents shall be prepared as an 8 ½ x 11 document using Calibri 11 font and submitted as a PDF file.

6. SUBMISSION OF RESPONSES

All questions regarding the Invitation must be submitted to smr@cnl.ca. Questions may also be submitted through any public engagement fora that CNL provides, such as webinars. Questions received through other means, such as telephone calls or e-mails to individuals at CNL, will not be answered. The topical areas of any questions along with the response may be issued publicly, for example, included in a public Question and Answer section on CNL's website. The identity of the entity asking the questions will be protected, and the source of the question will not be attributed.

Invitation responses are to be submitted to smr@cnl.ca on or before 23:59 EDT on 2018 May 28 for the response to be assessed in the first round. Responses received after this date may be assessed upon receipt, at CNL's discretion, but will be assessed no later than the next assessment round.

Following the first intake period, this Invitation will remain open with intake periods occurring at least semi-annually, ending on January 02 and July 02 of each year. CNL reserves the right to extend submission deadlines, modify the submission schedule, and add, remove or cease submission intakes.

7. OPENING AND EVALUATION OF RESPONSES

CNL shall open and begin review of responses as they are received, and as described in Section 6 for subsequent assessment intake rounds.

8. EVALUATION CRITERIA

CNL will evaluate each response received under this Invitation based on the evaluation criteria as set out in Part 2: Evaluation Question Set of this Invitation.

Evaluation criteria for Stage 3 will be released to Proponents upon entry to that Stage.

CNL reserves the right to change the process and / or the evaluation criteria over time in response to lessons learned throughout the Invitation process.

9. COMMUNICATION WITH PROPONENTS

CNL may, at any time, discuss with any Proponent its response, to understand technical and operational issues, to refine understanding of financing criteria, to explore the Proponent's SMR Project development maturity, and address any other point of clarification that CNL may have regarding the response.

Proponents will be notified of the result of their response according to four (4) potential envisioned outcomes:

1. The Proponent is provided feedback on the response and is advanced to the next appropriate Stage.
2. The Proponent is provided feedback on the response and is invited to resubmit a response once revisions have been made or the SMR Project is further advanced.
3. A Proponent whose response does not meet mandatory minimums or pass the evaluation criteria may be rejected outright, and the Proponent will be notified.
4. Under certain circumstances, CNL may elect to put on hold the review and evaluation of one or more SMR Projects submitted within a given intake period. The selection of which SMR Projects to put on hold will be made based on the scores received through the evaluation process and the overall interests of CNL and AECL.

10. CONFLICT OF INTEREST

Proponents are required to disclose in their responses any major shareholder, partner, supplier, or funder that may have an interest in CNL's shares, such that CNL can manage any conflict of interest, real or perceived, which this may create.

11. OWNERSHIP OF MATERIALS AND CONFIDENTIALITY

Other than as set out in this section, no title or interest in the material and information prepared by or for the Proponent in connection with or in relation to the response and delivered to CNL (collectively, the "Response Materials") shall transfer to CNL. In submitting its

response, the Proponent agrees that it grants CNL an irrevocable, perpetual, royalty-free, worldwide licence to use the Response Materials for its internal use.

Any information provided in the Response Materials may be shared with AECL and the Government of Canada. Any proprietary information provided in the Response Materials will be governed by one or more Non-Disclosure Agreements (NDA). A Proponent can seek to enter into an NDA with CNL at any time by submitting a request to smr@cnl.ca. CNL may employ external subject matter experts in the evaluation process. Any such external experts will also be subject to NDAs.

12. WORK FOR PROPONENTS OUTSIDE OF THIS INVITATION

CNL will not perform any work for Proponents that requires any level of commitment from CNL or AECL to provide a site for a demonstration SMR Project on a CNL managed site prior to the successfully completed Stage 1: Pre-Qualification. CNL may perform SMR-related work on a commercial basis or in partnership with any Proponents or any other entity outside of this Invitation, provided that that work does not require a commitment from CNL or AECL to provide a site.

Examples of work that CNL may perform prior to the successful completion of Stage 1: Pre-Qualification are:

- Initial site-specific work, such as geotechnical studies;
- Assistance in developing a plan as to how to prepare an environmental assessment;
- Any R&D work in support of their concept development, design or technical basis for licensing;
- Site feasibility studies;
- Support related to the development of plans for future environmental assessment and regulatory submissions;
 - Development of plans or the review of documentation supporting the development of plans to develop an Environmental Assessment, Licence to Prepare Site and Project Description; and
 - Surveys of flora and fauna of potential sites.
- Regulatory support, such as technical support for vendor design review submission; and
- Meetings and consultations on communications requirements related to potential Proponent's regulatory expectations.

Examples of work that CNL will not perform for Proponents prior to the successfully completed Stage 1: Pre-Qualification are:

- Any SMR technology-specific engagements with any stakeholders, local communities or Indigenous communities prior to the Proponent passing pre-qualification;
- Site preparation activities;
- Development of a stakeholder engagement strategy;

- Execution of a stakeholder engagement strategy;
- Review of draft Environmental Impact Statement documents;
- Assistance with disposition of stakeholder comments and questions;
- General communications services (e.g., communications plans, draft press releases, website content, marketing materials, etc.);
- Media relations, including spokesperson advice (Proponent responsible for media inquiries);
- Representation at trade shows and conferences;
- Document coordination and translation; and
- Overall stakeholder and communications advice.

13. INVITATION COSTS AND FEES

No payment will be made by CNL, AECL or the Government of Canada for costs incurred by any Proponent (or any Person acting on behalf of a Proponent) in the preparation and submission of a response to this Invitation. Costs associated with preparing and submitting a response, as well as any costs incurred by the Proponents (or any Person acting on behalf of a Proponent) associated with the evaluation of the Proponent, are the sole responsibility of the Proponent.

There will be no fee charged for Proponents to submit a response.

Additional fees, for example, for services provided by CNL and utilities and site services provided to Proponents as well as for access to and use of the land, will be required and will be negotiated at later stages.

14. PUBLIC ANNOUNCEMENTS

At the end of each intake, CNL may make an announcement indicating how many applications were received. When a Proponent successfully passes Stage 1 and/or Stage 2, CNL may announce the following details:

- name of SMR Project Proponent,
- name of design and cooling type,
- approximate electrical and/or thermal capacity, and
- stage completed.

The public release of any further information about the responses, or public release of information prior to the successful completion of a Stage, will only be done following discussion and agreement between CNL and the Proponent. CNL will not release any such information, except to AECL and the Government of Canada as per Section 11, without the permission of the Proponent.