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Written submission from GEH SMR Technologies Canada, Ltd. (GEH SMR Canada) and GE-Hitachi Nuclear Energy America, LLC (GEH-A)

In the Matter of the

Ontario Power Generation Inc.

Applicability of the Darlington New Nuclear Project environmental assessment and plant parameter envelope to selected reactor technology

Commission Public Hearing

January 2024

Mémoire de GEH SMR Technologies Canada, Ltd. (GEH SMR Canada) et GE-Hitachi Nuclear Energy America, LLC (GEH-A)

À l'égard d'

Ontario Power Generation Inc.

Applicabilité de l'évaluation environnementale et de l'enveloppe des paramètres de la centrale à la technologie de réacteur sélectionnée pour le projet de nouvelle centrale nucléaire de Darlington

Audience publique de la Commission

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Canada

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280 Slater Street
Ottawa, Ontario K1P 5S9

Subject: CMD 2024-H-02 CNSC Hearing 1 on Applicability of the Darlington New Nuclear Project Environmental Assessment and Plant Parameter Envelope to the Selected Reactor Technology

Dear Sir/Madam,

On behalf of GEH SMR Technologies Canada, Ltd. (GEH SMR Canada) and GE-Hitachi Nuclear Energy Americas, LLC (GEH-A), I am writing to you in regards to Ontario Power Generation (OPG)'s licence application to construct a BWRX-300 small modular reactor on the Darlington New Nuclear Project (DNNP) site, which is currently before the Canadian Nuclear Safety Commission (CNSC).

GEH is a world-leading provider of advanced reactors, fuel and nuclear services. As one of the first reactor Original Equipment Manufacturers, GE has been instrumental in engineering, designing, procuring, manufacturing and constructing nuclear power plants globally, with 67 reactors licensed in 10 countries.

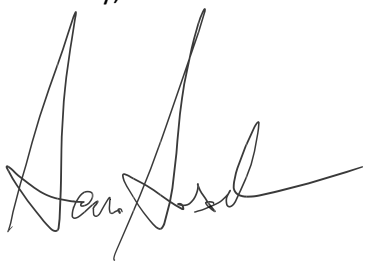
In Canada, GE has been operating as a committed local partner since 1892, and has been a pioneer in Canada's commercial nuclear energy industry since the 1950's. This includes GE's participation in a consortium that developed Canada's first nuclear plant, the Nuclear Power Demonstration unit, in 1962, followed by GE supplying fuel handling equipment for the Bruce and Darlington plants in the 1970s and 1980s, and GEH supplying, for several decades, manufactured fuel for the CANDU fleet.

GEH SMR Canada and GEH-A have reviewed the written submissions made by Canadian Nuclear Safety Commission (CNSC) staff (CMD 24-H2) and OPG (CMD 24-H2.1), and note that OPG's analyses of the BWRX-300's fit within the approved environmental assessment (EA) envelope has been thorough and independently vetted and confirmed by CNSC staff.

Given these technical analyses and reviews, GEH agrees that the existing approved EA adequately bounds the proposed undertaking for the construction of up to four BWRX-300 small modular reactor on the DNNP site. In support of this position, please find GEH SMR Canada's written submission enclosed with this letter for your consideration.

Thank you for the opportunity to participate in this proceeding. Please do not hesitate to contact me should you have any questions.

Sincerely,



Sean Sexstone
President, GEH SMR Technologies Canada, Ltd.
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WRITTEN SUBMISSION BY:

HITACHI

BEFORE THE CANADIAN NUCLEAR SAFETY COMMISSION

Applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment (EA) – HEARING 1

Reference Commission Member Document (CMD)
CMD 24-H-02

CNSC Public Hearing
Scheduled for:
January 22, 2024

A. Importance of Comprehensive and Certain Environmental Assessment Processes

1. GEH SMR Canada and GEH-A (collectively, GEH) acknowledge the importance of thorough environmental assessments in identifying, predicting and evaluating the potential environmental effects of proposed projects, before they advance to construction and development, and in providing opportunities for Indigenous Nations and communities, the public, and interested stakeholders to participate early on and inform a proponent's planning and project design. In so doing, these processes promote better project planning, and help foster sustainable development by protecting and conserving the environment, while incorporating longer-term views into project reviews to ensure benefits flow to present and future generations.

2. Concurrently, certainty in regulatory processes is also critical so that projects that are determined to be acceptable after undergoing thorough assessments can be promptly advanced. This is recognized in the Government of Canada's review that led to its enactment of the current *Impact Assessment Act*. In that review, titled "Certainty, Confidence, Competitiveness. Helping Good Projects Move Forward Sustainably", the Government of Canada acknowledged that:[1]

> Efficient, credible, and predictable assessment and decision-making processes are critical to attracting investment and maintaining the economic competitiveness of the country.
>
> Canadians want a credible process that supports timely decisions based on science and evidence, ensures good projects go ahead, and earns the confidence of Canadians and the investment community.

3. Such project certainty is particularly important where proposed projects can play a role in contributing to sustainable development. Given the current global climate change challenges – which are significantly affecting Canadians, as evidenced by the recent extreme weather events, and destructive fires over the past summer – an energy transition towards a more equitable and sustainable future is required, which must be predicated on delivering the benefits of access to modern, affordable and reliable energy services to all. The important role that nuclear energy plays to such energy transition has been noted as follows by the World Nuclear Association:[2]

> As the only proven, scalable and reliable low-carbon source of energy, nuclear power will be required to play a pivotal role if the world is to reduce its reliance on fossil fuels to address climate change and chronic air pollution.

[1] Government of Canada, Certainty, Confidence, Competitiveness. Helping Good Projects Move Forward Sustainably. Canada's New Impact Assessment System, available online: <https://www.canada.ca/en/services/environment/conservation/assessments/environmental-reviews/environmental-assessment-processes/certainty-confidence-competitiveness.html>.
[2] World Nuclear Association, Nuclear Energy and Sustainable Development, October 2022, available online: <https://world-nuclear.org/information-library/energy-and-the-environment/nuclear-energy-and-sustainable-development.aspx>.

> […] Using nuclear energy has numerous sustainability advantages relative to alternative forms of generation. By expanding its use, modern and affordable energy can be provided to all who currently lack access, whilst reducing the human impact on the natural environment, and ensuring that the world's ability to meet its other sustainable development goals is not curtailed.

4. GEH recommends that the Canadian Nuclear Safety Commission (CNSC) consider these important underlying purposes of the environmental assessment regime in considering the matter before it.

B. GEH Review of Application of DNNP EA to OPG's BWRX-300 Design

5. In the matter currently before the CNSC, an Environmental Assessment (EA) has already been approved in support of Ontario Power Generation Inc. (OPG) as operator to execute the Darlington New Nuclear Project (DNNP). That EA was issued following the completion of a comprehensive EA conducted by a Joint Review Panel (JRP) under the *Canadian Environmental Assessment Act, 1992* – a process which included a public review and comment period, two technical review sessions, requests to OPG for additional information deemed necessary by the JRP, three open house information sessions at public venues in the Project area, submissions from federal, provincial and municipal governments, Indigenous groups and other interested parties, and a 17-day public hearing in the Municipality of Clarington.

6. Significantly, the original EA was not based on use of a single particular technology for the site, but on the potential use of several different technologies.

7. Following its thorough assessment, the JRP determined that the DNNP was "… not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review and the Panel's recommendations are implemented."

8. OPG has more recently selected a reactor technology, a design which in the opinion of OPG has numerous advantages. That decision is the reason for the current process, as OPG is now required to conduct a review to confirm the continued applicability of the assumptions and conclusions of the EA to the new reactor technology – namely, the BWRX-300 small modular reactor that OPG is seeking to install at the DNNP site.

9. The conclusion as to the sufficiency of the existing EA should be based on a detailed review of the new technology against the "Plant Parameter Envelope" or PPE. The PPE is a set of data that provides an envelope of plant design and site parameter values for use in the EA process to help bound the potential environmental effects of the Project. This concept is consistent with CNSC REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, Appendix F.1. In this case, the PPE is based on the original technologies under consideration in the original EA.

10. OPG has reviewed these factors for up to four BWRX-300 units and has determined that the selected reactor technology falls within the ambit of the original PPE, with only minor mitigations.

11. In OPG's submissions, OPG concluded that the original findings in the EA remained valid. In particular, OPG consider the 198 parameters which were part of the 2009 PPE:

    a. 60 of those parameters were determined to not be applicable as they are related to equipment that will not be deployed for the BWRX-300 at DNNP. These are the result of design differences, such as the decision to use once through cooling. As noted by OPG, "Many of these have a positive impact on the Project".[3]

    b. In eight cases, the new nuclear technology falls outside of the PPE. In each of those cases, comprehensive analysis was provided to analyze whether these factors mitigated in favour of conducting a new EA. OPG concluded that "[f]or the eight (8) parameters where the BWRX-300 was determined to be outside the PPE, further assessment based on the updated parameters showed that the EIS conclusion remains valid."[4]

12. OPG's conclusions were further reviewed by CNSC Staff, who concluded as follows:[5]

> For the eight parameters outside of the bounding scenario in the EA, CNSC staff have concluded that OPG has adequately assessed the parameters, and that the mitigation measures identified in the EA are adequate to ensure there are no residual adverse environmental effects from the deployment of the BWRX-300 reactors. CNSC staff also conclude that OPG has adequately assessed changes to baseline environmental conditions for environmental components assessed in the EA.

13. GEH has considered both OPG's assessment and CNSC staff's recommendation to the Commission. After considering OPG's thorough assessment, the CNSC staff found that (i) the majority of the parameters assessed in the EIS Review either fall within the scope of the impacts assessed and accepted in the EA, or are not applicable due either to the design of the BWRX-300 reactor and/or due to OPG's approach to the design, and (ii) in those few cases where the impacts fall outside the PPE, proposed mitigation measures are sufficient. As a result, as long as the mitigation measures identified in the EA are implemented, no significant residual adverse environmental effects are likely to occur from the deployment of up to four BWRX-300 reactors at the DNNP site.

14. This conclusion, which takes into consideration new information and adopts appropriate mitigation measures, is consistent with the "adaptive management" approach recommended by the Environmental Assessment Agency of Canada in its "Technical Guidance for Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the *Canadian Environmental Assessment Act, 2012*".[6] Those involved in the original EA also had to address the uncertainty of which nuclear technologies would be adopted in the future, and did so by taking various technologies into consideration, a process flexible enough to address potential

[3] See OPG Submissions, p. 13.
[4] See OPG Submissions, p. 13.
[5] See CNSC Staff Review, p. 82.
[6] See https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/determining-project-cause-significant-environmental-effects-ceaa2012.html#toc012, at section 5, "addressing uncertainty".

changes in design. In the current process, OPG and the CNSC Staff are consistent with this process, by rigorously evaluating the current choice of nuclear technology against the PPE.

15. The BWRX-300 is a 300 MW boiling water reactor (BWR), a design that takes inspiration from previous GEH BWR designs. Importantly, the presence of differences between the BWRX-300 technology and the technologies that formed the PPE does not automatically indicate that new or different environmental impacts will occur. Rather, as confirmed by OPG through its application of a rigorous assessment processes and a well-established management system – which compared the design features of the BWRX-300 against PPE parameters, and assessed the environmental interactions and impacts of any values exceeding the PPE bounding value - the conclusions of the EIS remain valid to the BWRX-300.

C. Conclusions

16. The Canadian nuclear industry has decades of experience building, refurbishing, and operating "large-scale" nuclear, positioning it favorably to benefit from recent innovations in smaller, less expensive SMRs. OPG's leadership on the DNNP has positioned Canada to be a leader in a new and potentially massive market for small modular reactors and create hundreds of high-quality jobs, and other economic benefits.

17. While environmental assessment processes are critical to ensure projects advance in a manner that advances sustainable development, certainty is such processes is critical to be able to promptly advance these important projects so that they can play a role in mitigating the impacts of climate change. In the current review before the Commission, thorough assessments have been completed by both OPG, as the licence applicant, and by CNSC staff. Both of these entities have concluded that:

    a. the previous EA sufficiently considered the environmental effects of the new proposed reactor design;

    b. the previous EA is valid for the selected BWRX-300 technology; and
    c. there will be "… no significant residual adverse environmental effects from the deployment of up to four BWRX-300 reactors, provided the mitigation measures identified in the EA are implemented, as required by OPG's EA follow-up program".[7]

18. Accordingly, both OPG and CNSC staff concluded that no further environmental assessment should be required for the implementation of the BWRX-300 technology at the DNNP site.

19. Given that OPG's comprehensive technical analyses of the BWRX-300's fit in the EA envelope have been thoroughly and independently vetted and confirmed by CNSC staff, GEH agrees that the existing EA adequately covers the proposed undertaking, and encourages the CNSC to reach a similar conclusion. A prompt decision on this matter is critical to enable the advancement of a new important nuclear project that is likely to benefit Canadians country-wide by contributing to

[7] CNSC Staff Review, p. 81.

the necessary sustainable development required to address the current climate change impacts faced by Canadians and people across the globe.

20. GEH is confident of OPG's ability to safely execute the project activities and commitments to CNSC, as regulator, given OPG's operating experience, its performance history, its responsible environmental stewardship, and the expertise of its highly competent nuclear professionals. GEH is also proud to contribute to the profoundly beneficial impact this project is likely to have on the economies and climate goals of Ontario and Canada.

21. For these reasons, GEH is in full support of OPG's pursuit of further licensing, including the Licence to Construct and Licence to Operate, in the coming years.