



June 23, 2017

Ms. Robyn-Lynne Virtue
Panel Manager
Canadian Environmental Assessment Agency
160 Elgin Street, 22nd Floor
Ottawa, ON K1A 0H3

e-Doc: 5272027
GEN-000382

CEAA.DGR.Project-Projet.DGR.ACEE@ceaa-acee.gc.ca

SUBJECT: CNSC Technical Review of Ontario Power Generation's Response to the Canadian Environmental Assessment Agency's Information Requests on the Deep Geologic Repository Project Environmental Assessment for Low and Intermediate-Level Radioactive Waste

Dear Ms. Virtue:

On June 6, 2017, the Canadian Environmental Assessment Agency (the Agency) requested the Canadian Nuclear Safety Commission's (CNSC) technical advice regarding Ontario Power Generation's (OPG) response to the Agency's request for additional information for the proposed Deep Geologic Repository Project (DGR Project) Environmental Assessment (EA) for low- and intermediate-level radioactive waste. OPG submitted this information on May 26, 2017. This letter provides a response to this request.

Previously, the Minister of Environment and Climate Change (the Minister) requested additional information on the DGR Project Environmental Assessment on February 18, 2016. OPG submitted the requested information on December 28, 2016. Following a review of the additional information, the Agency sent 23 information requests to OPG on April 5, 2017. OPG responded to all information requests on May 26, 2017, which included a 144 page document.

CNSC staff's technical review of OPG's submission focused on the areas within the CNSC's mandate and the scope of the Minister's request. CNSC staff also reviewed OPG's submissions against the requirements of the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), the DGR Project's Environmental Impact Statement (EIS) Guidelines, the Agency's guidance documents with respect to alternative means and cumulative environmental effects (i.e., *Addressing "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act, 2012*, *Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012*), and other applicable Acts and regulations (i.e. CNSC's *Packaging and Transport of Nuclear Substances Regulations*, CNSC's *Radiation Protection Regulations*, Transport Canada's *Transportation of Dangerous Goods Regulations*).

CNSC staff have completed a technical review of OPG's submission and conclude that OPG has fully addressed all of the Agency's information requests. The additional information submitted by OPG has provided greater clarity and supporting details for the subject areas raised in the information requests. A summary of CNSC staff's technical review is provided in the table attached to this letter.



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In conclusion, CNSC staff continue to support its original conclusion to the Panel, as documented in the CNSC's Panel Member Document (PMD) 13-P1.3 and PMD 14-P1.2. That is, the proposed DGR project will not cause significant adverse environmental effects, taking into account the implementation of mitigation measures and OPG's commitments. Should a positive decision be made by the Minister on the EA, the CNSC tribunal can make a decision on licensing. If the CNSC tribunal issues a licence, as the independent nuclear regulator, CNSC staff will ensure and enforce safety over all phases of licensing the DGR project.

CNSC staff thank you for the opportunity to provide input and CNSC staff will be pleased to provide our continued support in this process.

Yours sincerely,

<Original signed by>

Caroline Ducros
Director, Environmental Assessment Division
Canadian Nuclear Safety Commission

Enclosure (1): CNSC Technical Review Comments Table, e-Doc: 5259162

c.c.: K. Glenn, C. Cianci, K. Lange (CNSC)

CNSC Technical Review of OPG IR Responses
OPG IR Responses, [e-Doc: 5260175](#)

IR #	Theme	Topic(s)	Based on CNSC Staff's review, did OPG provide sufficient information to address the IR?	CNSC Staff Review Conclusions
1.1	Regional Variability	Regional variability	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided documentation that describes in sufficient detail, the methodology used to account for regional variability and uncertainty to validate their conclusions on potential environmental effects for each valued component (VC).
1.2	Determining Significance of Effects	Use of Agency's <i>Operational Policy Statement</i> and associated terminology to determine significance	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided an updated VC analysis table (Table 6-1) in accordance with the <i>Operational Policy Statement on Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012</i> .
1.3	Assessment Methodology	Systematic approach and criteria used for comparison to arrive at a preferred location	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided a comparative analysis summary table of the alternate locations and the preferred site using the methodology in the <i>Operational Policy Statement: Addressing "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act, 2012</i> . The approach used is systematic, well-documented and traceable.

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IR #	Theme	Topic(s)	Based on CNSC Staff's review, did OPG provide sufficient information to address the IR?	CNSC Staff Review Conclusions
1.4	Technical Feasibility Criteria	Seismicity Gas pressure	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has limited both alternate locations to low and medium-low seismicity areas and updated GPS coordinates.</p> <p>With respect to the proposed DGR depth required to ensure sufficient confining overburden pressure at the alternate locations, OPG has re-stated that the proposed depth of 200m is a threshold or minimum value. The actual depth for a DGR will be considered during the detailed site characterization and subject to the repository design, waste material handling, and safety assessment.</p>
1.5	Air Quality	Acrolein GHGs Incremental works	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has described the potential environmental effects in sufficient detail that may result from increased emissions of acrolein, criteria air contaminants and greenhouse gases at the alternate locations.</p>
1.6	Surface Water	Acid generation and metal leaching	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided clear and sufficient detail regarding the factors that affect potential acid generation at each location, and mitigation measures to address potential environmental effects.</p>

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1.7	Aquatic Habitat and Biota	<p>Potential effects on thermally sensitive aquatic species</p> <p>Potential effects on floodplains</p>	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided a clear discussion and comparison of the potential environmental effects on thermally sensitive aquatic species and floodplains at the alternate locations.</p>
1.8	Radiation and Radioactivity	<p>Baseline radiation at Bruce site</p> <p>Naturally-occurring radon</p> <p>Abandoned oil and gas wells</p>	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided sufficient clarification of the factors considered in the comparative assessment of potential effects of radiation and radioactivity at the alternate locations. In addition, OPG has provided a clear analysis of the potential for impacts from radon and abandoned oil and gas wells as requested, and identified specific mitigation measures to address either of these cases if encountered.</p>
1.9	Malfunctions & Accidents	<p>Comparison among locations (<i>disruptive scenarios</i>)</p> <p>Effects during transportation</p>	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided sufficient detail concerning factors that influence the probability of disruptive scenarios occurring at each location and describes how mitigation measures could be considered from the site characterization data.</p>

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1.10	Rail Transportation	Criteria to exclude rail	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. Regardless of the mode of transport, all packaging and transportation of nuclear waste would be required to meet the CNSC's <i>Packaging and Transport of Nuclear Substances Regulations</i> (2015).
1.11	Radiological Risk to Human Health from Transportation	Applicability of information source (US DoE)	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has sufficiently justified the use of the U.S. Department of Energy's study in order to obtain a bounding estimate for transportation dose. OPG has indicated that the assumptions used in the study apply to the DGR for a bounding dose estimate.
1.12	Cost Estimate Variance	Range of variability in costs estimates	N/A	CNSC staff did not review this IR because it is not within CNSC's mandate and CNSC staff's area of expertise for this project.
1.13	Valued Components	Effects on Current Use of Lands and Resources for Traditional Purposes (CULRTP)	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided a comparative analysis of potential environmental effects on VCs related to Indigenous interests consistent with the draft technical guidance <i>Assessing the Current Use of Lands and Resources for Traditional Purposes under CEAA 2012</i> .

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1.14	Terrestrial Environment	Effects from clearing at sedimentary location Effects from fragmentation on traditional land use	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided an adequate discussion of the effects on the terrestrial environment from the site preparation phase at the alternate sedimentary location.
1.15	Indigenous Interests	Description of CULRTP at alternate locations	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided a clear and adequate description of the land and resource uses for the alternate locations from the perspective of Indigenous peoples, based on the information available to date.
2.1	Methodology for Temporal Boundaries	Overlapping timelines Air quality	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided detailed consideration of the potential for temporal overlap between the OPG DGR and a hypothetical APM DGR using the most conservative scenario (i.e. initial construction and expansion) to support their conclusion that cumulative residual adverse effects from the OPG DGR and the APM DGR are unlikely.

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2.2	Methodology for Types of Cumulative Environmental Effects	Use of Agency's technical guidance and associated terminology for types of effects	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has documented in sufficient detail, the additional cumulative effects identified in the IR (synergistic, compensatory, masking) to support their conclusion on the potential environmental interactions between the hypothetical APM DGR and OPG DGR project.
2.3	Accidents, Malfunctions and Malevolent Acts	Risk from accidents, malfunctions, and malevolent acts Effects to human health from long-term release	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has adequately discussed the potential severity and probability of occurrence for accidents, malfunctions and malevolent acts as well as the potential effects on human health from the release of radionuclides.
2.4	Radiation, Radioactivity and Groundwater Monitoring	Monitoring of radionuclides in groundwater Cumulative effects on non-human biota	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG's conclusions for cumulative effects on non-human biota from the DGR project and a hypothetical APM DGR have been adequately described. In addition, OPG has provided a clear and adequate discussion on the measures that are available for identifying and monitoring potential effects on groundwater quality from post-closure migration of radionuclides.

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2.5	Species at Risk	Effects on terrestrial SAR	Yes	<p>The Minister of ECCC is the Competent Minister for terrestrial SARs and CNSC has a memorandum of understanding with ECCC for this mutual area of interest.</p> <p>CNSC staff concludes that based on their review, no additional information is required and find that OPG has provided adequate and complete information to address this information request. OPG has provided sufficient detail about the potential for a cumulative effect loss of wetland habitat for relevant terrestrial SARA species for the case where both the OPG DGR and hypothetical APM DGR projects are located in the sedimentary rock location.</p>
2.6	Residual Cumulative Environmental Effects	Indigenous interests	Yes	<p>CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided clear and sufficient detail on the potential for cumulative effects from the OPG DGR project and a hypothetical APM DGR on VCs associated with Indigenous interests.</p>

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2.7	Cumulative Effects – Indigenous Interests	Cultural Heritage	Yes	CNSC staff conclude that no additional information is required and that OPG has provided adequate and complete information to address this information request. OPG has provided sufficient explanation to support their conclusion that the effects from the hypothetical APM DGR to aesthetics, noise and dust are not predicted to contribute cumulatively to the residual effects identified for Indigenous interests in association with the OPG DGR project.
3.1	Clarification of MIT-P-02	Building requirements for seismicity	N/A	CNSC staff did not review this IR because it is not within CNSC's mandate and CNSC staff's area of expertise for this project.