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# Written submission from the Canadian Nuclear Society

# Mémoire de la Société nucléaire canadienne

In the Matter of the

À l'égard de

**Darlington New Nuclear Project**

**Projet de nouvelle centrale nucléaire de Darlington**

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Application to renew the nuclear power reactor site preparation licence for the Darlington New Nuclear Project

Demande de renouvellement du permis de préparation de l'emplacement d'une centrale nucléaire pour le projet de nouvelle centrale nucléaire de Darlington

**Commission Public Hearing**

**Audience publique de la Commission**

**June 10, 2021**

**10 juin 2021**

Canada

# Intervention by the Canadian Nuclear Society (CNS)
# Before the Canadian Nuclear Safety Commission (CNSC)

# Application by Ontario Power Generation (OPG)
# to renew the Site Preparation License
# at the Darlington Nuclear Generating Station
# (Ref 2021-H-04)

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**Introduction**

The Canadian Nuclear Society (CNS) views with great interest the application for the renewal of Ontario Power Generation's nuclear power reactor Site Preparation Licence for the Darlington New Nuclear Project under review today during Day 2 of the hearings by the Canadian Nuclear Safety Commission (CNSC). In this short paper, the CNS will present its perspective on the importance of the Darlington NGS and the role nuclear power plays in Canada and in the Province of Ontario.

We note the following:

a) the application is for a nuclear power Site Preparation License for a future new reactor project under OPG's Darlington New Nuclear Project.
b) the license application requests a ten-year extension to the existing Site Preparation license. If granted, the extension to the Site Preparation License will allow OPG to consider and evaluate new reactor technologies, and prepare the site accordingly.

This paper will provide the perspective of the CNS on these factors.

The licensing of a nuclear facility is not an abstract activity. To operate, all regulated nuclear facilities in Canada must meet the safety performance requirements of the CNSC. However, all regulated nuclear facilities in Canada exist for important commercial, research, or energy supply reasons. This means that licensing decisions have direct research, technical and commercial consequences. It is the purpose of this paper to provide the views of the CNS on the importance of these licensing decisions.

The CNS is Canada's learned society for the nuclear industry. We are a not-for-profit organization representing professionals, scientists and other researchers, engineers and other nuclear professionals engaged in various aspects within Canada's nuclear industry. We do not represent any company or other organization within the industry. The CNS believes that the views of Canada's nuclear professionals, as embodied by its learned society, may provide useful assistance to the CNSC in its deliberations.

**Site Preparation for the Darlington New Nuclear Project (DNNP)**

In July 2019, three Canadian Provinces, New Brunswick, Ontario, and Saskatchewan, joined together to agree on a Memorandum of Understanding (MOU) for new nuclear generating technologies in Canada. These three Provinces were joined by Alberta in April, 2021. The MOU was necessitated by the fact that all four Provinces will be in need of new electricity generating facilities in the future. Though their reasons may vary, all these Provinces have older generating facilities which will likely be in need of retirement.

OPG will be considering the need to retire parts of the Pickering NGS during the current decade. Pickering started operating 1971-72 with Units 1 and 2. The final Pickering B units entered service 1983-86. Therefore by the end of the current Pickering operating license, some of the units at Pickering will have been operating more than 50 years. As the Provincial corporation supplying electricity to Ontario, OPG must consider the need for new generating facilities to replace Pickering units when they retire while considering the GHG targets set by the Canadian Government.

Part of this consideration is the concern over climate change, and Federal initiatives towards its policy of reducing carbon-dioxide emissions to meet Canada's voluntary contributions to emissions reductions under the Paris Accord. In this connection, it is important to note that the contemplated emissions reductions will likely be unattainable without non-emitting baseload power; as Canada has effectively used up its hydroelectric potential, this baseload generation can only be supplied by nuclear energy.

It is the view of the CNS, therefore, that it is prudent for OPG to renew its permit for site preparation for Darlington. For new nuclear generation, the Darlington site offers large advantages:

a) Darlington is strategically located relatively close to the main centers of Canadian nuclear engineering, research/development and manufacturing capability. Access to support services can thus be rapid should they be needed.

b) Darlington is located with a direct connection to Hydro One Ontario grid via the Wilson transformer station; Locating generation east of Toronto is highly advantageous to retain east-west balance within Ontario's transmission system.
c) Darlington has extensive emergency services for nuclear power generation technology in the unlikely event that such would be needed.
d) By providing site preparation permission at Darlington, OPG and CNSC can provide experience referenced to the advantage of other Canadian Provinces such as Alberta and Saskatchewan which do not currently have CNSC-licensed sites but will potentially be looking at licensing and operating their first nuclear power generation facilities.
e) As an existing licensed nuclear operating site, Darlington has been categorized and is well understood by both the CNSC and OPG for siting purposes of new nuclear facilities. This knowledge will be of benefit to Alberta and Saskatchewan should they choose to proceed with nuclear new builds in the future.

**Conclusions**

The CNS is therefore of the view that:

a) Nuclear power is essential to Ontario for the supply of base load electricity demand that cannot be provided without GHG emissions, economically and reliably from any other available source.
b) Electricity supplied by Darlington is an essential part of Ontario's base load electricity supply, meeting 20 per cent of Ontario's total electricity demand.
c) Considering the essential role of nuclear power in Ontario, it is prudent for OPG to retain the potential for a new build at the Darlington site through the application for an extension of its existing Site Preparation License
d) This is particularly the case in view of the foreseeable closure of the Pickering facility, and a new nuclear power facility is necessary to retain the stable, environmentally safe, reliable, and economic baseload generation nuclear power provides.
e) OPG has demonstrated in dialogue with the CNSC a strong response in emergency preparedness and in investment in equipment and personnel. This is of particular note in the event that a new build uses novel technologies.
f) OPG constitutes a strong ongoing source of high technology employment for engineers and skilled trades, providing a solid base for both Ontario industrial capacity and Ontario's academic and apprenticeship training programs.
g) Continuous performance improvement is intrinsic to OPG's nuclear operations and will be well applied to any future new build.
h) Approval of the application for renewal of the Site Preparation License for a 10-year term will provide certainty for regulators, the operator, and the public of the availability of a licensed site for operation of a new build at the Darlington site.

The Canadian Nuclear Society thus fully supports the application by Ontario Power Generation for the renewal of its Site Preparation License at the Darlington Nuclear Power Station location.