

## BACKGROUNDER: FEDERAL PANEL SUBMITS REPORT ON NUCLEAR WASTE BURIAL PLAN

On May 6, 2015, a Joint Review Panel appointed by the federal Minister of the Environment and the Canadian Nuclear Safety Commission in 2012 provided the Minister with their final report on the review of Ontario Power Generation's proposed Deep Geologic Repository for Low and Intermediate Level Radioactive Wastes. The Joint Review Panel (JRP) recommended that the federal minister approve the proposed repository, despite the expert evidence they heard throughout the public hearings about numerous technical uncertainties, and in the face of large and growing public opposition.

### Background

Ontario Power Generation is proposing to construct a series of caverns 680 metres below-surface in a band of limestone, and to transfer into those caverns 200,000 cubic metres of nuclear waste. Some of these wastes – called “low level” radioactive wastes – do not require extra barriers to shield workers from radioactivity, although they are still hazardous. Other wastes, classified as “intermediate” wastes are highly radioactive. In fact, intermediate waste is almost as radioactive as “high level waste” and as recently as 2002 was identified as Type III waste, with similar radioactivity to used fuel or irradiated nuclear fuel waste. Elements of these wastes will remain dangerously radioactive for hundreds of thousands of years, and some for even far longer than that.

### Key Issues

- Ontario Power Generation's characterization and inventory of the wastes remains incomplete
- The rate at which gas will be generated by deteriorating metal waste containers is still unknown; this is important, because these gas pressures can cause fracturing that could speed the release of radionuclides out to the biosphere
- The chemical stability of some wastes, such as ion exchange resins, is uncertain over time
- Many of the “design” decisions have not yet been made, including important features like the seal for the vertical shafts that connect the underground repository to the environment
- The only example Ontario Power Generation offered of a similar deep geologic repository for radioactive wastes, the Waste Isolation Pilot Plant in New Mexico, is no longer operating after an underground fire and loss of containment resulted in radioactive releases to the surface in 2014
- Management of the wastes through placement in the proposed DGR will cost approximately four times more than above-ground options, with current cost estimates at over \$2 billion; OPG's pattern of persistently underestimating costs for nuclear projects over the last several decades suggests that real costs are more likely to be in the \$6 to \$10 billion range
- Ontario Power Generation's proposal (2011) is for 200,000 metres<sup>3</sup> but in August 2013 Ontario Power Generation acknowledged on the public record that they intend to double the amount of waste to be placed in the proposed DGR and will seek a licence amendment after they receive a project approval based on the original volume; the final use and size of the proposed DGR remain unknown
- 154 municipalities representing more than 20 million people have passed resolutions opposing OPG's proposed waste repository; the large and growing public opposition includes many elected representatives in the U.S.
- The Project is not supported by the Saugeen Ojibway Nation; Ontario Power Generation has previously stated that it will not proceed without the support of the Saugeen Ojibway Nation.
- This project is an unacceptable risk to the world's largest fresh water supply: the Great Lakes.

Public interest interveners in the 2013-2014 hearings have issued an [Open Letter to the Government of Ontario](#), as the sole shareholder of the proponent, Ontario Power Generation, to request that Ontario Power Generation (OPG) be directed to withdraw their proposal and that the Government of Ontario initiate a needs assessment with respect to the storage and management of low, intermediate and high level radioactive wastes at OPG owned and/or operated reactors.

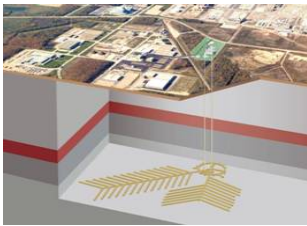
Visit [www.bruce-nuclear-waste-burial.ca](http://www.bruce-nuclear-waste-burial.ca) for additional information.

## BACKGROUNDER: OPG PROPOSAL

### Ontario Power Generation's Deep Geological Repository for Low and Intermediate Level Radioactive Waste

#### Overview

Ontario Power Generation (OPG) is proposing to construct and operate a deep geologic repository at the Bruce Nuclear site, within the Municipality of Kincardine, Ontario. Low and intermediate level radioactive wastes produced from the continued operations of the nuclear generating stations at Bruce, Pickering and Darlington would be placed in the Deep Geological Repository (DGR) at an estimated depth of 680 metres below the surface, approximately 650 metres from the eastern shore of Lake Huron. The estimated size of the surface facilities for the DGR is approximately 15 hectares while the footprint of the underground facilities is approximately 30 hectares.



The waste would consist of industrial items and used nuclear components (but not used fuel, according to statements to date by OPG) which is currently processed and stored at OPG's WWMF after being transported by truck from Pickering and Darlington to the WWMF, and by truck on-site from the Bruce reactor stations. The DGR will receive the wastes currently in storage on the Bruce site interim facilities at the Western Waste Management (WWMF) as well as that produced from the continued operation of generating stations at Bruce, Pickering and Darlington, Ontario.

Low level waste consists of industrial items that have become contaminated with low levels of radioactivity during routine clean-up and maintenance activities at nuclear generating stations. Intermediate level radioactive waste consists primarily of used nuclear reactor components, ion-exchange resins and filters used in reactor water filtration systems. The wastes are generated during the operation of nuclear reactors in Ontario, and during refurbishment of the reactors (replacement of the reactor's inner components). Shortly before a federal review hearing got underway in September 2013 OPG acknowledged that it also intended to place decommissioning wastes in the proposed DGR, a decision that would double the volume of the waste from 200,000 m<sup>3</sup> to 400,000m<sup>3</sup>. Ontario Power Generation has made a commitment to the host municipality of Kincardine that the Deep Geologic Repository will not be used to store high level nuclear fuel waste. Kincardine and other area municipalities have signed a "willing host" agreement with Ontario Power Generation which sets out a number of conditions, including payments from Ontario Power Generation to the municipalities which are dependent on statements of support for the project from the municipalities.

#### Key Issues

Key issues related to this proposal to bury nuclear waste in a limestone rock formation on the shore of Lake Huron include the eventual failure of the waste containers, the questionable ability of the "host" limestone and shale rock formations to act as a barrier to radioactive wastes migrating from the repository, the effectiveness of the seals to be placed in the shafts at time of closure, the rate of gas generation in the repository, the volume and nature of the radioactive wastes, the close proximity to Lake Huron, and local opposition.

There are several additional issues that apply to this and to other proposals to bury nuclear waste, more generally, including the effectiveness of both the engineered and geological barriers, the reliability of the computer modeling on which predictions of safety are based, and a general lack of independent peer reviewed studies.

#### Review Process

A joint federal review began in 2006. A Joint Review Panel was appointed in January 2012 and a public hearing commenced in September 2013, was adjourned in October 2013 and reconvened in September 2014. Final comments were required by October 9 2014 and the public record closed in November 2014. The Joint Review Panel provided a report with their recommendation to the federal Minister of the Environment on May 6, 2015.

Learn more about the proposed repository by visiting [www.bruce-nuclear-waste-burial.ca](http://www.bruce-nuclear-waste-burial.ca)

#### Deep Geological Repositories

Internationally, the nuclear industry has been promoting the idea of burying nuclear waste for decades. The nuclear industry's argument in favour of burying nuclear waste relies on concept of "multiple barriers", and the theory that a combination of barriers – generally a combination of packaging, packing material and rock - will contain the radioactivity for long enough to allow the radioactivity of the waste to decrease considerably. Key issues relate to the ability of the various barriers – both engineered containers and the rock formation – to effectively contain the wastes and the reliability of the computer-based predictions that the nuclear industry will use to defend its proposal. Repairing containers or retrieving failed containers of radioactive material will be difficult after the containers are placed in the underground repository, and these difficulties will increase over time and will dramatically increase if and when the waste containers begin to fail. Even low levels of exposure to radioactivity – including from wastes - can be harmful.