

Winter 2-26-2016

Waste not, want not

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Citation of this paper:

Simpson, Erika, "Waste not, want not" (2016). *Political Science Publications*. Paper 121.
<http://ir.lib.uwo.ca/politicalsciencepub/121>

Dealing with nuclear waste is so difficult that phasing out nuclear power would be the best option

Erika Simpson and Ian Fairlie, Special to PostMedia Network
Friday, February 26, 2016 4:01:21 EST PM

Environment Minister Catherine McKenna has dealt a setback to Ontario Power Generation's plan for a nuclear waste burial site on the shores of Lake Huron. In a letter to interested parties last week,

McKenna delayed a decision on whether to approve the proposed deep geologic repository (DGR) for low- and intermediate-level radioactive waste and set a short April 18 deadline for OPG to furnish a timeframe within which it could provide an updated list of commitments to mitigate potential damage from the site.

Furthermore, she stated she will seek a further extension for the review from cabinet at a later date. We are probably in for long delays.

The public hearings on the issue ended in October 2014 after many months of debate. A three-member federal panel appointed jointly by the previous government and the Canadian Nuclear Safety Commission approved the controversial project in May 2015, but now McKenna is requesting OPG provide additional information on alternative locations, cumulative environmental effects and an updated list of mitigation commitments for each identified adverse effect under the Canadian Environmental Assessment Act.

Alternative locations were not identified from the outset due in part to the surrounding communities' dependence on the Bruce nuclear plant for employment. A 21-page DGR hosting agreement between OPG and Kincardine in 2004 arranged for more than \$35 million to be paid by OPG to Kincardine and adjacent municipalities so long as they supported the licensing application.

Now that OPG must identify alternative locations, the risks is future funding for the Kincardine area could dry up, with OPG needing to entice other municipalities, assuming any can be found.

More money and some jobs would be offset by the stigma inevitably attached to radioactivity and by the risks involved, including accidents, radioactive leaks to underground water systems, and radioactive emissions to the air.

Recent accidents at nuclear waste dumps in Germany, New Mexico and France are deeply concerning. It is difficult to credibly predict cumulative environmental effects should a radioactive incident occur underground and for this reason, environmental non-governmental organizations usually insist that radioactive wastes be stored above ground in facilities where the waste can be monitored and retrieved.

According to testimony by retired OPG scientist Frank Greening and Kevin Kamps of Beyond Nuclear in the U.S. during the public hearings, the waste planned for Bruce is not heat-generating but zirconium would be mixed with it and if ignited by an intentional or unintentional spark, explosions and fires could drive

underground radioactivity into the biosphere.

Another wide concern is that if the DGR were permitted, OPG would seek a licence to expand and use it for high-level waste. This is irradiated nuclear fuel, which is heat-generating and emits high levels of radiation.

McKenna's Feb. 18 announcement also said OPG must address the cumulative impact of locating sites for all types of wastes so close together. As it is, three municipalities near Bruce have also volunteered to host Canada's high-level radioactive waste in a DGR; their applications are now deep into the consideration process.

Used nuclear fuel is currently stored above ground at Bruce, Darlington and Pickering nuclear power stations. What to do with them is a real problem for OPG and future generations.

It would be smart to take these serious nuclear headaches into account when deciding future electricity options, but successive Ontario governments have not done so yet. The Wynne government announced in January a \$9-billion project to refurbish Darlington's four Candu units and approved the continued operation of the Pickering plant to 2024.

The dangers of transporting nuclear fuel and other forms of nuclear waste to Lake Huron by boat, train or truck are also difficult to predict. OPG claims to have a perfect safety record over the last four decades in terms of transporting the waste.

The panel reported the decommissioned waste from Darlington and Pickering would need to be moved to Bruce as these reactors are phased out, probably doubling the DGR's inventory to 400,000 cubic metres.

The panel refused to address the question of whether the waste site would be expanded to take in high-level nuclear waste. McKenna now demands OPG address the issue.

If Ottawa does agree to host one large nuclear waste site, there would be enormous financial consequences. The U.S. estimated it would cost nearly \$100 billion to construct and operate a depository in Yucca Mountain and the location has been shelved. Atomic Energy of Canada Limited estimated the cost of one site in Canada would be more than \$13 billion, about the same as Canada's annual defence budget.

There are no straightforward answers. Given the dangers of radioactive waste, McKenna should invoke the precautionary principle which is enshrined in environmental laws worldwide. It states projects should not be undertaken if they might have serious adverse consequences, even if we don't know whether these consequences will happen.

The next step would be to stop making more nuclear waste. Many countries, such as Australia, Austria, Denmark, Greece, Malaysia, New Zealand and Norway, are opposed to nuclear power. Quebec as well as Germany, Italy, Spain, Sweden and Switzerland are phasing their plants out. It's time Canada joined them.

Ian Fairlie is a U.K.-based Canadian consultant on radiation risks and former scientific secretary to Britain's Committee Examining the Radiation Risks of Internal Emitters. His doctorate concerned the radiological hazards of nuclear fuel and he has studied radioactive releases at nuclear facilities since the Chernobyl

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