Arguments against the Darlington proposal for new nuclear reactors

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OVERVIEW

A public hearing has been announced for March 2011 on a proposal to build up to four new nuclear reactors at Darlington Nuclear Generating Station. The scheme is part of a plan to replace the ageing reactors at the Pickering station, which are scheduled to close by 2020.

Too often local governments and community members are fed false promises about nuclear energy by people who stand to gain from perpetuating a nuclear power industry in Ontario. For these reasons and more, Sierra Club Canada (SCC) is committed to ensuring that Ontarians get to hear both sides of the nuclear energy debate.

There is no justification to accept either the expense or the risks of nuclear technology. All it takes is the courage to stand up to the nuclear lobby.

Arguments against the Darlington Proposal

No Need

Ontario's demand for power is not growing. The idea that nuclear power is needed to quench Ontario's "thirst for energy" is a myth. Not only is the demand for power not growing, studies (1,2) have demonstrated it's possible to meet Ontario's electricity needs from existing hydro supplies, energy efficiency, renewable energy and, most exciting, tapping tremendous co-generation opportunities.

Co-generation alone is capable of greatly reducing reliance on Ontario's electricity grid, and the more co-generation that exists, whether grid connected or not, the lower the demand will be for grid electricity. And it's this lower demand for grid electricity that will allow the phasing out of Ontario's nuclear plants.

The reality is there's absolutely no reason for large, risky, expensive nuclear power plants. Nuclear energy simply isn't necessary to meet Ontario's electricity requirements.

Economics

At an estimated cost of $36 billion, the Darlington scheme is a bad deal for taxpayers. Spending on cheaper and greener initiatives, including co-generation, renewable energy

and energy efficiency, would provide a much better deal for Ontario energy users and create thousands of more sustainable jobs.

The cleanest, most reliable and least expensive source of power is not nuclear but efficiency and conservation. While nuclear costs have steadily risen over the industry's 50 year history, the costs for modern green power technologies are declining.

A dollar can only be spent once, and every dollar spent on nuclear is a dollar not available for green energy and conservation. With capital tied up in expensive nuclear projects, green energy entrepreneurs will be forced to go elsewhere.

Over the past 50 years Canadian taxpayers have subsidized the Canadian nuclear industry over $17 billion dollars!

Cost overruns on the last nuclear station built at Darlington alone were over $9 billion dollars. With a final bill of $14 billion, the station cost four times the government estimate of 3.6 Billion (3).

Debt incurred by Ontario Hydro in the operation of its nuclear power reactors amounts to over $35 billion dollars (4). It's no wonder a Harper spokesperson referred to AECL as a dysfunctional $30-billion dollar sinkhole (5). Ontarians just need to check their electricity bills — they are still paying down debt from previous nuclear fiascos.

Radioactive Emissions

Ontario's nuclear stations release massive amounts of radioactive pollutants into the air and water on a routine basis. This radioactive water gets into our food and drinking water, exposing millions of people to a known carcinogen - Tritium. Tritium is the Canadian nuclear industry's dirty little secret - it's constantly entering the environment and our bodies.

Radioactive tritium can be incorporated into our DNA – and that's where it does its damage, from close range. Tritium decays within our body, ejecting beta particles that can disrupt our genetic code. Chronic exposure to tritium can increase rates of cancer and birth defects (a developing fetus is particularly susceptible).

In our report, "Tritium on Tap" (6), using data from the Canadian Nuclear Safety Commission, we documented the rising volume of radioactive tritium being released into the environment from so-called 'normal' operation. It's telling that Canadian limits on tritium releases are much, much higher than other jurisdictions -- 70 times higher than in the European Union and 473 times higher than in California -- just in order to accommodate the flawed and dirty Candu reactors.

A note about the SCC report: Tritium on Tap. A month after the release of the 2009 report, the Darlington nuclear plant spilled roughly 300,000 litres of tritium-contaminated

water into Lake Ontario.

Nuclear Waste

To date, Darlington reactors have created over 5,000 tonnes of high level radioactive waste that must be isolated from humans and the environment for thousands of years. When reactors are dismantled, they also become radioactive trash, which too must be isolated from the environment for thousands of years.

Nuclear power production in Canada annually produces about 85,000 highly radioactive waste fuel bundles, along with 500,000 tonnes (or more) of toxic and radioactive mine tailings.

There are currently over 200 million tonnes of uranium mine tailings in Ontario and Saskatchewan! This radioactive waste remains a hazard for thousands of years and contains numerous carcinogens, such as radium, radon gas, and thorium. They're a toxic inheritance that our children and their children will need to manage in perpetuity.

Spent fuel from Canada Deuterium Uranium (CANDU) reactors also contains deadly radioactive elements. Byproducts of the fission process, these radioactive elements include including uranium, plutonium, cesium and strontium. This high-level nuclear waste will remain extremely toxic for periods far longer than recorded human history (in some cases for millions of years). Ontario already has 30,000 tonnes of such waste.

In over 50 years of nuclear power production in Canada, a permanent solution to waste disposal has not been found and, according to the Nuclear Waste Management Organization (NWMO), may not be found in the next 200 years. NWMO predicts it will cost $25 billion dollars to just manage this radioactive waste for just the next 300 years.

Accident Risk

Human error or technical failure could cause a meltdown at Darlington. Accidents do happen – one only has to look at the catastrophic incident at Chernobyl. The nuclear industry knows that the risk of major nuclear accident is real and requires a special law, the Nuclear Liability Act, to protect it financially from the liability of a catastrophic accident.

Although there has not been a major accident involving CANDU reactors, there have been numerous safety violations recorded, including leaks of contaminated water and exposure of workers to radiation.

Safe operation of a CANDU requires continual vigilance, perfectly fully functioning technology, and perfect human judgment and decision making at all times – three things that have demonstrably not occurred at Darlington and other CANDU stations.

Terrorism Risk

Nuclear power plants are attractive targets for terrorists because of the severe consequences of radioactive releases. Such an attack would have widespread and catastrophic consequences for both the environment and public health.

In 1977, just to prove the Bruce Reactor was vulnerable to terrorist attack, three activist set out in a canoe on a bright summer morning. They paddled along Lake Huron's shore to the Bruce nuclear generating station. Unimpeded, they wandered the grounds and opened an unlocked door into the radioactive-waste storage building!

Long-term storage of the spent fuel from CANDU reactors poses yet another serious security issue as these materials (which include plutonium) can be used to make 'dirty' bombs.

Nuclear power plants are also attractive targets for terrorists because of their importance to the electricity supply system. Any electricity grid fed by large centralized nuclear plants will always be vulnerable as a strategic terrorist target.

Increased energy efficiency and decentralized green energy sources are not only cheaper and more reliable, they are more resilient to terrorist attacks and safer for Ontarians!

No Help against Climate Change

At every step of nuclear power generation, large quantities of greenhouse gases are emitted. Approximately 240,000 to 366,000 tonnes of carbon dioxide are produced every year in Canada from nuclear plant construction, uranium mining, milling uranium ore, road transportation, fuel fabrication, conversion and refining activities (7).

Beyond these direct emissions, low-grade uranium mined from Saskatchewan is upgraded largely in the United States using coal fired power—the most carbon intensive energy producer.

Atomic Energy of Canada Limited – A History of Failure

AECL's incompetence is legendary and the CANDU reactor may be the worst nuclear reactor ever made. In case after case, the CANDU reactor has been beset with serious technical problems, malfunctions, egregious delays and huge cost-overruns (in the billions).

AECL's work has been repeatedly marked by incompetence. In fact, several of AECL's projects have been outright failures and abandoned. Look no further than their disastrous multi-year efforts to produce the Maple reactor (which helped create the isotope crisis). The reactors, which proved to be unsafe to operate, have been left to rust in the woods.

AECL's installation of the Pt. Lepreau reactor's 380 replacement calandria tubes, only to

be followed by its embarrassed admission that the installation of these tubes had been a “mistake” and as a result they would all need to be “removed, adjusted and reinserted”, might rightly be called a comedy of errors if it had not been so hugely time consuming, expensive and -- from the perspective of reactor safety -- so crucially important.

AECL’s promise to create a “new prototype” of an “enhanced” CANDU reactor was yet another expensive, abandoned failure.

What’s worse, the body overseeing AECL’s boondoggles, the CNSC, is not independent or impartial. In fact it is plagued by political interference. Take, for example, the case of AECL’s National Research Universal reactor at Chalk River. It too has been beset with a litany of problems over the years. In May 2009 when CNSC learned of serious technical difficulties at the NRU reactor -- which led to a leak of heavy water into the Ottawa River -- CNSC President Linda Keen ordered the reactor shut down. For her diligence she was fired and humiliated by the Harper government.

In conclusion, the one thing AECL can be relied on for is failure. The Canadian nuclear power industry is a failed industrial policy which must end.

References:

[1] **http://torriesmith.com/downloads/kblo.pdf**

[2] **http://www.sierraclub.ca/national/postings/new-energy-directions.pdf**

[3] **http://v1.theglobeandmail.com/servlet/story/RTGAM.20080616.wontnuke0616/...**

[4] **http://www.cnp.ca/resources/nuclear-subsidies-at-50.pdf**

[5] **http://www.thestar.com/News/Canada/article/649629**

[6] **http:/www.sierraclub.ca/national/tritium_report.shtml**

[7] **http://pubs.pembina.org/reports/Nuclear_web.pdf**