



**Written submission from
Borden Rhodes**

**Mémoire de
Borden Rhodes**

In the Matter of

À l'égard de

**Ontario Power Generation Inc.,
Pickering Nuclear Generating Station**

**Ontario Power Generation Inc.,
centrale nucléaire de Pickering**

Request for a ten-year renewal of its Nuclear
Power Reactor Operating Licence for the
Pickering Nuclear Generating Station

Demande de renouvellement, pour une période
de dix ans, de son permis d'exploitation d'un
réacteur nucléaire de puissance à la centrale
nucléaire de Pickering

Commission Public Hearing – Part 2

**Audience publique de la Commission –
Partie 2**

June 2018

Juin 2018

I am Borden Rhodes. My friends, family and I live in downtown Toronto. My training is in accounting and business, not science, so I cannot comment upon nuclear physics intelligently. I can, however, draw upon my business training to present my concerns with the continuation of the Pickering nuclear power plant.

I have commented on the Darlington refurbishment hearings in previous years. I understand that the public's considerable concern and opposition to that plant got largely ignored and the request approved without much amendment. I am concerned if the CNSC cares at all about the general public and its safety. I hope the CNSC will ultimately prove my fears unfounded.

To reiterate my concerns about the proposed refurbishment of the power station, I refer again to the statements made by Mr. Ivan Ciuciura, who was the director of emergency management for Durham region, during the hearings about the Darlington power station.

In those hearings, he said that the emergency plan for a major incident at Darlington was hope that major media stations would, through their own means and within fifteen minutes of the incident, pick up the story and broadcast it. I cite this from page 68 of the transcript of the 5 December 2012 hearing. It is expected that all residents at the time of this incident, even if it is at 4:15 AM on a Wednesday morning, will be watching CP24, listening to the radio, checking their Twitter status or refreshing the Region of Durham website to learn that they need to evacuate.

For people who irresponsibly do not spend their waking and sleeping hours keeping abreast urgent safety announcements, like me, they will have to hope that they can hear one of the emergency sirens placed in a 3 km area surrounding the plant alerting them of imminent danger. These people will also have to recognise that this is the general nuclear emergency alarm siren, which, according to page 67, they did not know in 2012.

According to page 62, the plan is for residents to orderly and calmly drive or literally walk away from Darlington. Friendly police officers will be available in major intersections to help direct traffic to safety. Within five hours, according to page 61, everybody will be at least 10 km away from Darlington and, therefore, completely away from any possible danger.

I'm not sure how I'm expected to take this emergency plan seriously, and I hope I will be forgiven for not wanting to rely upon it. To Mr. Ciuciura's credit, he admits on page 59 that this is not so much a plan but a 'good process in place' to help emergency management 'problem-solve'. However, I am concerned that this plan is modelled after the daily Toronto rush hour traffic which Mr. Ciuciura defined on page 60 as an 'emergency evacuation'.

In perusing the general risk attitude during the Darlington hearings, the CNSC's attitude, to quote them, assessed the risk of a catastrophic incident at Darlington, and presumably Pickering, as "of such low probability that it should not be included in the review of plausible environmental impacts of any nuclear power project." Of course, this is not actually a plan to handle an improbable, albeit major, disaster, but rather ignoring. This reminds me of a well-known story in finance of how two Nobel Prize winners in economics nearly triggered a credit crisis on the scale of the 2008 credit collapse.

In 1994, four high-profile bond traders, five MIT business professors and two Nobel Prize behind the stock options pricing model formed Long-Term Capital Management (LTCM). They hired brilliant mathematicians, economists and computer scientists to capitalise on differences between the intrinsic value and the market price for high-grade bonds.

LTCM invested mostly in government bonds that are almost risk-free because the issuing country can always print money or raise taxes to cover the interest payments. Because the risk in these bonds is so small, the difference between their market price and intrinsic value is tiny. To amplify these differences into reasonable returns for investors, the fund borrowed \$25 for each dollar invested into the fund.

The important part of this story is that these bonds were almost risk-free. The fund managers never planned for a bond default because the probability of it happening was, to use the CNSC's phrasing, "of such low probability that it should not be included in the review of plausible impacts". The fund quadrupled its investors' wealth in its first four years.

However, in 1998, Russia defaulted on its bonds rather than devalue its currency or tax its citizens to cover the interest. As a result, not only did LTCM lose their investor's dollar, but its creditors rushed the fund for the additional \$25 that they lent. The US Federal Reserve had to intervene to structure a \$3.6 billion bailout with 16 major banks to keep the western financial system from collapsing.

This story emphasises that, even with the best minds working with the best mathematical models, you simply cannot ignore improbable risk. I do not believe that the Pickering power plant is adequately safe because the emergency plans simply do not address the consequences of a major, even if improbable, incident.

There is additionally the issue of nuclear waste, which to my understanding remains extraordinary dangerous to most life for upwards of 20,000 years. I remind the CNSC that very few governments have survived a few centuries. Almost no societies have survived for more than a few thousand years. Accordingly, what the nuclear industry has effectively done is irresponsibly burden the next thousand generations for the sake of profit and convenience today.

That brings me to my last points. The Economist magazine has written extensively about the economic infeasibility of nuclear power.

According to its analysis, the nuclear industry only survives through incredible subsidies and preferential government treatment. The magazine considers it an inefficient economic waste.

It is also not necessary for reducing our carbon footprint and moving towards a sustainable energy supply. Germany has demonstrated that a low-carbon future is possible without nuclear power. They plan to eliminate nuclear power from their energy mix by 2022. Although they still derive 40% of their power from coal, the dirtiest known mass energy source, the carbon output per average German is 40% lower than the average Canadian's – a difference which has grown every year as Germany's carbon output decreases whilst Canada's increases. The difference can be explained through an aggressive expansion in renewable energy that, whilst full of challenges, has been generally successful and more cost effective than nuclear energy.

Accordingly, I oppose continuing the life of the Pickering nuclear facility primarily on safety grounds and the appalling short-sightedness of safety and waste management plans. Further, it has been shown and demonstrated that nuclear is neither necessary nor sufficient to meet climate change targets.

Sincerely,

Borden Rhodes