

## **What is Greenpeace's primary concern with the Green Energy Act?**

The Green Energy Act could be a Trojan horse for the government's nuclear agenda.

Despite being promoted as a tool to develop green energy, the draft Green Energy Act contains a clause that would empower the Minister of Energy to direct the Ontario Power Authority to build new nuclear reactors without any public review by the Ontario Energy Board.

Such a power, if used, would undermine the stated intent of the act to promote and expand the development of green energy by robbing renewable energy of the financial support and space on the electricity grid it needs to grow.

## **How is this a change from current government policy?**

Under current government, policy the Ontario Energy Board (OEB) is mandated to review the economic "prudence" and need for new nuclear stations.

The OEB hearings are the only public forum remaining for the public to examine alternatives to the McGuinty government's nuclear plans.

## **Is there a reason to be concerned about the cost of building new nuclear stations?**

Yes. Ontarians are still paying off Ontario Hydro's \$31 billion in debt, largely created by building the first generation of reactors.

The government's estimates for building additional reactors are highly suspect. In 2005, the McGuinty government estimated the cost of building a 2000 megawatt (MW) reactor at \$5.8 billion. In 2008, Moody's Investment Service estimated the cost to be \$15 billion.

Every dollar spent on nuclear or on nuclear debt is a dollar not spent on renewable energy.

## **Does the McGuinty government have a history of trying to avoid public review of its nuclear electricity plan?**

Yes. In 2006, the government re-wrote Ontario's environmental assessment regulations to exempt its electricity plan from an environmental assessment.

The McGuinty government stated publicly that federal environmental assessments on individual nuclear projects would be adequate and that it had no responsibility to subject those projects to provincial environmental assessments or participate in federal reviews.

Documents acquired by Greenpeace through freedom of information, however, reveal that the McGuinty government decided against participating in federal environmental assessments to specifically avoid those reviews being expanded to include an assessment of possible alternatives to nuclear.

## **How else has the government tried to avoid public scrutiny of its nuclear plants?**

In 2005, the Ontario Power Authority (OPA) tried to undermine nuclear safety reviews by asking the federal nuclear regulator to ignore its modern nuclear safety standards and instead apply outdated and flawed nuclear safety standards from the 1970s.

The OPA and the nuclear industry lobby thought they could build reactors much more quickly if they could avoid proper and modern nuclear safety reviews. The OPA and the nuclear lobby thought new reactors could be built quickly enough to replace ageing reactors in 2014, if review standards were compromised.

Fortunately, Linda Keen, then president of the CNSC, rejected the idea of skipping necessary safety reviews. She told then OPA president Jan Carr and Ontario Energy Board (OEB) Chairman Howard Weston that "grandfathering" licensing would not be permitted. Linda Keen was later fired by the Harper government.

## **Does Greenpeace support the government's Green Energy Act?**

Yes, but with serious reservations. The government's proposed Green Energy Act provides the right vehicle for building a renewable-based electricity system in Ontario.

## **What should the government do?**

First, the government must amend the Green Energy Act (Section 5(1)) to prevent it from being used to enable the construction of nuclear reactors.

Second, the government should remove its cap on renewable energy created by the commitment to maintaining nuclear capacity at 50 per cent. This could start with a commitment to replace the Pickering reactors with green energy when they go offline in 2014.

Third, the government should defer any decision on new reactors until the OEB has been able to complete its hearing on the OPA's Integrated Power System Plan and consider the economic prudence of more reactors in comparison to all of the competing options.

## **How else could the Green Energy Act be improved?**

The act can be improved by clarifying that it only relates to conservation, renewable and high-efficiency Combined Heat and Power (CHP) projects.

The clause allowing the Minister to build nuclear stations without the approval of the Ontario Energy Board must be removed.

## **How is the government's commitment to maintaining nuclear capacity at 50 per cent electricity generation blocking the development of green energy?**

Green energy can't grow in Ontario unless it is given space on our transmission system.

The McGuinty government's decision to allocate 50 per cent of generation to the nuclear industry robs green energy of the opportunity to grow to levels in other jurisdictions.

## **How could the McGuinty government expand green energy?**

The best opportunity to "get more green" into Ontario's electricity supply mix is to allow green energy to replace ageing nuclear reactors, starting with the Pickering reactors, when they reach the end of their operational lives.

## **Can green energy replace Pickering B?**

Easily. Pickering "B" reactors provide only 2000 megawatts (MW) of power to Ontario's electricity grid. Germany builds the equivalent in wind energy in less than three years.

Wind energy could replace the reactors in less than half the time it would take to build nuclear and at lower cost.

A report by the Pembina Institute—and endorsed by Greenpeace and all of Canada's major environmental organizations—shows that Pickering B, in fact all Ontario's nuclear stations – can be replaced by cleaner, cheaper green alternatives.

See: [renewableisdoable.ca](http://renewableisdoable.ca)

## **Wouldn't replacing Pickering with new nuclear plants replace help with climate change?**

No. New nuclear plants would be too late and too expensive to replace Pickering and help with climate change.

International scientists tell us there is an urgent need to stabilize the world's greenhouse gas emissions by 2015 and then to cut them significantly.

New nuclear plants to replace Pickering won't be online until at least 2020 while Pickering reactors are supposed to start shutting down in 2014.

New nuclear plants are also too expensive. The cost of building new reactors has more than doubled since 2005.

## **How could replacing Pickering with new reactors increase nuclear accident risks or greenhouse gas emissions?**

The nuclear risk will go up because the Ontario Power Authority (OPA) is considering running the ageing reactors well beyond the safe date for shut down. Their problem is that the Pickering B reactors should be shut down by 2014 but they can't replace them before 2020.

Greenhouse gas emissions would increase if the OPA did have to shut down the reactors and rely on electricity from coal plants or natural gas plants to make up the gap in electricity.

Operating the Pickering reactors past their shut down date would drive up the rate of risk of nuclear accidents. The Pickering reactors are entering the most dangerous stage of their operational lives. They will be more prone to unplanned shutdowns and to increased risk of accidents. Operating these reactors longer increases this risk.

The best option, proposed by the Pembina Institute and supported by Greenpeace, is to build quick-to-deploy green energy and conservation sources. They could be in place by the time the ageing Pickering reactors should be shut down.

See: [renewableisdoable.ca](http://renewableisdoable.ca)

### **How could replacing Pickering with new reactors increase greenhouse gas emissions?**

The ageing Pickering “B” reactors should be shut down in 2014. Replacement reactors wouldn’t be online until at least 2020. One option in Ontario’s electricity plan for filling the electricity gap caused by closing Pickering is to increase fossil generation and that means increasing greenhouse gas emissions.

Greenpeace supports a plan proposed by the Pembina Institute that would see quicker-to-deploy green energy and conservation sourced phased in to replace the Pickering reactors at the end of their operational life.

See: [renewableisdoable.ca](http://renewableisdoable.ca)

### **Why is Greenpeace particularly concerned by safety of the Pickering Nuclear Station?**

2.5 million people live within 30 km of the Pickering reactors, including downtown Toronto.

The Pickering nuclear reactors have serious design flaws, and they are due to be shut down from old age. So Pickering is arguably Canada’s most dangerous nuclear station.

Pickering is closer than any other nuclear station in the world to a major population centre. Because of the high population density, regulatory authorities would not allow a new plant to be built at Pickering today.

When the Chernobyl reactor exploded 350,000 people had to be evacuated from a 30 km radius.

### **What are Pickering’s design flaws?**

Pickering has two significant design flaws that increase the risk of accidents.

First, Pickering is the only nuclear station in the world that allows multiple reactors to share important safety systems – the Emergency Coolant Injection System and the containment system, which are intended to control the release of radioactivity in the case of an accident.

Second, the CANDU design of the Pickering nuclear station shares an inherent design flaw with the Chernobyl-style RBMK reactor design called “the positive void coefficient,” which can lead to an explosive pulse of power. That’s what contributed the Chernobyl accident.

### **Why do shared safety systems at the Pickering nuclear station increase accident risks?**

Currently, there are six operating reactors at the Pickering nuclear station – two at the older Pickering “A” station and four at the Pickering “B” station.

Because of Pickering’s shared safety systems, however, there is reduced redundancy, meaning that more than one accident happening at the same time could have catastrophic consequences.

### **What is the “positive void coefficient”?**

The positive void effect was an important contributor to the 1986 Chernobyl accident.

A positive void effect refers to the rapid increase in reactor power that occurs when voids form in the coolant used to remove heat from the reactor core. The increase in reactor power makes it difficult to control the reactor and that increases the chance of an explosion and release of radioactivity.

CANDU reactors –like those at the Pickering nuclear station – share this inherent design flaw with the Chernobyl RBMK reactor design.

### **Why is the age of the Pickering nuclear station a concern?**

The Pickering nuclear station is the oldest nuclear station in Canada.

Given the complexity of a nuclear plant, the impacts of ageing are not well understood and often only become apparent after component failures.

The four reactors at the Pickering “A” nuclear station went into service starting in 1971. Two of the Pickering “A” reactors were recently restarted while two have been permanently shut down.

The four Pickering “B” reactors went into service starting in 1983. Ontario Power Generation (OPG) says the four Pickering “B” will reach the end of their operational life in 2014.

### **Why is the location of Pickering a concern?**

There are over 2.5 million people within 30 km of the Pickering nuclear station.

Regulatory authorities would not allow a new plant to be built at Pickering today because of the high population density nearby.

A Chernobyl-scale accident at the Pickering Nuclear Station would have a devastating impact on the health and environment of Southern Ontario and demolish the economy of Canada’s largest city, Toronto.