



NUCLEAR POWER IN ALBERTA'S OIL SANDS

Position

Due to the serious environmental and economic risks of nuclear energy, AWA believes that nuclear power development is not consistent with the maintenance of wilderness or with healthy, economically diverse, and sustainable human communities. Safer, cheaper, and more reliable options should be pursued for the development of Alberta's oil sands.

Points of Emphasis

- Nuclear power is associated with severe environmental impacts.
- *Waste:* Each stage of the production process generates large amounts of radioactive and otherwise hazardous wastes. No proven solution exists for dealing with these wastes, which in some cases will require care and monitoring, no matter how deeply buried, for hundreds of thousands of years.
- *Water:* Nuclear power generation (e.g., uranium mines and mills) pollutes surface and groundwater with radioactive and hazardous pollutants. Most nuclear reactors require large amounts of cooling water and are generally located near rivers, lakes or oceans.
- *Air:* Significant releases of hazardous air pollutants, some causing acid rain, occur throughout the process of mining and producing uranium fuel for nuclear power stations.
- *Greenhouse Gases:* Contrary to the claims of nuclear proponents, greenhouse gases, particularly carbon dioxide, are produced at each stage of the nuclear energy cycle, including during construction of reactors; operation of uranium mining equipment; milling of uranium ore; mill tailings management activities; refining and conversion operations; transportation of uranium between milling; refining and conversion facilities; and transportation of radioactive wastes. Uranium mining is one of the most CO₂ intensive industrial operations and as demand for uranium grows because of new electricity generation and new plant construction, CO₂ levels will also rise.
- *Cost:* Costs may be enormous. Nuclear power could not survive in a competitive energy market without huge taxpayer subsidies to cover research and development, waste disposal, reactor decommissioning, and accident liability. Twenty billion dollars in "stranded" debt, mostly left behind by Ontario Hydro's perpetually overbudget and underperforming nuclear plants, are being paid for by Ontario taxpayers. Economic damages from a major accident at the Darlington, Ont., nuclear plant east of Toronto would be in the range of \$1 trillion. Nuclear power is not subject to "stable" fuel prices: the world price for uranium has risen by a factor of more than six over the past five years. Energy Probe estimates that 12 percent of Canada's national debt is due to nuclear subsidies. The cost of protection against the threat of terrorist attack on nuclear facilities would also be considerable.
- *Safety:* Although proponents claim that the chance of a nuclear accident is extremely low, if such an event did occur, few would dispute the fact that the damage to both human lives and the environment on which we depend would be colossal. Furthermore, the UN





Intergovernmental Panel on Climate Change argues that if nuclear power were to be used extensively to tackle climate change, “The security threat ... would be colossal.” Since much of Alberta’s oil sands’ product is shipped to the U.S., Alberta could become an obvious target for terrorist attacks on nuclear reactors. The magnitude of a terrorist attack on a nuclear reactor site could cost several thousand deaths and tens of billions of dollars.

Waste disposal presents an enormous safety challenge. With respect to burial of nuclear waste under the ground, under the seabed, or in polar ice, nuclear engineering experts say that no solid experiments or theories confirm the predictions that casks can survive without corrosive penetration for 10,000 years, let alone several hundred thousand years. Geologists remind us that the stability of rock for millions of years does not guarantee its future stability. Shifting bedrock could cause an underground nuclear disaster. Global climate change could increase polar ice melting, causing the release of radioactive hazardous materials into the environment. Furthermore, recent evidence indicates that the rate of underground migration of some of the most dangerous constituents of nuclear waste, such as plutonium and americium, is much faster than anticipated.

The risks of outer space disposal include the possibility of an accident during launch and the potential for the scattering of radioactive waste. These risks are too great for this to be an acceptable option. Furthermore, establishing international agreements on the operation and regulation of such a program would be extremely difficult.

- *Reliability:* The Ontario CANDU reactor fleet has been subject to severe performance problems. Some Ontario facilities have had average operating capacities below 40 per cent. Eight of Ontario’s 20 reactors were shut down for safety reasons from 1998 to 2005. Reactors expected to have operational lifetimes in the range of 40 years have required major refurbishments after approximately 25 years of service.
- *Alternatives:* Safer, cheaper and more reliable options for energy development are being developed, including fuels derived from the gasification of petroleum coke wastes already produced by the oilsands and geothermal energy sources. These cheaper, cleaner, more reliable options should be Alberta’s focus.

Background

The Canadian Association of Petroleum Producers estimate that production from Alberta’s oil sands will hit at least 3.5 million barrels per day by 2015. However, it is highly likely that production will be constrained by limited supplies and/or high prices of natural gas, which is currently the most available and cheapest fuel for production of bitumen.

To resolve the problem of dwindling reserves of natural gas, oil sands producers are considering the option of constructing nuclear power plants in northern Alberta. Domestic and French companies are promoting this option in Alberta. The House of Commons Standing Committee on





Natural Resources estimates that the oil sands will need 20 large nuclear reactors, or 120 small ones, by 2015 to meet its energy requirements.

Energy Alberta Corp. (EAC) has a two-year exclusive deal with Atomic Energy Corporation Ltd (AECL) to sell the the concept of nuclear power to oil companies. By early 2008, the two companies hope to file an application with the EUB for a permit to construct nuclear power plants. EAC hopes to begin construction in 2011 and bring the first nuclear power plant fully in line by 2016 at a cost of \$5.5 billion. AECL receives several hundred million dollars a year in federal subsidies. In the last two decades, that has added up to about \$17 billion.

Canada's Natural Resources Minister Gary Lunn stated in January 2007 that he likes the idea of nuclear power for the oil sands. Chief Executive Clive Mather of Shell Canada Ltd. told Reuters in January 2007 that nuclear energy could offer a price advantage over time. Shell is a major oil sands operator.

AREVA, a nuclear group controlled by the government of France, is also targeting potential customers in Alberta. AREVA owns large chunks of the full nuclear cycle, from uranium mining through reactor construction to handling waste.

