



CA9800015

NEW DIRECTIONS IN NUCLEAR WASTE DISPOSAL IN ONTARIO HYDRO

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Ontario Hydro Nuclear has financial, environmental, safety and public acceptance business objectives which must be met to achieve long term sustainable success. Short term objectives of achieving nuclear excellence in safety, cost and production are vital to this success. Ontario Hydro's nuclear waste and decommissioning liabilities must be managed within these objectives. This paper outlines the financial environmental and societal considerations and responsibility framework for managing these liabilities.

Financial

The financial liabilities for nuclear waste and decommissioning are substantial. Ontario Hydro estimates it will cost 16B\$ to place all its used fuel into dry storage, to dispose of used fuel material underground, to store, process and dispose of operational low and intermediate wastes and to decommission its nuclear stations.

To meet these financial obligations, Ontario Hydro has been proactively collecting funds since 1982. Over 1.5B\$ has been collected so far. To meet the financial obligations of storing, processing, transporting and disposing of wastes and decommissioning of reactors costs Ontario Hydro 0.17 cents/kw hr. This represents about 12% of variable costs of producing nuclear energy or 4% of our total costs.

Environmental

Environmentally acceptable and safe methods and technologies exist for managing wastes. Ontario Hydro storage systems have an excellent safety record. Low level waste disposal has been implemented internationally. There is a growing international consensus that deep geological disposal of used fuel can be carried out in an environmentally safe way.

Societal

Public acceptance of nuclear is closely linked to management of wastes. Station communities accept storage of used fuel and L&IL wastes but there is an expectation that progress is made towards disposal. Social acceptability of disposal in the potential host communities will be key to the success of managing wastes and the long term sustainability of nuclear power.

Used Fuel Disposal

AECL have completed an R&D program spanning 17 years on the concept for deep disposal of used fuel in the Canadian Shield. The total cost on this program has been 700M\$, and has mainly been funded by the Federal Government. An environmental review is now underway by a federal panel. The panel will make recommendations to government on the acceptability of the concept and on how to proceed on used fuel management in the future. In preparation for this hearing the Ontario Hydro Board of Directors approved a strategy for disposal of used fuel. Ontario Hydro's overall view is:

- o storage systems are safe and could be relied upon for very long periods of time;
- o there should be a forward proving program on disposal with staged decision making;
- o the focus should be on finding a socially and technically acceptable site with cautious investment in R&D until one is found;
- o as an owner of 90% of used fuel, Ontario Hydro will take the lead in implementing disposal, utilizing AECL as a technological resource. Ontario Hydro will incorporate the needs of Hydro Quebec and New Brunswick Power.

Ontario Hydros' views on responsibilities stem from three principles:

- o Those who created the waste are responsible for its safe management, including finding acceptable solutions for storage and eventual isolation and disposal.
- o Government is responsible for independent regulation including defining and ensuring due process is followed.
- o Waste producers and governments are accountable to society and for involving stakeholders in finding acceptable solutions, and in defining acceptable regulation and process.

This division of responsibilities is important for a number of reasons:

1. Regulation must be completely independent of waste ownership, the more independent the better. This is essential in developing trust in the system. It avoids real and perceived conflict of interest and minimizes concerns related to trust in the system.
2. Government must not become the owner of used fuel. This could happen if the government is made responsible for disposal and could result in a burden on taxpayers, it would be a conflict of interest with the regulatory role, and raise significant concerns about efficiency of management.
3. Storage, isolation and disposal requires management on an integrated system basis. The options range from perpetual on-site storage, centralized storage above or below ground, and eventual disposal. The selection of the preferred option is strongly influenced by societal needs which may change over time. In 1978 when AECL started their R&D program, the best option was considered to be geological disposal in the

Canadian Shield. The Federal Panel is now assessing acceptability of the AECL proposal and charting a course for the future. Over the timeframes associated with managing used fuel societies views on acceptability may change.

4. Ontario Hydro's objective is to manage used fuel in a safe, environmentally, socially and financially acceptable way. The needs of regulator, government, public, customers and affected communities must be met. The affected communities include: generating station communities for on site storage; transportation communities; host communities for disposal. The eventual solution must systematically balance and satisfy the needs of all affected communities.
5. Experience in other countries has been problematic where the government have taken the role of regulator and responsibility for disposal, particularly in the U.S. Significantly better results have occurred in Sweden where the utilities are responsible for all phases of waste management including disposal.