

## **Plan for the Long-Term Management of Canada's Used Nuclear Fuel**

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### **CHECK AGAINST DELIVERY**

An important part of the nuclear fuel cycle is the long-term management of used nuclear fuel that arises as a by-product of electricity generation. This submission addresses Canada's progress in the development of these plans.

#### **Initiation of Canadian Nuclear Fuel Waste Management Program**

Work on used fuel disposal in Canada was initiated in the 1980s after the 1978 Ontario Royal Commission on Electric Power Planning recommended that nuclear capacity be capped pending progress on nuclear waste disposal. This led to the governments of Ontario and Canada establishing the Canadian Nuclear Fuel Waste Management Program where AECL was assigned responsibility for developing geological disposal.

In 1989, in response to public concern about siting a repository, the concept of geological disposal was referred to a Federal Environmental Panel, and a moratorium was placed on siting activity pending this review.

#### **Seaborn Report and *Nuclear Fuel Waste Act***

The Federal Panel (known as the Seaborn Panel) conducted a comprehensive review of AECL's disposal concept. In its 1998 report, the Panel said that the technical safety of geologic disposal had been demonstrated at the conceptual level, but public support had not been demonstrated, and there was insufficient social acceptability to proceed.

The Panel made 52 recommendations that were largely translated into the 2002 *Nuclear Fuel Waste Act* – a new framework of accountability.

#### **Interim Storage of Used Fuel**

Used fuel has continued to accumulate, and Canada now has 2 million bundles or 30,000 tonnes of used fuel in safe, interim storage, principally in Ontario where the majority of nuclear energy is produced. This volume is equivalent to six hockey rinks filled to the boards.

Nuclear power plant operators generally have adequate future capacity for decades to come, and with care and maintenance, the storage containers can safely store used fuel for 100 years.

## **Progress Since 2002**

In accordance with the requirements of the *Nuclear Fuel Waste Act*, significant progress has been made since 2002.

- The Nuclear Waste Management Organization (NWMO) was formed by Ontario Power Generation, Hydro-Québec and New Brunswick Power with a mission to collaboratively develop and implement a socially acceptable, technically sound, environmentally responsible and economically feasible plan for Canada's used nuclear fuel.
- An Advisory Council, chaired by the Hon. David Crombie, was formed by the NWMO.
- Trust and segregated funds have been established by the used fuel owners, and the accumulated balances of these funds now exceed \$5 billion.
- The NWMO study of alternative storage and disposal options was completed and submitted to the Government of Canada in 2005, along with a recommendation. Following a Government decision in 2007 to accept the NWMO recommendation, the NWMO published an Implementation Plan in 2008.

## **NWMO Study of Alternatives (2002-2005)**

Significant efforts were made by the NWMO studies to address societal aspects of nuclear fuel management.

- 18,000 Canadians including 2,500 Aboriginal people were engaged, and contributions were received from 500 experts.
- 120 information and discussion sessions were held across all provinces and territories.

Not surprisingly, there was a wide diversity of views. However, there was common ground:

- Safety and security is top priority.
- This generation must take action now to manage the waste we created.
- We must take advantage of best international practice.
- The approach must be adaptable to allow for changes in technology and societal priorities.

## **Adaptive Phased Management**

The NWMO's recommendation for Adaptive Phased Management (APM) emerged as the approach that would best meet the priorities and values of Canadians. This is the plan approved by the Government of Canada in 2007.

APM is both a technical method and management system.

The technical method is isolation in a deep geological formation where used fuel can be monitored, and retrieved if necessary. This method is aligned with international practice where almost all countries with major nuclear programs have made the national decision for a deep geologic repository.

Equally important is how we get there. This is specifically tailored to Canadian values and priorities, and requires:

- Flexibility in the pace and manner of implementation and responsiveness to new developments and traditional Aboriginal knowledge.
- Openness, transparency and staged decision-making with the involvement of Canadians at every step of the way.
- The facility to be located in an informed and willing host community with a focus for siting on four provinces that are part of the nuclear fuel cycle.

### **Federally Mandated National Infrastructure Project**

The Government of Canada accepted the NWMO's recommendation in June 2007, and the NWMO is now responsible for implementing a national infrastructure project that will involve an investment of \$16 billion by the owners of used fuel. It will be a high-technology project with skilled employment for hundreds over many decades and will operate as a centre of expertise for international collaboration. It will involve a long-term partnership between the NWMO and the host community, and it will foster community well-being. It will be highly regulated, with strict scientific and technical criteria to ensure safety.

### **Adaptive Phased Management Implementation Plan**

In 2008, the NWMO published an implementation plan after public consultation. The plan involves:

- Building long-term relationships with interested Canadians.
- Further developing repository design and safety cases.
- Collaboratively defining and implementing a process for site selection.
- Developing a formula for trust funds to ensure that those that benefit from nuclear energy pay for the long-term cost.
- Continuing research into alternative technical methods and societal expectations to ensure our plans adapt as necessary.
- Continuously improving the NWMO's governance structure and organizational capability.

## **Building Relationships and Involving Canadians in Decision-Making**

Building relationships and involving interested Canadians in decision-making is a fundamental part of the NWMO's plan. The NWMO very much sees itself as working on behalf of Canadians to implement APM, and that it can only succeed by maintaining a social licence to proceed. Several mechanisms have been established to achieve this in a systematic way, including:

- A forum of Municipal Associations from nuclear provinces and frequent dialogues with reactor site communities.
- A forum of Aboriginal Elders from across Canada and projects with several Aboriginal groups.
- A network of Citizen Panels representing a cross-section of socially active Canadians, and multi-party dialogues where interested parties such as industry, Aboriginal people, special interest groups and labour are brought together.
- Ongoing Provincial and Federal Government briefings.

These mechanisms are used on a frequent basis to seek input on implementation plans, and more recently, on plans for site selection.

## **Collaborative Design of Process for Site Selection**

Probably the most challenging task is the selection of a site for the used fuel repository. In the fall of 2008, using the mechanisms described, the NWMO held public dialogues that focused on the principles for site selection. We translated what we heard into a draft site selection process document that was published in May 2009. The final stages of extensive dialogues using those same mechanisms are now being completed. Provided there is sufficient consensus, site selection could be started as early as next year.

The draft siting document contains a nine-step process of social, safety and environmental assessment and evaluation criteria; embodies the concept that a community chooses to participate and has the right to withdraw; commits to a partnership approach and provides for the inclusion of surrounding communities and Aboriginal people; and defines the role of independent third-party reviews.

## **What We have Heard about the Draft Site Selection Process**

Canadians have provided very helpful views, including the need for Provincial Government support and recognition of the contribution that the eventual host community will be making. There is support for the proposed broad definition of community that includes the wider region and for third-party independent review to be accessible to communities. There is also a view that the NWMO's social licence to proceed will be strengthened if we focus on fuel from existing reactors.



NUCLEAR WASTE MANAGEMENT ORGANIZATION  
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

## Summary

Canada, together with international partners, has the technology for the safe, long-term isolation in a geological formation.

Canada has the benefit of a strong government policy and legislative framework to support progress.

Trust funds and mechanisms are in place to ensure that financial burdens will not be passed on to future generations.

As a result of successive reviews, extensive dialogue and a government decision over the past 25 years, the NWMO now has a mandate that is consistent with the expectations of Canadians who expect to see action taken.

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