

**ENERGY PROBE
RESEARCH FOUNDATION**

**CROSS-EXAMINATION
MATERIALS**

OPG PANEL 8

nwmo

NUCLEAR WASTE
MANAGEMENT
ORGANIZATION

SOCIÉTÉ DE GESTION
DES DÉCHETS
NUCLÉAIRES

Moving Forward Together

Annual Report 2009



ATTACHMENT 1

Financial Guarantee Status – NWMO Members

ONTARIO POWER GENERATION INC.

Effective July 31, 2003, OPG provided the Canadian Nuclear Safety Commission (CNSC) with a *Decommissioning Financial Guarantee* that included a guarantee associated with the long-term management of used fuel arising from the operation of OPG-owned nuclear stations and waste management facilities, including those leased by Bruce Power. The *Decommissioning Financial Guarantee* also covers liabilities associated with long-term management of low and intermediate level waste, as well as plant decommissioning.

Development and maintenance of the Financial Guarantee considers the following points:

- » The Financial Guarantee covers the liability based on projected waste arising to year end in any given year. As a result, the value of the used fuel Financial Guarantee changes annually to recognize the incremental cost associated with additional used fuel generated during that year.
- » The initial Financial Guarantee submission covered the five-year period to year end 2007. It was updated annually by means of an Annual Report provided to the CNSC.
- » The Financial Guarantee is satisfied in part by the actual accumulation of funds within both a Used Fuel Fund and a Decommissioning Fund under the *Ontario Nuclear Funds Agreement (ONFA)* between OPG and the Province of Ontario. This value is supplemented by a Provincial Guarantee which is executed between the Province of Ontario and the CNSC.
- » The *NFWA* Trust Fund forms part of the Used Fuel Fund under *ONFA*.

The *Provincial Guarantee Agreement* provides an unconditional and irrevocable guarantee to supplement monies set aside by OPG in segregated funds including the *NFWA* Trust Fund to satisfy the total Financial Guarantee required by the CNSC.

OPG submitted documents to the CNSC in 2007 to support its application to update the Financial Guarantee for the period from January 1, 2008, to year end 2012. The CNSC Hearing for this application was held in November 2007. The CNSC accepted the Financial Guarantee proposal on November 29, 2007.

The Annual Report to the CNSC for year 2010 shows a Financial Guarantee requirement of \$11.337 billion. This will be satisfied by a segregated fund balance at year end 2009 of \$10.246 billion and a Provincial Guarantee of \$1.545 billion. The Provincial Guarantee value has been accepted by the CNSC at a fixed amount that will cover all remaining years until 2012.

The value of the Ontario Power Generation *Nuclear Fuel Waste Act* Trust Fund as of year end 2009 is \$1.693 billion. This value forms part of the segregated fund balance shown above.



Stakeholder Consultation Meetings:
Ontario Power Generation
Regulated Facilities Payment Amounts

Held on
November 2, 2007
and
November 8, 2007

Prepared by
Elenchus Research Associates Inc.

Revised Meeting Notes
January 2, 2008



- The capital structure and ROE reflect the regulatory environment and OPG's responsibility for waste management costs.
14. OPG is fully responsible for nuclear decommissioning and waste management costs. If the actual costs differ from the forecast that is included in the value of the nuclear fixed assets and recovered through depreciation and return on rate base, ratepayers are not responsible for the difference. (Note that O.Reg. 53/05 provides for a deferral account related to changes in OPG's nuclear decommissioning and waste management liabilities resulting from changes to the approved reference plan as defined in the Ontario Nuclear Funds Agreement.)
15. At OPG's inception on April 1, 1999, the assets and liabilities acquired by the company were established at fair value. The fixed asset values were recorded based on discounted cash flows. Since the fixed assets were valued in total, separate fixed asset amounts were not established for costs for nuclear decommissioning and waste management. Subsequent to April 1, 1999, OPG separately identifies the impact on fixed assets of any changes in the nuclear liabilities.

2.4 DESIGN OF PAYMENT AMOUNTS: HYDROELECTRIC (KEN LACIVITA)

Ken Lacivita (Director, Trading and Origination) explained the proposed design of the hydroelectric payment amounts. His presentation (Design of Payment Amounts: Hydroelectric) addressed four issues:

- How the regulated assets operate within the market
- Basis for a hydroelectric incentive mechanism
- Existing hydroelectric incentive mechanism
- Proposed hydroelectric incentive mechanism

Ken elaborated on the following points in response to stakeholder questions:

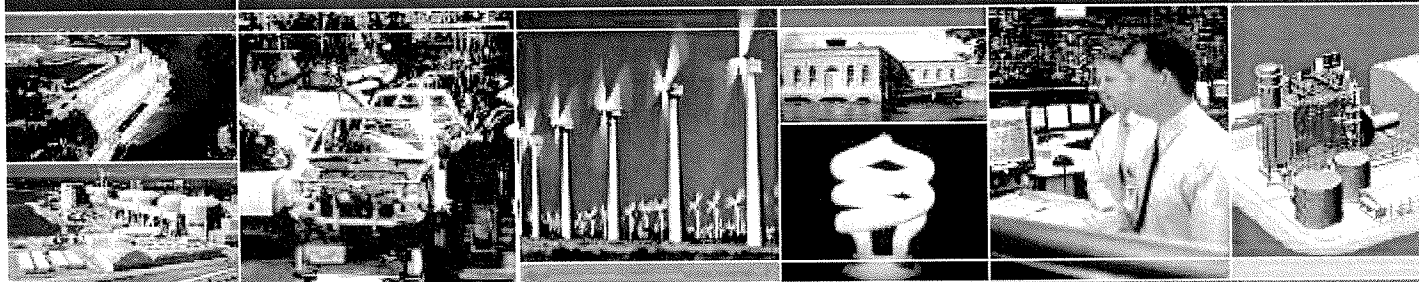
1. Under the proposed incentive mechanism, the peak and off-peak hours are not predefined. In general, the peak demand period is from roughly 7 a.m. to 11 p.m. on week days. These hours typically have the greatest value (highest HOEP). The incentive mechanism is driven by the differential between high-priced hours and low-priced hours, whenever they occur. Typically this implies shifting production away from nighttime hours (11 p.m. to 7 a.m.) to daytime/evening hours (7 a.m. to 11 p.m.). However, price does not always move in strict adherence to the typical on-peak/off-peak periods due to factors other than demand that affect the market price.
2. Slide #9 illustrates the basis of the incentive. If OPG does not shift production and instead produces a flat level of production from its regulated hydroelectric facilities, it will receive the basic payment amount approved by the OEB. When OPG shifts production from low priced hours (shown in yellow on Slide #9) to high priced hours, it must "notionally purchase" the shortfall in production (equal to the difference between the monthly average production and the production in that 5 minute interval) in the low-value hour at the market price. OPG would then receive payment

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ONTARIO POWER AUTHORITY

Supply Mix Background Reports

Volume 3 – December 2005



Supply Mix Background Reports

Volume 3 – December 2005

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3.7 Provision for Managing Decommissioned Nuclear Generation and Spent Nuclear Fuel

The purpose of this paper is to introduce the background for the current status of managing decommissioned nuclear generation and spent nuclear fuel. In doing so, it summarizes the legal environment, financial provisions required of nuclear operators, related activities in other countries and the role of the Nuclear Waste Management Organization (NWMO) and its recent recommendations. These considerations will have implications for the supply mix advice as it relates to Ontario's existing nuclear and any new nuclear facilities.

3.7.1 Key Findings

- *Federal Nuclear Fuel Waste Act, 2002*, (NWFA) established Nuclear Waste Management Organization (NWMO) to propose approaches for the management of nuclear fuel waste and implementing the approach that is selected and approved; commercial nuclear reactor owners support NWMO through regulated contributions other support
- NWMO issued a report in November 2005 on the alternative methods of long-term management in "Choosing a Way Forward – The Future Management of Canada's Used Nuclear Fuel"
- NWMO has assessed three technical options specified by the Nuclear Waste Management Organization (NWFA) – Deep Geological Disposal; Storage at Nuclear Reactor Sites and Centralized Storage – and added Adaptive Phased Management
- NWMO did not review appropriate role for nuclear power as part of this process
- Adaptive Phased Management was the recommended alternative – incorporation of social concerns was a strong driver in reaching this conclusion
- Canadian Nuclear Safety Commission (CNSC) was established in 2000 under the *Nuclear Safety and Control Act* to regulate operation, use and management of nuclear materials
- In 2005, CNSC issued a draft regulatory guide specifying that all nuclear facilities must have in place a decommissioning plan that conforms with detailed specifications
- Financial provisions respecting Ontario nuclear liability are contained in a consolidated guarantee to CNSC in the areas of decommissioning of Ontario nuclear facilities, nuclear waste management and a provincial guarantee for remaining costs. The total value of the guarantee to CNSC is \$4.5 billion
- *Nuclear Liability Act* sets out required insurance, provision for risks covered by the operators, their insurance companies and the federal government
- Other countries are following somewhat similar paths in their methods of dealing with wastes, although the specifics of each country vary somewhat

- In November 2005, the NWMO recommended to the federal government, addition of the Adaptive Phased Management approach, which provides for deep, underground containment with the opportunity for retrievability at a future time

3.7.2 Introduction

This section of the report summarizes the following:

- Legal environment behind the safety of the Canadian nuclear industry, and more particularly, the Ontario nuclear industry, including the issues surrounding decommissioning and waste fuel management for nuclear generating facilities
- Financial provisions required of owners of nuclear power stations, and the current state of these provisions
- Status of similar activities in other countries and
- Activities of the NMWO, its mandate, and the results of its work to the fall of 2005

3.7.3 Financial and Economic Issues

3.7.3.1 Laws and Financial/Economic Factors

Historical Background

In 1978 the governments of Canada and Ontario directed Atomic Energy of Canada Limited (AECL) to develop the concept of deep geological disposal of nuclear fuel wastes. A subsequent joint statement in 1981 established that the selection of such a site would not begin until after full federal public hearings and approval of the concept by both governments. In 1998, an Environmental Assessment Panel was established to review the concept and a broad range of nuclear fuel waste management issues in a public process.

The panel estimated the facility cost for deep disposal to be \$8.7 billion to \$13.3 billion in 1991 dollars. After public consultations and much other study, the panel issued its report in February, 1998. The panel concluded that:

- Broad public support is necessary in Canada to ensure acceptability of a concept for managing nuclear fuel wastes.
- Safety is a key part, but only one part, of acceptability. Safety must be viewed from two complementary perspectives: technical and social.

The panel continued on to define safety and acceptability criteria, including requiring the support of Aboriginal people and comparison with other alternatives. After applying the criteria to the deep disposal concept, the panel arrived at two key conclusions:

- "From a technical perspective, safety of the AECL concept has been on balance adequately demonstrated for a conceptual stage of development, but from a social perspective, it has not.
- As it stands, the AECL concept for deep geological disposal has not been demonstrated to have broad public support. The concept in its current form does not have the required level of acceptability to be adopted as Canada's approach for managing nuclear fuel wastes."

The panel went on to make a number of key recommendations, including: creating a nuclear fuel waste management agency at arms length from the utilities and AECL, with arrangements for its funding by the producers and owners of nuclear fuel waste; developing a comprehensive public participation plan; developing an ethical and social assessment framework; and, developing and comparing options for managing nuclear fuel wastes. Other recommendations added support and specifics to these recommendations.

The Nuclear Fuel Waste Act

Subsequently, the Canadian parliament approved the NFWA in June 2002, and it came into force November 15, 2002.

This act establishes the organization as the NWMO. It also outlines NWMO's objectives, funding, accountability and oversight and reporting requirements. The NWMO is established as a non-profit organization with the purpose of:

- Proposing to the government of Canada approaches for the management of nuclear fuel waste; and
- Implementing the selected and approved approach.

The Act also defines the involved "nuclear energy corporations" to be Ontario Power Generation (OPG), Hydro-Quebec (HQ), New Brunswick Power Corporation, and any other body that owns nuclear fuel waste resulting from the production of electricity by means of a commercial nuclear reactor. This includes successors or assignees of these corporations. It also includes any assignee of AECL.

The purpose of the act is to permit the government to make a decision on the management of nuclear fuel waste. Nuclear fuel waste is defined as irradiated fuel bundles removed from a commercial or research nuclear fission reactor.

Nuclear Issues

3.7

Each of the named corporations is required to become and remain a member or shareholder of NWMO. NWMO is required to offer, at a cost reasonable in terms of its costs, management of nuclear fuel wastes to its members and to all owners of nuclear fuel waste produced in Canada that are neither members nor shareholders of NWMO.

NWMO is required to create an Advisory Council to examine the study as it proceeds and report to the federal Minister of Natural Resources on a triennial basis. The members of the Advisory Council are expected collectively to have the following attributes: a broad range of scientific and technical disciplines related to the management of nuclear fuel waste; experience in nuclear energy matters, in public affairs, and as needed in other social sciences; expertise in traditional aboriginal knowledge; and inclusiveness of representatives nominated by affected local and regional governments and aboriginal organizations.

NWMO is financed through a strictly regulated financing structure which requires each of the nuclear energy corporations and AECL to maintain a trust fund in Canada. In the case of the nuclear energy corporations, the funds are to be held by a financial institution. All records relating to the trust funds must be maintained in Canada.

The initial funding of the trust fund was as follows:

- Ontario Power Generation Inc. - \$100,000,000
- Hydro-Quebec - \$4,000,000
- New Brunswick Power Corporation - \$4,000,000
- AECL - \$2,000,000

These contributions were established to be paid annually, subject to annual revision when the Minister subsequently approved the amount of deposit at a different level. There are severe penalties in the event that the corporations fail to contribute to the funds as required and the detailed status of the funds is subject to auditing by independent auditors. Only the NWMO may withdraw monies from the fund and then only on a restricted basis.

Within three years of the Act, (coming into force in Nov. 2002), the NWMO was required to submit a report to the Minister setting out:

- Proposed approaches for the management of nuclear fuel waste, together with the comments of the Advisory Council.
- A recommendation as to which approaches should be adopted.

The Act requires that each of the following methods must be the basis of at least one approach:

- Deep geological disposal in the Canadian Shield, per the previous study.
- Storage at nuclear reactor sites; and
- Centralized storage, either above or below ground.