nwmo

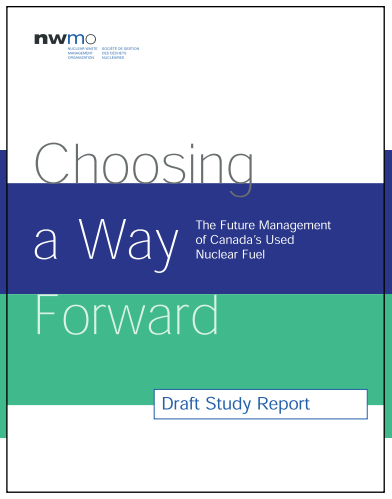
NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

August 2005

Summary Report

Dialogue on *Choosing a Way Forward* The NWMO Draft Study Report June/July 2005

Stratos



NWMO Background Papers

NWMO has commissioned a series of background papers which present concepts and contextual information about the state of our knowledge on important topics related to the management of radioactive waste. The intent of these background papers is to provide input to defining possible approaches for the long-term management of used nuclear fuel and to contribute to an informed dialogue with the public and other stakeholders. The papers currently available are posted on NWMO's web site. Additional papers may be commissioned.

The topics of the background papers can be classified under the following broad headings:

1. **Guiding Concepts** – describe key concepts which can help guide an informed dialogue with the public and other stakeholders on the topic of radioactive waste management. They include perspectives on risk, security, the precautionary approach, adaptive management, traditional knowledge and sustainable development.

2. **Social and Ethical Dimensions** - provide perspectives on the social and ethical dimensions of radioactive waste management. They include background papers prepared for roundtable discussions.

3. **Health and Safety** – provide information on the status of relevant research, technologies, standards and procedures to reduce radiation and security risk associated with radioactive waste management.

4. **Science and Environment** – provide information on the current status of relevant research on ecosystem processes and environmental management issues. They include descriptions of the current efforts, as well as the status of research into our understanding of the biosphere and geosphere.

5. **Economic Factors** - provide insight into the economic factors and financial requirements for the long-term management of used nuclear fuel.

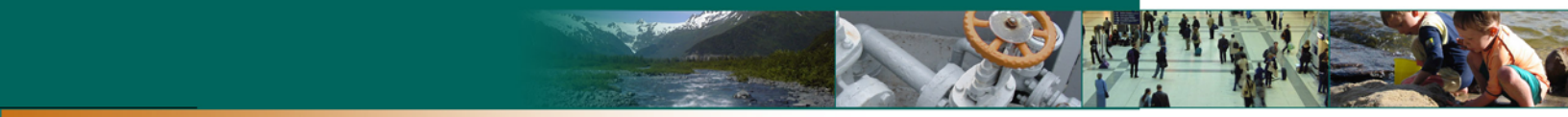
6. **Technical Methods** - provide general descriptions of the three methods for the longterm management of used nuclear fuel as defined in the NFWA, as well as other possible methods and related system requirements.

7. **Institutions and Governance** - outline the current relevant legal, administrative and institutional requirements that may be applicable to the long-term management of spent nuclear fuel in Canada, including legislation, regulations, guidelines, protocols, directives, policies and procedures of various jurisdictions.

8. **Workshop Reports** - provide information on the outputs and outcomes of some NWMO engagement activities including discussions and expert workshops.

9. **Assessments** - provides perspectives on the advantages and limitations of the management approaches under study.

Disclaimer
This report does not necessarily reflect the views or position of the Nuclear Waste Management Organization, its directors, officers, employees and agents (the "NWMO") and unless otherwise specifically stated, is made available to the public by the NWMO for information only. The contents of this report reflect the views of the author(s) who are solely responsible for the text and its conclusions as well as the accuracy of any data used in its creation. The NWMO does not make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information disclosed, or represent that the use of any information would not infringe privately owned rights. Any reference to a specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or preference by NWMO.



Dialogue on *Choosing A Way Forward*

The NWMO Draft Study Report

June / July 2005

SUMMARY REPORT

August 8, 2005

Stratos
strategies to sustainability

Intentional blank page

DIALOGUE ON

CHOOSING A WAY FORWARD
THE NWMO *DRAFT STUDY REPORT*

– SUMMARY REPORT –

June / July, 2005

Submitted to:

Nuclear Waste Management Organization

August 8, 2005

Prepared by:

Stratos Inc.
1404-1 Nicholas Street
Ottawa, Ontario
K1N 7B7
tel: 613 241 1001
fax: 613 241 4758
www.stratos-sts.com

Stratos
strategies to sustainability

OUR VISION

A world where decision makers at all levels integrate sustainability into their actions to improve ecological and human well-being.

OUR MISSION

To provide business, governments and organizations with expert advice, information, and tools that will assist the development and implementation of more sustainable policies and practices.

We encourage you to print on recycled paper.
Stratos uses 100% post-consumer content recycled paper.

Table of Contents

Executive Summary

Background and Objectives – The Nuclear Waste Management Organization (NWMO) hosted a series of six dialogue sessions in six cities across five provinces (Manitoba, Saskatchewan, New Brunswick, Québec, and Ontario) during the period of June 22 to July 20, 2005. The objectives of the dialogue sessions were to:

- Provide opportunities for participants to comment on the draft NWMO recommendation and *Draft Study Report*;
- Provide for an exchange of views; and
- Provide the NWMO with the opportunity to improve the recommendation before it is finalized.

Each of the provinces chosen, with the exception of Manitoba, corresponded to the provinces that have direct involvement in the nuclear fuel cycle. Manitoba was included in response to a request for a dialogue in Pinawa, due to its long-standing involvement with the Atomic Energy of Canada Limited Whiteshell Laboratories and the Underground Research Laboratory located near that community. Participants were invited to the session on the basis of their prior involvement with NWMO activities and research and their expressed interest in the NWMO's work. A total of 169 participants attended the sessions.

The session agenda included presentations by the NWMO on elements of its *Draft Study Report,* followed by periods of discussion in plenary and breakout group sessions. Focus questions were used to solicit participant views on key aspects of the NWMO draft recommendation and on the conditions required to successfully implement it. Session reports were prepared for each of the dialogue sessions and have been posted on the NWMO website (www.nwmo.ca).

This Summary Report provides a synthesis of the key messages that were expressed by dialogue participants. To the extent possible, the Summary Report, as well as the session-specific reports, has been written to reflect the common ground as well as the range of views expressed.

General Views on the NWMO and Its Approach to Engagement and Dialogue – Dialogue participants expressed wide-spread support for the approach taken by NWMO in the development of its *Draft Study Report* and recommendation and complimented the NWMO on its engagement activities undertaken. More specifically, many participants stated that NWMO had been open and transparent in its work, and that they felt that they had been listened to during the earlier dialogue and engagement activities. Participants especially noted NWMO's efforts and support towards meaningful dialogue with Aboriginal communities.

Participants strongly encouraged the NWMO to continue the dialogue and engagement process it has begun with Canadians as part of its study process, with a particular emphasis on Canadian youth and Aboriginal peoples, as it moves to implementation of any approach selected by government.

A small number of participants disagreed, suggesting that the NWMO's engagement process should have gone beyond its legislated mandate and specifically invited discussion of the role of nuclear energy in Canada's energy generation mix. A few stated that the NWMO dialogue process should have been more like an environmental assessment, including formal hearings in front of a panel.

General Views on *Draft Study Report* - Most participants offered general support for the *Draft Study Report* itself, noting that the report was balanced, informative, comprehensive, and fair. More specifically, participants commended the report for its:

- Clarity of analysis;
- Degree of detail and supporting information;
- Balance of technical and social considerations;
- Its objectivity and the degree to which it has balanced the need for a timely decision with the need to recommend the most appropriate and lasting solution;
- Its attention to ethical and long-term social considerations; and
- Tone (directional and not prescriptive) and fairness in accurately conveying the range of opinions that exists on many of the key issues related to used nuclear fuel.

While offering general support for the *Draft Study Report*, several participants expressed concerns with the Report's neutrality of the issue of nuclear power generation. On the one hand, a number of participants thought that the *Draft Study Report* was too narrowly focussed and that NWMO should comment on the future of nuclear power in Canada and the future production of used nuclear fuel, despite these issues being outside of the NWMO's legislated mandate. Some argued that Canada should not make a decision on the long term management of used nuclear fuel before completion of a national debate on the future of nuclear energy. Other participants faulted the *Draft Study Report* for not communicating explicit support for continued nuclear generation.

Views on the Appropriateness and Key Characteristics of the Recommendation - A large majority of Dialogue Session participants expressed comfort with the recommendation as a whole. These participants supported the NWMO's identification and recommendation of a "Fourth Option," noting that it combines the strengths of each of the three options required for study under the *Nuclear Fuel Waste Act.*

Only a few participants expressly disagreed with the nature of the NWMO recommendation, arguing in support of Option 2 (continued surface storage at nuclear reactor sites) or Option 3 (centralized storage, either above or below ground) as described in the *Nuclear Fuel Waste Act*, for the most part as further interim solutions

pending a debate on nuclear energy. Regardless of their views on the different aspects of the NWMO recommendation, however, participants generally agreed that long-term management of used nuclear fuel is an issue that needs to be addressed now.

A small number of participants noted that they did not see material difference between the NWMO's draft recommendation, identified as Option 4 (Adaptive Phased Management), and Option 1 (Deep Geological Disposal in the Canadian Shield) as identified for study in the *Nuclear Fuel Waste Act*.

Several participants at each Dialogue Session expressed concern that the illustrative implementation timelines in the *Draft Study Report* were too long. These participants thought that the schedule should be accelerated, wherever possible and argued that enough was known already about the technology for a deep geologic repository for used nuclear fuel to proceed immediately. Other participants expressed divergent views, however, arguing that the illustrative timelines were either "pragmatic", or that it is impossible to pre-judge the time needed to achieve informed consent by a willing host community and Aboriginal peoples.

Centralized Containment and Isolation in Appropriate Geologic Formations - A large majority of participants supported the aspect of the NWMO recommendation on the centralized deep geologic containment and isolation of used nuclear fuel. These participants felt that this aspect of the recommendation:

- Is known to be technically sound, as concluded by AECL and the Seaborn Panel;
- Provides for institutional control through centralized storage;
- Allows for protection of human populations and the environment by providing storage at depth, multiple barriers, and chemical isolation;
- Is most cost-effective option;
- Provides the greatest levels of security in both the medium and very long time periods;
- should not be technically difficult because Canada has large areas of suitable geologic formations; and
- best addresses the public's primary concerns related to safety and security of present and future generations.

Some participants who supported this aspect of the recommendation stressed that their support was contingent on finding a technically appropriate site within a willing host community. Other participants noted that they supported the recommendation only insofar as it addresses only the used nuclear fuel arising from existing Canadian nuclear rectors.

A few of participants raised issues with respect to which areas of Canada the NWMO has identified as geologically appropriate. Some participants expressed concern with the inclusion of Ordovician sedimentary rocks as a geologically appropriate formation on the basis that it may not have been sufficiently researched. A few participants indicated that

it would not be appropriate to include Saskatchewan among the jurisdictions targeted for initial siting activities, because the Province had received few net benefits from the nuclear fuel cycle to date. Although Manitoba has not been identified as a focus of siting, a few called on the NWMO to explicitly acknowledge that the *Manitoba High-level Radioactive Waste Act* places restrictions on the provision of facilities for the storage and/or disposal of used nuclear fuel in Manitoba.

Support for this aspect of the recommendation was not universal, however. A few participants favoured surface storage, at existing reactor sites, primarily as a means of limiting the transportation of used nuclear fuel and keeping the waste accessible and readily in view.

Phased Decision Making / Adaptive Management - A large majority of participants also expressed general comfort with this aspect of the recommendation, noting that it was appropriate to take decisions in a staged, adaptive manner. Participants supporting this key aspect of the recommendation often attached a proviso that phased decision-making and adaptive management not lead to a protracted decision-making process that risked not being completed.

A few participants expressed disagreement with this aspect of the recommendation, feeling that the deep repository technology is well in hand and preferring fixed milestones for implementation of the management approach for used nuclear fuel.

Interim Shallow Storage - Participants offered very mixed views about this aspect of the recommendation which calls for the provision for interim shallow underground storage of used fuel at the central site while awaiting the development of the deep geologic repository. Many participants called on the NWMO to clarify the rationale and justification for this provision. A minority of participants objected to the provision outright, arguing that centralized interim shallow underground storage was unnecessary and could work against the NWMO's long-term goals with respect to the security and environmental integrity in managing the used nuclear fuel. Some other participants commented that the optional interim step of shallow underground storage was prudent since it would allow for more time for citizens to understand the issues and develop confidence in the approach before proceeding, as well as allowing for more time to explore new waste management technologies and/or uses for the fuel.

Provision for Retrievability - Most participants supported this aspect of the recommendation which allows for retrievability of the used nuclear fuel from the deep geologic repository, noting that: (i) the used fuel must be accessible if monitoring indicates that problems exist; (ii) used nuclear fuel is a potential energy resource for future generations; and that (iii) future technologies could emerge to better manage the used fuel.

Some participants indicated, however, that they did not support the provision for retrievability because of its perceived cost. Others objected to retrievability for security reasons and because they opposed the reprocessing of used nuclear fuel which would be involved in any reuse of the material.

Continuous Monitoring - Participants' support for the NWMO recommendation for continuous monitoring of the used nuclear fuel over extended periods of time was nearly universal. Given the importance that many place on maintaining the ability to monitor the used fuel over time,several participants commented that the NWMO needs to elaborate on the nature and extent of monitoring envisioned in the final study report.

Participant Views on the Conditions Required to Implement the Approach Successfully - Participants at the Dialogue Sessions generally identified five key implementation issues as important to appropriate implementation of any management approach selected:

1. Participant Views on Citizen Engagement - Participants placed high importance on sustained citizen engagement and public education, noting that that these will be crucial to build public confidence and support in implementing the NWMO recommendation, and to allow informed decision-making by communities. Many participants encouraged NWMO to, as much as possible, include in its report how it intends to continue the process it has begun with its study process through to the implementation of the management approach itself.

2. Participant Views on Governance – Governance of the NWMO and related decision-making processes were issues of major importance to many participants. Participants suggested that the final study report include recommendations on the roles that will be played by various groups in decision-making, such as:

- Citizens in potential host communities;
- Local governments;
- Aboriginal peoples;
- Cottage associations;
- Business associations;
- Communities on transportation routes;
- Citizens of broader regional administrative bodies or districts; and
- Citizens of the broader province under consideration.

Several participants were concerned about decision making processes at the federal and provincial levels following a government decision on an approach and called on the NWMO to provide more clarity on the decision-making process following the submission of the recommendation to the Minister of Natural Resources Canada.

Many participants were critical of the current composition of the NWMO Board of Directors. Several noted that sound corporate governance principles include the need for independent directors and recommended that the NWMO Board comprise a majority of independent directors.

Aboriginal peoples' representatives to the Dialogue Sessions called on the NWMO to make recommendations with respect to Aboriginal participation in NWMO governance processes. Several participants also raised the importance of including the chosen host community in the NWMO Board governance structures.

3. Participant Views on Siting - Participants offered very strong support for NWMO's recommendation of siting the deep geological repository only in a willing host community.,with the caveat that any willing host community must also be proven to be technically appropriate. A small number of participants argued that NWMO will be unable to identify a willing host community and suggested, in part for this reason, that the waste stay at the existing reactor sites and/or that NWMO explore creating a new purpose-built (and therefore willing) community around a suitable geologic location on Crown lands. Participants widely called on NWMO to provide sufficient time and resources to build the capacities for potential host communities to make informed decisions. Among the key issues of concern to participants were how the boundaries of the "willing host communities" would be defined, and how the "willingness" of the community would be measured.

Participants stressed the importance of initiating siting-related activities without delay, following government decision on an approach. One of the first tasks recommended for NWMO attention was the development of a clear, transparent, and agreed set of criteria for assessing the suitability of potential sites. Participants advised the NWMO to look carefully at lessons learned from past siting exercises involving hazardous waste and low-level nuclear waste.

4. Participant Views on Financing - Dialogue Session participants supported NWMO's approach of making conservative cost estimates, so that the availability of funds will not unduly influence future choices with respect to the most appropriate management approach for used nuclear fuel in Canada. Participants acknowledged the financial surety provisions that have been established as a result of the 2002 *Nuclear Fuel Waste Act*, but noted that much needs to be done in order for the public to have confidence that sufficient resources will be available for full implementation of the approach. Participants were especially concerned about the availability of sufficient financing to allow for complete implementation of the recommendation, over very long time periods, should the nuclear utilities not prove sustainable over the longer term, should a future government decide to use the monies in the trust funds for other purposes, or should the funds set aside not fully cover the implementation costs. Participants

made numerous suggestions on how their confidence in financial surety might be strengthened.

5. Participant Views on Research and Intellectual Capability - Participants at four of the six Dialogue Sessions placed particular importance on issues related to research and intellectual capacity, recognizing that implementation of the NWMO recommendation will require knowledge and expertise be available over a very extended period, and therefore a significant and ongoing investment in both the natural and social sciences. Participants also noted their concern that the institutional memory and capacities of the nuclear workforce are eroding, many knowledgeable individuals have left the industry and/or are about to retire and there are few new entrants. Participants offered several suggestions for implementation of an appropriate research and intellectual capability development program to support the proposed recommendation.

Regional Issues and Variations – The range and nature of messages heard were similar across the six dialogue sessions. Each session did, however, involve some discussion and exploration of issues uniquely relevant to the region. related to different experience with the nuclear fuel cycle and the legacy issues arising from those experiences. For instance, lessons learned from uranium mining conditioned the comments of some Saskatoon participants, lessons learned from the siting process for low-level nuclear waste conditioned the comments of some Toronto participants and their expectations for implementation of the NWMO recommendation.

Next Steps - The results of the dialog sessions and other NWMO engagement and dialog activities will inform the refinement of the NWMO recommendation and final study report, which is to be submitted to the Minister of the Natural Resources Canada by November 15, 2005. The report will be made available on the NWMO website (www.nwmo.ca).

1 Introduction

1.1 Background

On November 15, 2002, the *Nuclear Fuel Waste Act* came into force. The Act required major nuclear fuel waste owners (Ontario Power Generation, Hydro-Québec, New Brunswick Power Nuclear, and Atomic Energy Canada Limited) to establish the Nuclear Waste Management Organization (NWMO) and begin making scheduled contributions to trust funds for the purpose of implementing a federally-sanctioned management approach for used nuclear fuel. The Act further requires that, by November 15, 2005 the Nuclear Waste Management Organization submit to the Minister of Natural Resources Canada a study setting out:

(a) its proposed approaches for the management of nuclear fuel waste, along with the comments of the Advisory Council on those approaches; and
(b) its recommendation as to which of its proposed approaches should be adopted.

In May 2005, following on more than two years of technical study and citizen dialogue and engagement,[1] the NWMO released its *Choosing a Way Forward - The Future Management of Canada's Used Nuclear Fuel - Draft Study Report (*hereinafter referred to as t*he Draft Study Report).* Through the *Draft Study Report*, the NWMO sought to share its thinking and proposed course of action for the management of used nuclear fuel and provide Canadians with an opportunity to comment on the draft recommendation and accompanying *Draft Study Report*, prior to their submission to the Minister.

1.2 Dialogue Sessions on the NWMO *Draft Study Report*

1.2.1 Location of Dialogue Sessions

The NWMO hosted six dialogue sessions on its *Draft Study Report* during June and July 2005 in:

- Pinawa, Manitoba (June 22, 2005)
- Saskatoon, Saskatchewan (June 28 & 29, 2005)
- Saint John, New Brunswick (July 5 & 6, 2005)
- Trois-Rivières, Québec (July 8 & 9, 2005)
- Toronto, Ontario (July 15 & 16, 2005); and
- North Bay, Ontario (July 19 & 20, 2005).

Each of the locations chosen, with the exception of Pinawa Manitoba, corresponded to the provinces that have direct involvement in the nuclear fuel cycle. Pinawa was included in response to a request for a dialogue in the province of Manitoba, due to its

[1] Outputs from all NWMO technical and citizen engagement processes undertaken during the study period are available on the NWMO website at www.nwmo.ca

long-standing involvement with the AECL Whiteshell Laboratories and the Underground Research Laboratory located near that community.

Participants to the dialogue sessions were invited on the basis of their prior involvement during the NWMO study process, including the compilation of background information, as well as workshops, roundtables, contributors to technical studies, and dialogue and engagement activities on a broad range of issues undertaken by NWMO since November 2002. A total of 169 participants attended the sessions. Appendix I provides a listing of the NWMO research and engagement activities from which the Dialogue Session participants were identified.

1.2.2 Objectives of the Dialogue Sessions

The purpose of the dialogue sessions were to:

- Provide opportunities for participants to comment on the draft NWMO recommendation and *Draft Study Report*;
- Provide for an exchange of views; and
- Provide the NWMO with the opportunity to improve the recommendation before it is finalized.

1.2.3 Approach to the Dialogue Sessions

A common agenda was used for all sessions[2] (see Appendix II). The sessions were organized, facilitated and reported by consultants from Stratos Inc., under contract to the NWMO. The agenda included an opening plenary presentation on the NWMO and the *Draft Study Report* and recommendation by Elizabeth Dowdeswell, President of the NWMO (see Appendix III). Participants were then invited to raise questions of clarification and provide initial comments and reactions on the *Draft Study Report* and recommendation. Those who wished to provide NWMO with written views on the *Draft Study Report* and recommendation were invited to do so by e-mail, regular mail, fax, or through the NWMO website, up to August 31, 2005.

A plenary dialogue session addressed the appropriateness of the NWMO recommendation and was followed by breakout group discussions on the five principal aspects of the NWMO draft recommendation, namely:

- Centralized containment and isolation of used nuclear fuel in suitable rock formations;
- Flexibility in the pace and manner of implementation and phased decision-making;
- Provision for interim shallow underground storage at the centralized site;
- Continuous monitoring of the used fuel; and
- Potential for retrievability for an extended period.

[2] The Pinawa dialogue session was conducted over a single day.

During the plenary breakout sessions, participants were asked to focus on the following questions:

- Is the recommended management approach appropriate for Canada?
  - In what ways is it appropriate?
  - What concerns, if any, do you have?
  - How can it be improved?

The breakout groups each reported back to plenary with a summary of their respective discussions on each of the key aspects of the recommendation.

The second portion of the agenda included a plenary presentation on key implementation aspects of the recommendation and was followed by breakout group discussions. The key implementation aspects addressed were:

- Citizen engagement;
- Siting Process;
- Financing;
- Governance and institutions;
- Design of implementation plans;
- Mitigation; and
- Research and intellectual capability.

Participants were asked to focus on the following questions with respect to implementation of the NWMO recommendation:

- What are the conditions required to successfully implement the approach?
  - What matters to you most in implementation?
  - What assurances do you need to be confident in implementation?

The breakout groups each reported back to plenary with a summary of their respective discussions on implementation issues.

It is important to note that the Dialogue Sessions were not designed to achieve consensus among participants. Reports on each of the individual dialogue session have been prepared and have been posted on the NWMO website (www.nwmo.ca). The reports do not provide a verbatim transcript, nor do they include a record of all views expressed. The reports represent an attempt to capture views that, in the judgment of the rapporteur and the facilitator, were either widely held or which reflect the range of perspectives among session participants. To the extent possible, the reports attempt to remain faithful to the views as they were expressed.

1.3 About This Report

This Summary Report is based on the six Dialogue Session Reports. The report outlines the key messages heard at the dialogue sessions, as well as highlights of regional issues and variations in the messages observed in the various jurisdictions. Like the Session Reports, the intention of this report is to succinctly and faithfully capture both common

views and the wider range of perspectives presented by participants, including comments made by individuals that may be controversial, or in some cases inaccurate.

It is important to note that, given this Report's focus on providing a synthesis of the key messages heard from participants, responses provided by NWMO personnel during the sessions, on questions of clarification and intent, are not included in this report. Likewise, while attribution has been provided, where requested by individuals and / or their organizations, in the individual Dialogue Session Reports, this Summary Report does not attach attribution to the key messages contained here.

2 General Views on the NWMO and the *Draft Study Report*

2.1 Participant Views on NWMO Engagement and Dialogue Processes

Dialogue Session participants expressed wide-spread support for the approach taken by NWMO in development of the *Draft Study Report* and recommendation and were complimentary of the engagement and dialogue activities undertaken by NWMO. More specifically, many participants expressed the view that NWMO had been open and transparent in its work, and that they, as individuals, felt that they had been listened to by NWMO during the earlier dialogue and engagement activities.

Participants especially noted NWMO's efforts and support towards meaningful dialogue with Aboriginal communities. They noted that the opportunities and resources made available allowed for Aboriginal peoples to gain a better understanding of the nuclear industry in general, and the management of used fuel in particular. They also noted that the support and opportunities provided by NWMO allowed Aboriginal peoples' organizations an opportunity to enter into meaningful dialogue with the nuclear utilities and their provincial regulators. Exceptions to this general support for Aboriginal dialogue came in Saskatchewan, where some participants raised concerns about the degree to which NWMO engaged Métis people. One participant to the Toronto session commented that the NWMO had not adequately reflected Aboriginal opposition to further nuclear power development in Canada, as part of the *Draft Study Report*.

A small number of participants expressed divergent views on the appropriateness of the NWMO engagement process, suggesting that the engagement process was too narrowly scoped in its exclusion of nuclear energy and nuclear waste production issues. A very few participants argued that NWMO's past dialogue and engagement activities were overly focussed on reactor-site communities and suggested that a broader, national dialogue and engagement process would have been more appropriate. An equally small number of other participants argued to the contrary, that the process was too broad and should have been more restricted to those communities likely to be directly affected by the management of used nuclear fuel One participant felt that the NWMO dialogue and engagement process was not acceptable because it was less formal, effective, and

objective than those specified by legally-mandated environmental assessment processes.

Despite offering general support for NWMO's engagement and dialogue activities, several participants expressed concern that too few Canadians were aware of the issues involved. These participants offered strong encouragement for the NWMO to continue an ongoing dialogue and engagement process with Canadians, including a particular emphasis on Canadian youth and Aboriginal peoples.

2.2 Views on the *Draft Study Report*

Participants offered wide-spread and general support for the *Draft Study Report* itself, noting that the report was balanced, informative, comprehensive, and fair. More specifically, participants commended the report for its:

- Clarity of analysis;
- Degree of detail and supporting information;
- Balance of technical and social considerations;
- Its objectivity and the degree to which it has balanced the need for a timely decision with the need to recommend the most appropriate and lasting solution;
- Its attention to ethical and long-term social considerations; and
- Tone (directional and not prescriptive) and fairness in correctly conveying the range of opinions that exists on many of the key issues related to used nuclear fuel.

A few participants, however, stated that the *Draft Study Report* could not be considered impartial, because of NWMO's ownership by the nuclear utilities.

In addition to suggesting improvements to the recommendation itself and its implementation by NWMO (see below), participants made a number of cross-cutting suggestions for improving the *Draft Study Report* and which, in their view, would contribute to increased support and public confidence in the recommendation. These suggestions included:

- Elimination of technical jargon, simplification of technical explanations, inclusion of more illustrations and generally recognized analogies, which could be accomplished through writing the Final Study Report using language at the "grade 8 level";
- Reference should be made, early in the Report, to key areas of public concern identified during the dialogue sessions and how the NWMO has responded;
- Making the information and arguments more relevant to Canadians by, for instance[3]:

[3] A number of these suggestions are already addressed in the *Draft Study Report*. Most Dialogue participants, however, noted that they had not had an opportunity to become completely familiar with all of the details included in the *Draft Study Report*.

  - Translating the cost estimates for implementing the recommendation into a cost per kilowatt hour of electricity generation;
  - Including a discussion on used fuel transportation which includes estimates of the number of trips that will be required to move the fuel from existing reactor sites to the central site under each of the possible transportation methods (e.g. road, rail, ship);
  - Providing clarity on the amount of space that will be required for the centralized repository under different future scenarios and an explanation of how the facility will be designed to safely accommodate each of these possible outcomes; and
  - Making the report more locally relevant by providing a more detailed breakdown of the projected costs, including estimates of the transportation costs for each nuclear generating province.
- Providing additional material and information in the final study report, such as:
  - A "road map" within Part 1 of the report, which provides details on where additional information on key issues can be found;
  - Details on NWMO's transition plans, as it moves from a planning to an implementing organization.
  - Inclusion of the *Nuclear Fuel Waste Act*, in its entirety, as an Appendix to the final study report; and
  - Providing explicit references to Government of Canada policies on nuclear non-proliferation.

2.2.1 The Draft Study Report and the Future of Nuclear Power

While offering general support for the *Draft Study Report*, several participants expressed concerns with the Report's neutrality of the issue of nuclear power generation. Regardless of their views on the future of nuclear power production in Canada, however, a strong majority of participants agreed on the need for decisions on the management of used nuclear fuel to be reached and implemented now.

On one hand, several participants expressed the view that the report was too narrowly focussed and that NWMO should have gone further to comment on the future of nuclear power and the future production of used nuclear fuel, despite these issues being outside of the NWMO's legislated mandate. Among the numerous interventions made on the issue were comments that:

- The mandate of the NWMO is too restrictive and the *Nuclear Fuel Waste Act* should have included exploration of energy supply issues;
- NWMO has avoided discussion of the issue due to an inherent, pro-nuclear bias arising from an NWMO Board of Directors with sole representation from the nuclear industry;
- Waste issues are best solved by reduction at the source, which in this case would involve cessation of further used fuel production;
- Public confidence in the recommended approach may not emerge until used fuel production is suspended;

- Used nuclear fuel inherently involves long-term, multi-generational and complex hazards and that the only lasting solution must involve the cessation of nuclear power generation; and
- The precautionary principle, if properly invoked, would prevent the issuance of licences for nuclear facility expansion or refurbishment, until a permanent solution to long-term used nuclear fuel management is implemented.

These participants called on the NWMO to take a position on the future of nuclear energy (even though they recognized it was not in the NWMO's mandate) and to recommend that the Minister of Natural Resources Canada undertake a separate public dialogue on the future of nuclear energy prior to federal government decision-making on the NWMO recommendation for long-term management of used nuclear fuel. Moreover, a few participants also called on the NWMO to include a presentation of a life cycle cost / benefit analysis of different energy sources, so that the costs of nuclear waste management can be put into context. A few participants also called on the NWMO to recommend that governments and the utilities invest in renewable energy technologies at the same level as for used nuclear fuel management.

Other participants strongly disagreed with the above views and expressed their support for ongoing and expanded nuclear power generation. Some of these participants faulted the *Draft Study Report* for not communicating explicit support for continued nuclear generation. These participants expressed concern that the pro-nuclear position is under-represented in the report and questioned why the *Draft Study Report* discusses only the waste related issues associated with nuclear power generation, while not also discussing the positive benefits from nuclear power and the ability to manage associated risks. These participants also felt that the report needed to provide additional information on Ontario and Canada's future energy needs and the positive attributes of nuclear generation in relation to other energy supply choices.

2.2.2 Option 1 (Deep Geological Disposal in the Canadian Shield) vs Option 4 (Adaptive Phased Management)

At each session, some participants noted that they did not see material difference between the NWMO's draft recommendation, identified as Option 4 (Adaptive Phased Management), and Option 1 (Deep Geological Disposal in the Canadian Shield) as identified for study in the *Nuclear Fuel Waste Act*. As both the Act's Option 1 and the NWMO's recommended Option 4 involve a deep geological repository as the final end-point for the used nuclear fuel, these participants suggested that public involvement and decision-making will be clearer and less complicated if the NWMO recommendation were to be re-labelled as Option 1, with phased decision-making.

2.2.3 Other Participant Concerns With the Draft Study Report

Participants raised additional concerns with the *Draft Study Report:*

- Many participants expressed concern with the limited discussion of the transportation-related aspects of the recommendation in the *Draft Study Report,*

calling on NWMO to clarify the duration, frequency, and scale of transportation activities that will be required to relocate the used nuclear fuel from the existing reactor sites to the recommended central facility, under different transportation modes (e.g. rail, ship, road);

- Several participants suggested that the NWMO *Draft Study Report* was overly optimistic in assuming that future societies will have more expertise, knowledge and institutional capacities to address the issue. These participants argued that the high degree of uncertainty with respect to future societies and institutions should be acknowledged and more directly used as a rationale to support the recommendation of containment and isolation in deep geologic formations;
- A small number of participants expressed the view that the assessment methodology was not robust, appropriate or scientifically sound; and
- A very few participants questioned why the *Draft Study Report* did not make a specific recommendation with respect to which economic regions should be targeted for further site identification and assessment;

2.3 Additional Requests for Clarification

Dialogue session participants requested clarification on a number of points with respect to the *Draft Study Report* and development of the draft recommendation. Elizabeth Dowdeswell and Sean Russell of the NWMO responded to these requests for clarification and directed participants to specific details contained in the *Draft Study Report,* where appropriate. Among the issues most frequently raised for further clarification were requests for greater clarity on:

- The expected frequency (i.e., number of trips) and duration (i.e., number of years) of the used fuel transportation phase under various transportation modes (e.g. ship, rail, road);
- Implementation of the financial surety provisions included in the *Nuclear Fuel Waste Act* and whether these will be sufficient for full implementation of the NWMO recommendation, including research and development, citizen dialogue and engagement, host community capacity building in support of informed consent, and mitigation for host communities;
- The NWMO definition of “community”, and whether the *Draft Study Report*’s definition extends beyond physical, geographic locations to include cultural communities, and other communities of interest;
- Canada’s legal, trade or moral obligations, or right of refusal, with respect to used nuclear fuel imports from other countries that have purchased the CANDU technology or Canadian uranium;
- The role of the Board of Directors, the Advisory Council, and governments in the development of the recommendation and the *Draft Study Report*;
- Why Manitoba was excluded from the list of provinces to focus the siting process for selection of potential sites for centralized storage.
- Why the NWMO was proposing that other geological formations (i.e., Ordovician sedimentary rock) were suitable for the deep geological repository;

- How other countries are approaching the issue of spent fuel management, including site selection, continuous monitoring and retrievability;
- The Government of Canada's decision-making process after the recommendation has been submitted; and
- NWMO's post-recommendation structure, mandate and initial activities.

2.4 Views on the Appropriateness and Key Characteristics of the Recommendation

Most participants expressed strong agreement on the need to develop and implement an effective management approach for existing nuclear waste, regardless of future decisions on nuclear power.[4] As such, most participants expressed comfort with the recommendation as a whole and supported the NWMO's identification and recommendation of a "Fourth Option" that combines the strengths of each of the three options required for study under the *Nuclear Fuel Waste Act*. Only a few participants expressly disagreed with the nature of the NWMO recommendation, arguing in support of Option 2 (continued surface storage at nuclear reactor sites) or Option 3 (centralized storage, either above or below ground) as described in the *Nuclear Fuel Waste Act*.

Some participants at each Dialogue Session expressed concern that the illustrative implementation timelines employed in the report were too long. These participants thought that schedule should be accelerated, wherever possible and argued that enough was known already about the technology for a deep geologic repository for used nuclear fuel to proceed immediately. Moreover, they were concerned that there were risks in not moving as quickly as possible, including that:

- Technical knowledge and expertise necessary to implement the management approach might be lost;
- Financial risks will be greater as the long-term sustainability of existing nuclear utilities is uncertain;
- It may prove difficult to incite and sustain political interest and will to act over the longer term;
- Existing storage facilities are becoming full and were never designed to safely secure the used nuclear fuel over an extended period; and
- There are risks that institutional and social capacities could decline, rather than expand over even the short to medium term

Some of these participants also expressed the view that there was a moral obligation for current citizens, politicians, and plant operators to implement a management approach within the expected lifetime of the current reactors (30 to 50 years) – both to provide for financial surety, and to ensure that used nuclear fuel is truly managed by the generation which has benefited from the use of nuclear power.

4 A fair number of these participants stressed, however, that their support for the NWMO recommendation should not be misconstrued as support to current nuclear power operation, or as a justification for expansion of the nuclear industry.

Other participants expressed divergent views, however. Some argued that the illustrative timelines were "pragmatic" – given the likely time requirements to identify and assesses a suitable location and obtain the required construction licenses. Others advised the NWMO to avoid illustrative timelines as there may not be a technical basis for these timelines, and as it is impossible to pre-judge the time that might be necessary to provide the education and information for appropriate citizen engagement and capacity building to allow for informed consent by a willing host community and Aboriginal peoples. Finally, a small number of participants expressed the view that the timelines were too short and optimistic given social and technical uncertainties and the lack of a similar facility (existing or under active construction) anywhere else in the world.

2.4.1 Centralized Containment and Isolation in Appropriate Geologic Formations

A large majority of participants expressed support for the NWMO recommendation for centralized deep geologic containment and isolation of used nuclear fuel. These participants felt that this aspect of the recommendation has the following advantages:

- Known to be technically sound, as concluded by AECL and the *Seaborn Panel Report*;
- Provides for institutional control through centralized storage;
- Allows for protection of human populations and the environment by providing storage at depth, multiple barriers, and chemical isolation;
- Most cost-effective option;
- Greatest levels of security in both the medium and very long time periods;
- Canada has large areas of suitable geologic formations and siting should not be technically difficult; and
- There is less uncertainty about geology than about the capacities of future societies and their institutions. This approach best addresses the public's primary concerns related to safety and security of present and future generations.

Some participants who expressed support for this aspect of the recommendation did ask for NWMO to include a more extensive social, ethical and technical justification for it in the final study report. Others stressed that their support was conditional on finding a technically appropriate site within a willing host community. One area of concern among those participants that supported this aspect was the issue of transportation and transportation-related risks. Several participants argued that the siting of the facility should minimize the distance as well as the amount of time and material involved in transportation activities.

A number of participants also raised issues with respect to which areas of Canada NWMO has identified as geologically appropriate. For instance, a number of participants expressed concern with the inclusion of Ordovician sedimentary rocks as a geologically appropriate formation. These participants argued that, in their view, past technical

studies had shown these formations to be inappropriate. They also indicated that Canada had accumulated a large body of knowledge on granite-type formations, such that work on sedimentary formation would represent a set back and a significant, unwarranted, research investment to learn about these structures. Other participants indicated that it would not be appropriate to include Saskatchewan among the jurisdictions targeted for initial siting activities – due to transportation related concerns and the belief that the province has already borne a disproportionate burden for the development of its uranium mines. Others called on the NWMO to acknowledge that the *Manitoba High-level Radioactive Waste Act* places restrictions on the provision of facilities for the storage and/or disposal of used nuclear fuel in Manitoba.

A number of participants noted that their support for centralization was contingent on the volume of used nuclear fuel being finite and restricted to that arising from the operation of existing nuclear reactors through the end of their planned service life. These participants noted that they were unable to reach conclusions on the appropriateness of a centralized approach for a future with expanded nuclear generation, and that under such a scenario, a decentralized approach might be more appropriate.

Support for this aspect of the recommendation was not universal, however. Some participants expressly withheld support for centralized containment and isolation in deep geologic formations and favoured surface storage, at existing reactor sites to allow for active rather than passive management and oversight. These participants noted the following weaknesses with this aspect of the recommendation:

- Deep geologic containment and isolation will place the waste "out of sight and out of mind" and will compromise long-term stewardship over the material;
- This option may give the signal to continue or expand nuclear energy production by 'solving' the waste problem;
- Transportation-related challenges and concerns will be insurmountable and the material will never leave existing reactor sites;
- Security risks are heightened, and not alleviated by transportation related activities and centralization of the used nuclear fuel; and
- The concept is, as yet, unproven and the used nuclear fuel should remain at existing sites at least until proven in other jurisdictions, over the longer term.

Finally, a small number of participants expressed the view that this aspect of the recommendation was unwarranted and that the NWMO need only be concerned with the management of used nuclear fuel over a 150 to 500 year period, after which time the material would no longer present a hazard.

2.4.2 Phased Decision Making / Adaptive Management

A strong majority of participants expressed general comfort with the recommendation for phased decision-making and adaptive management, noting that it was pragmatic in

identifying the most likely implementation approach and also has the following positive attributes:

- Provides opportunities for continuous learning from Canada's own and others' experiences in this area, leading to adjustments in design details;
- Provides opportunities for future generations to be proactively engaged in the management of the used nuclear fuel;
- Allows for the emergence of new technologies and approaches that might make geologic containment and isolation unnecessary;
- Provides time for development and implementation of appropriate regulatory regimes and governance structures and for other institutions to develop the capacity to fulfill their long-term mandates related to the used nuclear fuel;
- Allows for decisions to move as quickly or slowly as necessary; and
- Provides time for capacity building and informed decision-making among youth, and potential host communities and avoids predetermined outcomes that might undermine community support.

Participants supporting this key aspect of the recommendation often attached a proviso that phased decision-making and adaptive management not lead to a protracted decision-making process. Participants expressed strong concerns that delays in implementation could have serious negative consequences, including:

- Project intent being changed or the project itself being shelved entirely at a future date;
- Risk that existing reactor sites become de facto permanent storage sites;
- Risk that the interim shallow underground storage facility at the central site becomes the de facto permanent storage facility, rather than the deep repository;
- Loss of existing technical expertise on used fuel management;
- Increased risk of cost overruns; and
- Increased risk of political or environmental crises.

These participants made a number of suggestions to NWMO to alleviate these concerns, including:

- Placing an increased emphasis on identifying activities that will need to take place during the first decade of implementation and initiating implementation as soon as possible;
- Identification and discussion of short-term, discrete decision-points (e.g. what they are, what must be decided, when, by whom, with what implications)
- Designing decision-points to be in tune with the electoral cycle;
- Including recommendations on acceptable upper time limits – say "up to 30 years" rather than "about 30 years"; and
- Bringing youth – the future generations – into the decision making process.

Noting the above considerations, a number of participants expressed disagreement with the recommendation for phased decision-making and adaptive management and further argued that that it sends the signal that this generation is only interested in talking about the issue and not getting on with the task of implementing solutions. These participants preferred NWMO to make a firm recommendation, with fixed milestones for implementation of a management approach for used nuclear fuel.

2.4.3 Interim Shallow Storage

Participants offered very mixed views about the provision for interim shallow underground storage of used fuel at the central site while awaiting the development of the deep repository. Many participants commented that the rationale for interim shallow storage required better justification and rationalization in the final study report, along with a direct discussion of the risks and benefits of centralized interim shallow storage against those of leaving the used fuel at the reactor sites until the deep geologic repository is available.

Participants that supported this aspect of the recommendation did so by noting that:

- Early centralization will increase security over the used nuclear fuel;
- As an activity undertaken in parallel with the development of the deep geologic repository, it will minimize the time required until all the material is located safely in the deep geologic repository;
- It will allow for demonstration of the required technologies and raise public confidence;
- It will assist in site identification activities as fewer sites will have appropriate formations for both interim shallow storage as well as permanent, deep geologic isolation;
- It will allow for more timely decommissioning and clean up should decisions be taken not to refurbish existing nuclear reactor facilities;
- It will provide citizens with a familiar and comfortable analogue to the current approach to the management of household wastes (i.e. collection, centralization, and final disposal); and
- It provides a relatively low-cost mechanism for building capacities and confidence and improving decision-making with respect to ultimate deep geologic containment and isolation.

An equivalent number of participants expressed the view that centralized interim shallow underground storage was unnecessary and could work against the NWMO's long-term goals with respect to the security and safety of the used nuclear fuel, noting:

- Used nuclear fuel is currently being safely stored at existing reactor sites;
- The technological know-how already exists to ensure confidence in a deep geologic repository approach, while a comparable body of knowledge on shallow storage would need to be developed at the expense of time and additional financial resources;

- This approach may maximize rather than minimize used fuel handling and related public and occupational exposures; and
- Concern that this could lead to the worst-possible outcome – used nuclear fuel abandoned in unsuitable containers, in unsuitable formations, out of view, and forgotten about by future generations. If interim storage is considered necessary, these participants strongly favour that it be above ground.

Those participants who expressed concerns with this aspect of the provision generally favored either:

- A direct transfer of used fuel from the reactor sites to a deep geologic repository, once it is ready; or
- Centralized interim surface level storage, so that the used nuclear fuel remains in sight and in mind.

2.4.4 Provision for Retrievability

Most participants supported the provision for retrievability of the used nuclear fuel from the deep geologic repository on environmental integrity grounds, noting that the used fuel must be accessible if monitoring indicates that problems exist, and for the purpose of upgrading or repairing containers.

Several other participants also supported for the provision for retreivability for other reasons, including:

- The view that the nuclear fuel will always be retrievable by those who desire access to it, and that NWMO should build retrievability into the repository design as a necessary means to minimize the costs, and risks to future generations that desire access to it;
- Retrievability is necessary to allow future generations to make decisions as to whether, or when, to close the repository permanently;
- Used nuclear fuel is a potential energy resource for future generations; and
- Future technologies could emerge to manage the used fuel on a lower risk basis;

Some participants indicated, however, that they did not support the provision for retrievability, arguing that:

- A truly lasting solution to the nuclear waste issue would be one that puts the used nuclear fuel effectively out of reach for all time, and that this aspect creates uncertainty and confusion in a recommendation that is meant to provide certainty and permanence.
- Retrieval for the purpose of reprocessing, partitioning and transmutation will increase rather than decrease the generation of hazardous radioactive materials and the risk of public and worker exposure during handling;
- This provision makes the deep geologic repository more expensive and more technically difficult, meaning less public and political support for NWMO's desired end-point; and

- Controlling access to the repository would be an ongoing concern and future generations' decision-making will be more difficult as a result.

2.4.5 Continuous Monitoring

Participants' support for the NWMO recommendation for continuous monitoring of the used nuclear fuel over extended periods of time was nearly universal. The positive attributes noted for this aspect of the recommendation included:

- Is essential to ensure the long-term protection of human and ecological health;
- Will provide the public with assurances that the facility continues to be safe;
- Will allow future generations to measure and assess their stewardship over the used nuclear fuel;
- Will allow for continuous learning and provide for well-informed decision making; and
- Is a precondition to future retrieval of the material, regardless of the intended purpose.

Despite supporting this aspect of the recommendation in principle, several participants thought that the NWMO needed to strengthen the recommendation and discussion in the final study report by:

- Demonstrating that the ability to monitor the used nuclear fuel, for extremely long timeframes exists, or can be readily developed;
- Estimating the resource requirements and ensuring that these are included within the project cost estimates;
- Recommending that public be given an opportunity to provide input on what will be monitored, how it will be monitored, and how the information will be publicly communicated and used in decision-making by NWMO and regulatory bodies; and
- Recommending that continuous monitoring involve independent parties, made up of technical experts, regulators (e.g. CNSC), and local citizens and be explicitly tied to the host community's decision-making structures.

2.5 Participant Views on the Conditions Required to Implement the Approach Successfully

Participants at the Dialogue Sessions generally addressed five key implementation issues and offered their views on how implementation could proceed in a manner that builds public confidence and that lead to successful outcomes. The five implementation issues addressed were:

- Citizen engagement, including an emphasis on broad public education and community capacity building;
- Governance and institutions, including the nature of NWMO and decision-making processes;
- Siting, including definitions and conditions for identification of a willing host community;
- Financing, including surety of funds and how they are managed; and

- Research and intellectual capability, and how it can be maintained.

Participants noted that many of the implementation issues were inter-connected, making it difficult to isolate them for discussion purposes. Of particular importance to participants, however, were the inter-relationships with respect to issues of siting, governance and decision-making, and citizen engagement. Participants viewed that proper resolution of outstanding issues in these areas was essential in building and maintaining trust and achieving successful outcomes as the process moves forward. Regardless of their views on the different aspects of the NWMO recommendation, however, participants generally agreed that the long-term management of used nuclear fuel is an issue that needs to be addressed now.

2.5.1 Participant Views on Citizen Engagement

Several participants expressed scepticism and distrust with respect to nuclear utilities and their government regulators and promoters. As such, they placed high importance on transparency and sustained citizen engagement and public dialogue in the future, noting that these will be crucial to building public confidence and support in the NWMO recommendation and its implementation. As noted above, participants complimented the NWMO on its past engagement and dialogue processes and expressed a strong desire for the organization to continue to operate in an open and transparent manner as it moves forward with implementation of the recommendation.

Participants identified a need for a successful public education and engagement program during implementation to target different audiences, with different materials, and for different purposes, including:

- Building capacities for prior informed consent within the willing host community;
- Addressing the public right to know of all communities along the transportation corridors;
- A separate program for Aboriginal peoples, which takes account of recent court decisions regarding consultation with Aboriginal peoples' organizations, as well as Aboriginal approaches to decision-making;
- A school / curriculum-based program to target youth;
- Televised information and outreach, to inform Canadians generally and citizens of the four identified provinces with significant involvement in the nuclear fuel cycle more specifically;
- A program targeting politicians at the federal and provincial levels; and
- Ensuring that used nuclear fuel management costs are communicated on customers' electricity bills as a separate line item, strengthening the polluter pays message and encouraging the end user to take more control over source reduction.

Participants also identified a range of factors that NWMO will need to keep in mind when designing and implementing its engagement program, such as:

- NWMO leading and having ownership of the advertising campaign, rather than governments or utilities, to ensure balanced and credible reporting and to address public concerns and / or misconceptions;
- Significant and ongoing investments will be required;
- Opportunities and resources should be provided to allow communities and Aboriginal peoples to design and implement their own engagement processes and to engage in their own, independent experts;
- NWMO needs to be provided with explicit and clear authorities to negotiate and implement agreements with potential host communities;
- Communications with potential host communities need to be honest and straightforward, acknowledging that transportation of the used nuclear fuel may require decades, but that the community's guardianship over the material will need to be extended indefinitely, over several millennia; and
- Designing engagement programs that are capable of reaching scattered communities in areas of low population density.

Some participants further noted that a successful public engagement program will need to learn from the legacy issues in uranium mining communities, and although it is outside of the NWMO's mandate, some participants suggested a wide-ranging public engagement process is needed on the future of nuclear power and broader energy policy issues.

2.5.2 Participant Views on Governance

Governance of the NWMO and related decision-making processes were also issues of major importance to many participants. Participants discussed and provided suggestions to the NWMO with respect to several key governance-related aspects, including:

- Decision Making Mechanisms;
- NWMO Board Composition
- NWMO Advisory Council Representation;
- Aboriginal Involvement;
- Host community Involvement; and
- Other issues.

With respect to decision-making, participants identified a number of questions and considerations that they felt NWMO will need to address in the future including:

- In practice, how will members of a potential host community express consent: through elected bodies or a plebiscite?
- How can a community have a strong voice given the limited powers and jurisdiction of municipal governments as compared to the provincial and federal governments?
- What level of input, consent, or assurance should be given to adjacent communities and those along the transport route?

- How will conflicts between competing interests within and between communities be addressed?
- Community and intervener funding will be needed to hire independent experts.
- Will a contract or agreement be signed with the community or will special legislation be passed that would offer legal recourse to the host community and other affected communities?

Participants called on the NWMO to think through these questions and suggested that the final study report include relevant recommendations and discussions to provide greater clarity on the roles that will be played, or the right to veto, by various groups in that decision-making, such as:

- Citizens in potential host communities;
- Local governments;
- Aboriginal peoples;
- Cottage associations;
- Business associations;
- Communities on transportation routes;
- Citizens of broader regional administrative bodies or districts; and
- Citizens of the broader province under consideration.

Several participants were concerned about the decision making processes at the federal and provincial levels following a government decision on an approach. These participants called on the NWMO to provide more clarity on the decision-making process following the submission of the recommendation to the Minister, while some made specific recommendations for participatory processes such as:

- A federal-provincial environmental assessment process to follow the NWMO submission of its Final Study Report to the Minister of Natural Resources Canada.
- A full parliamentary debate, followed by a free vote on the future of nuclear power before proceeding with decision-making on the recommendation itself; and
- A citizens' referendum, in Ontario and / or Canada, on the future of nuclear power prior to making decisions on the NWMO recommendation

Many, but not all, participants were critical of the current composition of the NWMO Board of Directors. Participants drew attention to the Seaborn Commission's recommendation for an organization independent of the nuclear utilities. These participants expressed the view that the utilities might be in a conflict of interest in their desire to minimize short-term costs at the expense of long-term safety and security. Others noted that sound corporate governance principles include the need for independent directors and recommended that the NWMO Board comprise a majority of independent directors to allow for participation by other interested parties such as Aboriginal peoples, potential host communities, scientific experts, and civil society organizations.

While agreeing on the benefits of independent directors, however, some participants stressed that the nuclear utilities should retain majority representation, as they have the most direct relationship with the ratepayers who will be funding the NWMO and will therefore be best placed to execute financial oversight over the organization. While not objecting in principle, a few participants cautioned the NWMO to ensure that Board decision-making does not become overly partisan and protracted.

Likewise, some participants made suggestions for making the NWMO Advisory Council more independent, in part through an open nomination process. Participants' views differed, however, on the extent to which the Advisory Council should be made formally representative of different interest groups. Some favored legally-mandated participation of different interests, while others preferred less formal participation by qualified and knowledgeable individuals without any formal responsibilities to any particular organizations or constituencies. Most participants agreed, however, that the Advisory Council should be independent from the NWMO Board, should be provided with sufficient resources and authority to execute its mandate, and should continue to issue separate and independent reports to the Minister and the public.

Aboriginal peoples' representatives to the Dialogue Sessions called on the NWMO to make recommendations with respect to formal Aboriginal participation in NWMO governance processes, with one participant suggesting a model based on that of federal *Species at Risk Act*.

Several participants also raised the importance of including formal participation by the chosen host community, in the future, within the NWMO Board and other governance structures. They further suggested that recommendations should be made for frequent and targeted reporting to the host community. A further suggestion, which was raised at most of the Dialogue Sessions, was for NWMO to relocate to the host community, once selected.

Other governance-related issues that were raised and discussed by the Dialogue Session participants included:

- The importance of NWMO determining and communicating issues of ownership and liability over used nuclear fuel that may come into its care within a future centralized storage facility and deep geological repository;
- The need to make revisions to the *Nuclear Liability Act* to address joint-venture organizations such as NWMO, or activities that NWMO will be involved with in the management of used nuclear fuel;
- The importance of NWMO being subject to federal legislation, such as the *Access to Information Act and* the *Auditor General Act*, as well as other provisions related to equity and visible minorities.

2.5.3 Participant Views on Siting

Participants offered wide-spread and strong support for NWMO's recommendation of identifying a willing host community, indicating that this should be precondition for proceeding with implementation of the recommendation. Nevertheless, those participants that supported the concept of a willing host community stressed that there could be no compromise over geological appropriateness and that any willing host community must be proven to be technically appropriate. A small number of participants remained convinced, however, that NWMO will be unable to identify a willing host community and suggested that NWMO explore either expropriation, or creation of a new purpose-built (and therefore willing) community around a suitable geologic location on Crown lands.

More so than with some other implementation issues, however, participants noted the interrelationship between siting issues and other aspects of implementation such as governance, citizen engagement and mitigation. In particular, participants called on NWMO to provide sufficient time and resources to build the capacities for potential host communities to make informed decisions. One of the key issues of concern to participants was the issue of how the boundaries of the "willing host communities" would be defined. Participants offered divergent views, with some arguing for narrow definition to include, primarily, the geographic community where the facility will be located. Others called for a much broader definition, including all potentially affected communities, citizens of the host province, and all citizens along transportation corridors. Still others called for an even broader definition that would include interest-based communities, such as civil society organizations. With uncertainty as to the future of nuclear power in Canada, a few participants suggested that the entire country should be considered as part of the definition.

Participants broadly stressed the importance of NWMO playing the lead role in site identification and assessment processes, and of initiating siting-related activities as soon as possible following a government decision on an approach. One of the first tasks recommended for NWMO attention was the development of a clear, transparent, and agreed set of criteria for assessing the suitability of potential sites. Participants offered numerous suggestions on the range of criteria that could be included, such as:

- Appropriate geology;
- Avoiding protected areas;
- Low population density;
- Avoiding areas with economic potential arising from known mineral deposits
- Minimizing transportation distances from reactor sites;
- Maximize transportation options (e.g. rail, road, ship);
- Year round access and easy accessibility in case of emergencies;
- Areas not susceptible to flooding, earthquakes, or other natural hazards;
- Capacity for military intervention for security (e.g., near a military base); and
- Social justice criteria, to ensure that disadvantaged communities are not exploited.

In considering siting-related issues, participants cautioned the NWMO to look carefully at lessons learned from past siting exercises involving hazardous waste and low-level nuclear waste and especially at lessons learned from experiences in Port Hope and Deep River, Ontario and Swan Hills, Alberta. Based on their experiences in those processes, participants identified a number of conditions thought to be vital to securing a willing host community, including:

- Up-front clarity on decision-making processes – who will decide, on what basis (see above discussion on Governance);
- An NWMO with clear and binding authorities to negotiate and implement agreements with potential host communities;
- A technically appropriate concept that is determined to be environmentally safe and socially acceptable based on public assessments;
- Economic and employment benefits; and
- Involvement in decision-making, providing opportunity for the community to exercise control over implementation.

Participants, particularly Aboriginal participants stressed the importance of ensuring real and lasting benefits if used nuclear is to be managed in their region. They saw this as needing to go beyond jobs to include genuine partnerships.

2.5.4 Participant Views on Financing

Dialogue Session participants supported NWMO's approach of making conservative cost estimates, so that the availability of funds will not unduly influence future choices with respect to the most appropriate management approach for used nuclear fuel in Canada. Participants acknowledged the financial surety provisions that have been established as a result of the 2002 *Nuclear Fuel Waste Act*, but noted that much needs to be done in order for the public to have confidence that sufficient resources will be available for full implementation of the NWMO recommendation.

Based on past experiences with issues such as abandoned mines, participants were especially concerned about the implications should the nuclear utilities not prove sustainable over the longer term. As well, some participants raised concerns with respect to governance of the NWMO (see above) stating that governments and utilities could not be trusted in the long-term to leave such funds set-aside for their intended purpose.

Participants also warned that NWMO's recommendation for adaptive management and phased decision-making and the need to build capacities for long-term monitoring and stewardship by a willing host community make it difficult to project future financing needs. Finally, participants expressed the view that the nuclear industry has routinely underestimated project related costs and that there is no reason to be confident that current costs estimates will prove to be any more reliable. All participants generally cautioned NWMO to ensure that the availability of financial resources does not become a

restricting factor and that decisions are made on the basis of technical and social appropriateness, not available funding.

To address their concerns with respect to financial surety provisions, participants suggested that:

- NWMO provide greater clarity about how, and by whom, the trust funds are currently being managed;
- The timetable for implementation be advanced as much as feasible
- Ensuring all financial requirements are provided for by contributions made during the remaining planned service life of the existing reactors;
- Provincial governments be required to provide guarantees for their nuclear utilities' obligations for management of the used nuclear fuel;
- NWMO review and update its cost estimates on a continual basis and ensure that trust fund provisions are maintained accordingly.
- The NWMO Board be made more independent from the nuclear utilities (see above)
- A requirement for an up-front performance bond or equivalent insurance be established;
- Expand the range of contributors to include the including uranium miners and fuel bundle manufacturers and others across the entire nuclear fuel cycle; and
- Require utilities to include costs related to used fuel management as a line item on customers' utility bills, and charge those costs on a consumption basis.

Some participants at three of the six dialogue sessions proposed that NWMO recommend a requirement for nuclear power utilities to contribute matching funds to renewable energy and energy efficiency projects for every dollar that is set aside for implementation of the used nuclear fuel project. Other participants disagreed, however, stressing that there is a need to acknowledge that the fuel and waste is "owned" by the citizens of the province and that its ratepayers and taxpayers must pay for any such proposals, not the utilities themselves.

2.5.5 Participant Views on Research and Intellectual Capability

Participants at four of the six Dialogue Sessions placed particular importance on issues related to research and intellectual capability, recognizing that implementation of the NWMO recommendation will require a significant and ongoing investment in both the natural and social sciences. Participants also noted their concern that the institutional memory and capacities of the nuclear workforce are eroding and expressed misgivings with respect to the suspension of activities at the AECL Underground Research Laboratory in Manitoba. Without a broader and independent approach to the future management of used nuclear fuel, these participants expressed concern that the NWMO, as directed by its governing nuclear utilities, will focus only on R&D activities related directly to a deep geologic repository.

Participants offered several suggestions for addressing their concerns with respect to implementation of an appropriate research and intellectual capabilitiy development program, including:

- Beginning to train and engage today's youth in the issues, trades and professions that will be needed to successfully manage used nuclear fuel in the future. This was seen to be especially important in order to sustain knowledge of the hazards and coping mechanisms of working with nuclear material in the event that nuclear generation ends at the completion of the planned service life of existing reactors;
- Placing an emphasis on incorporating residents of the host community in any research, or training and apprentice programs once the willing host community is defined;
- Maintaining strong connections to international research initiatives and sharing lessons learned with other jurisdictions that are also developing solutions to the long-term management of used nuclear fuel;
- Recommending that AECL turn its Underground Research Laboratory near Lac du Bonnet, Manitoba over to the NWMO for the purposes of training, capacity development and to support citizen engagement through visits and demonstrations;
- Establishment of a university chair on nuclear waste management to address non-technical issues;
- Establishment of an independent research advisory committee to NWMO to:
    - Identify technical and socio-economic research priorities and associated budgets;
    - Establish a long-term work plan to address these needs;
    - Actively promote the necessary research; and
    - Oversee the contracting, delivery and reporting of research results.

3 Regional Issues and Variations

Although a number of consistent messages emerged from the Dialogue Sessions (as captured in Section 2), the individual regional sessions reflected some differences in experiences and circumstances that were reflected in the discussions. Some of the many variations are described below.

3.1 Pinawa Session

While participating actively and constructively in the dialogue session, several participants drew attention to the *Manitoba High-level Radioactive Waste Act,* which places restrictions on the provision of facilities for the storage and/or disposal of used nuclear fuel in Manitoba.

Given the historical involvement of the Pinawa community with the AECL Whiteshell Laboratories and the Underground Research Laboratory, participants placed a greater

emphasis on issues related to research and development than was the case at other Dialogue Sessions. Their comments, concerns and suggestions for this aspect of implementation are recorded in the report on the Pinawa Dialogue Session.

3.2 Saskatoon Session

Saskatchewan participants addressed three issues that were not addressed in as comprehensive a manner at other sessions:

1. Participants expressed concern with NWMO engagement with Metis peoples, and made a number of suggestions for "genuine Aboriginal involvement" in the implementation of the NWMO recommendation, including for full participation and the provision of lasting benefits;
2. Participants drew considerable attention to the legacy issues of uranium mining in that province, indicating that they had contributed to an atmosphere of mistrust of the nuclear industry in some Northern and Aboriginal communities;
3. Some participants argued that NWMO had erred in including Saskatchewan among priority jurisdictions for further site identification and assessment activities, due to transportation related concerns and the belief that the province has already borne a disproportionate burden for the development of its uranium mines.

3.3 Saint John Session

Participants at the Saint John session placed an emphasis on issues related to Aboriginal engagement and involvement in decision-making. Participants also suggested that reaching agreement on the management of used nuclear fuel in that province could be particularly difficult due to a combination of factors including:

- The debate on the appropriateness of retrofitting the Point Lepreau nuclear generating station; and
- The implications of Aboriginal title with respect to much of New Brunswick, including the area where the Point Lepreau nuclear facility is located; and
- Perceptions that the Province and New Brunswick Power's past engagement and dialogue activities on nuclear power generation have been deficient.

Saint John participants also advised that their ability to participate in decision-making with respect to the NWMO recommendation would be enhanced by the provision of analysis and information on the implications of each of the recommendations, and related options, to New Brunswick citizens and New Brunswick Power customers.

3.4 Trois-Rivières Session

Several participants at this session raised issues with respect to the limitations of disassociating the NWMO recommendation with discussions on the future of nuclear power in Québec and Canada, regardless of the limitations of NWMO's legislated mandate.

3.5 Toronto Session

The Toronto Dialogue Session was distinguished by the number of participants who expressed a desire to have their interventions formally attributed to them within the session report. Like the Trois-Rivières session, it was also distinguished by the divergence and intensity of views on the appropriate role of nuclear power generation in Ontario's electrical energy future.

3.6 North Bay Session

The North Bay dialogue addressed a broad array of issues, from the relationship between energy policy and used nuclear fuel management, to the geological appropriateness of different regions. Specific concerns raised were:

- The history of past waste management issues in Northern Ontario, including proposals for moving Toronto's solid waste to the north, and the transportation of mixed-oxide nuclear fuels through their region to Chalk River without sufficient informed consent; and
- Strong concerns over transportation of used nuclear fuel through the region.

4 Next Steps

The results of the dialog sessions and other NWMO engagement and dialogue activities will inform the refinement of the NWMO recommendation and final study report, which is to be submitted to the Minister of the Natural Resources Canada by November 15, 2005. The report will be made available on the NWMO website. In the meantime, the NWMO website (www.nwmo.ca) continues to provide public access to the outputs of all NWMO activities undertaken to date.

Appendix I: Dialogue Session Invitations

Participants to the dialogue sessions were invited from the provinces involved in the nuclear cycle - Ontario, Québec, New Brunswick, Manitoba and Saskatchewan. Participants were identified on the basis of their prior involvement with NWMO including engagement and dialogue activities, research activities, and those that expressed an ongoing interest in the work of the NWMO.

In total, Dialogue Session invitees were identified on the basis of their participation in the following NWMO activities:

- Individuals who have made submissions to the NWMO;
- Authors of Background Papers;
- Aboriginal dialogue leaders;
- Traditional Knowledge Workshop;
- Mayors/Municipal leaders and staff of the Canadian Association of Host Communities;
- Ethics Roundtable;
- People from Public Information & Discussion sessions who asked that the NWMO keep them informed; and
- Organizers and participants of key NWMO events:
    - Scenarios Workshops,
    - Technical workshops
    - Public Policy Forum;
    - Community Dialogue Workshops;
    - CPRN Dialogues (those that asked NWMO to keep them informed);
    - National Stakeholders and Regional Dialogues;
    - Nature of the Hazard Workshop.

Appendix II: Dialogue Session Agenda

Objectives:

1. **Provide the opportunity for participants to comment on the draft NWMO recommendation**
2. **Provide a dialogue forum for an exchange of views**
3. **Provide the NWMO with the opportunity to improve the recommendation before it is finalized**

Day 1	
6:00 – 6:30 pm	**Arrival and Refreshments**
6:30	1. Welcome and review of agenda
6:45	2. Presentation of NWMO recommendation
7:45 – 9:00	3. Open dialogue
Day 2	
7:30 – 8:30	**Continental breakfast**
8:30 – 9:30	*4.* Discussion of the recommended approach *1. Is the recommended management approach appropriate for Canada?* *1a) In what way is it appropriate* *1b) What concerns if any do you have* *1c) How can it be improved?*
9:30 – 11:00	5. Breakout groups on the recommended approach • *5 Key components of the recommendation – Pros and Cons* • Improvements to the recommendation/report
11:00 – 11:15	***Break***
11:15 – 12:30	6. Reports from breakout groups and plenary discussion
12:30 – 1:15	**Lunch**

1:15 – 1:45	7. Plenary • Highlights from morning discussion • Introduction to discussion on implementation
1:45 – 3:00	8. Breakout groups on implementation actions 2. What are the conditions required to successfully implement the approach? 2a) What matters to you most in implementation? 2b) What assurances do you need to be confident in implementation?
3:00 – 3:15	***Break***
3:15 – 4:15	9. Reports from breakout groups and plenary discussion
4:15 – 4:30	10. Closing • Sum up • Closing remarks

Appendix III: NWMO Presentation by Elizabeth Dowdeswell

(to be provided by NWMO in all electronic postings and formal publications.)
(to be provided by Stratos in the final "hard copy" submissions of this report.