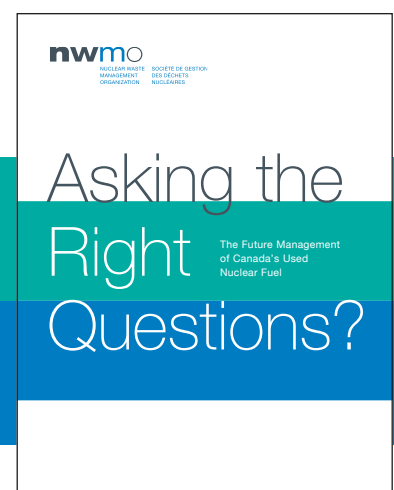


Public Attitude Research Findings

Phase 3 - Report on Discussion Group Findings

Navigator Limited





NAVIGATOR

Report on Discussion Group Findings

NUCLEAR WASTE MANAGEMENT ORGANIZATION

JANUARY 2005

Report on Discussion Group Findings for the Nuclear Waste Management Organization

In the Fall of 2004, the NWMO asked Navigator to conduct qualitative research to examine Canadians' views and attitudes toward some of the challenges faced by the NWMO. Specifically, the groups explored participant views on the eight objectives Canadians would like to see achieved in whatever management solution is ultimately recommended to the government by the NWMO. Participants were asked to reflect on these objectives, in relation to the three management options still under consideration and asked to explore the trade-offs and balances that would need to be made in order to choose any one management option. The NWMO is seeking guidance on how to think about and manage the inevitable trade-offs as it continues to prepare to make recommendations. Navigator is pleased to provide this report on our findings.

CONTEXT

The NWMO is entering the final year of its study on what should be done with Canada's used nuclear fuel. This fall, the NWMO released its second discussion document, *Understanding the Choices*. This release serves as both a report on the NWMO's latest progress, as well as a discussion document that invites Canadians to consider some of the many questions and conclusions with which the NWMO is faced.

Understanding the Choices, is an 110-page document that examines the values and priorities of Canadians and how the NWMO has used this understanding to assess and compare the various management options for managing used nuclear fuel.

The document reports on the direction the NWMO has received from Canadians and how that direction is being applied. This includes the identification of eight objectives to be achieved by the NWMO's recommended management options. These objectives are:

- Fairness
- Public Health and Safety
- Worker Health and Safety
- Community Well-being
- Security
- Environmental Integrity
- Economic Viability
- Adaptability

Understanding the Choices also provides a more detailed description of the three management options still under consideration. These options are: On Site Storage, Centralized Storage, and Deep Geological Burial. An assessment team studied the strengths and limitations of the three options.

The NWMO has reached the conclusion that no one of the management options perfectly achieves all eight objectives. This conclusion is central to the reason for this discussion group research since, with no perfect solution, balances and trade-offs will need to be made between the various objectives.

Understanding the Choices, complete with an Executive Summary, is available to the public in both English and French on the NWMO's website.

RESEARCH OBJECTIVE

To understand how Canadians think about the various objectives the NWMO will seek to achieve as it recommends a management solution for Canada's used nuclear fuel and to explore how Canadians approach the trade-offs and balances that will inevitably be required.

METHODOLOGY

Research was conducted according to the following program:

- Focus groups held in each of the Ontario communities of Pickering (December 8, 2004), Sault Ste. Marie (December 13, 2004) and Windsor (December 15, 2004), as well as Saint John, New Brunswick (December 9, 2004) and Quebec City, Quebec (January 10, 2005);
- 2 groups per location;
- 8 to 10 adults per group, for a total of 96 participants;
- Participants were screened into two groups: one group of those who identify themselves as active on various community or political measures; and a second group of those who do not identify themselves as particularly active, but regularly watch or read the news;
- Each group lasted for 2 hours and 15 minutes; and
- Participants were initially introduced to the mandate of the NWMO and shown a 16-minute video which explained what the organization had accomplished, heard and concluded so far.

The research was designed to explore the following key questions:

1. Do participants support the objectives and identify with them? Are additional objectives suggested?
2. Which objectives do they feel are most important?
3. Which trade-offs do they find difficult? Which do they find not as difficult?
4. What is it about each management option that makes participants feel their objective is achieved?
5. What do participants need to be assured of in order to accept certain management options?

6. How do considerations of possible future scenarios impact the thinking of participants?
7. Are there any particular words or phrases that participants use to discuss the objectives or their preferences?
8. What do participants suggest is important for implementation of any recommendations?
9. Is there any evidence of regionality?

FINDINGS

1. PARTICIPANTS SUPPORT THE EIGHT OBJECTIVES

Participants were universally supportive of the objectives developed through the work of the NWMO and presented in *Understanding the Choices*. Early in the discussion, participants were presented with a list of the eight objectives and short definitions of each drawn from the Executive Summary of *Understanding the Choices*. Participants were not critical of any of these objectives, nor did they suggest additional objectives.

When presented with the objectives, the first reaction of many participants was to react to the scope of the challenge. This took two forms. Some felt overwhelmed by the importance of selecting a management option. One participant expressed this sentiment when he said, “Reading these objectives tells you how huge a task it is and how big a responsibility it is.” Other participants reacted to the scope of the challenge by expressing frustration with the earlier generation who had begun to create nuclear energy without a solution for the used fuel.

It was a struggle on the part of many participants to focus on the objectives. There was a tendency for participants to quickly turn their minds to the various anxieties they have with one or another of the management options, rather than consider the relative merits and importance of the objectives. We believe this is because there was such a level of support for all the objectives that participants did not immediately find them helpful as a means to selecting a preferred option. Participants had to be pressed to discuss the objectives in relative terms and consider that trade-offs may be required or balances struck.

2. PUBLIC HEALTH AND SAFETY IS THE MOST IMPORTANT OBJECTIVE

Through the course of the discussion, one objective rose to the top as particularly important. Ensuring *public health and safety* was, by far, the biggest concern of participants across all groups. This objective was not expressed as *public health and safety* though. It was usually expressed in terms of *security*.

Though the distributed definition of *security* referenced protection from theft, only a few participants expressed a concern with the used fuel being attacked or falling into the wrong hands. For most participants, *security* was a blanket term used to express keeping the used fuel contained and ensuring people were not harmed. This included security against accidents, exposure of large populations, earthquakes, leakage into the water, unknown happenings deep below the earth, etc. All of these anxieties were expressed in terms of security, making it by far the most discussed objective.

Some objectives were discussed as sub-sets of the *security* objective. ***Environmental integrity*** was mentioned as an important objective by a few participants in most groups, but not as a trade-off. Though not explicitly stated, most participants appear to consider the objective of *environmental integrity* as an important area that could not be separated from *public health and safety*. In other words, to ensure human health and safety meant to choose a management option that protected *environmental integrity*.

It is important to note that participants discussed *environmental integrity* only in terms of leakage of used nuclear fuel into the biosphere. There was little suggestion, of either concern or indifference, that the environment may be adversely impacted in an effort to safely contain the used nuclear fuel. No participant suggested that stresses and damage associated with new infrastructure was a significant concern.

There was concern expressed with the *fairness* to local communities who may be asked to receive the fuel, but no direct suggestion that it was unfair to the local environment. As a trade-off among objectives, *environmental integrity*, when defined as impacts other than leakage of fuel into the environment, was clearly subordinate to *public health and safety*, *security* and *fairness* to local communities. Where it was defined as protection against leakage, it was considered a very important objective that is a necessary requirement to ensure *public health and safety*.

The objective of ***adaptability*** received a fair bit of attention from participants. As the NWMO has noted on other occasions, Canadians appear to possess a high level of optimism when it comes to the future and the advance of science. Nonetheless, *adaptability* is a secondary objective to *public health and safety*. For many participants, *adaptability* would be characterized as a nice-to-have rather than a must-have. *Public health and safety*, expressed as *security*, was the only objective that can be fairly characterized as a must-have. All other objectives that were expressed in must-have language were derivatives of the desire for *public health and safety*.

It is worth noting that for some of the participants who were keen on the objective of *adaptability*, it appeared as if a significant measure of their motivation was driven by a concern with some aspect of the deep geological burial management option, rather than a strong belief in future *adaptability*. These participants recognized *adaptability* as a useful argument for promoting one of the non-deep geological options.

Economic viability received limited attention in the discussions. While the cost of the various options presented in the video struck some participants as significant, they

did not place much emphasis on the cost of one option over another. All participants agreed *economic viability* was important, but throughout the discussions, it never appeared to be the objective that drove participants to prefer one management option to another.

Worker health and safety was rarely mentioned in the groups. When mentioned it was generally considered important as an objective because it is so closely linked with *public health and safety* as tied to some kind of spill or leak. When *worker health and safety* was mentioned in the context of doing dangerous work, it generated less of a concern. While it was felt that all reasonable steps should be taken to protect worker health and safety, it was also felt that the situation was fair as long as workers know the risks when they take the job and are duly compensated. This aspect of *worker health and safety* was clearly less of a concern to participants than the objective of *public health and safety*.

Fairness is an objective that was expressed in many different ways and applicable to many situations. Appeals to *fairness* were suggested for each of future generations, current nuclear reactor communities, and any future host community. Like all the others, it is an objective to strive for, but is subordinate to *public health and safety*. For example, on a number of occasions, participants suggested that whatever solution is selected will likely be less fair to some community, but at the end of the day we would have to live with that to protect the broader *public health and safety*.

The objective of *fairness* to future generations was strongly and widely identified as very important, but was not expressed as a motivating objective with near the force of the desire to ensure *public health and safety*.

Community well-being is another objective that is first and foremost associated with *public health and safety*. Participants placed the highest importance on preserving communities' well-being in the form of avoiding harmful exposure to used nuclear fuel. This was particularly the case with densely populated areas where exposure would be more widely felt. At the same time, participants did not volunteer discussions of the non-public health and safety components of *community well-being* as important objectives. Local economic impact, environmental disruption or impacts on social or cultural fabric were not raised, though the objective of not forcing used fuel on a community and seeking *fairness* both received regular mention.

3. DIFFICULT AND NOT DIFFICULT TRADE-OFFS

Difficult:

Adaptability vs. Public Health and Safety

A challenging trade-off for many participants was *adaptability* versus *security* and *public health and safety*. Many participants were optimistic about the future and science's ability to find new and better solutions for our used nuclear fuel. No one

who suggested that we have achieved all that we can hope to with used nuclear fuel. At the same time, all participants cared most deeply about *public health and safety*.

Some participants were clearly willing to trade-off *adaptability* for increased *public health and safety*. A sentiment heard on a few occasions was, “We haven’t found a solution in 30 years of waiting. We could wait 30 more, and then 30 more, but eventually we need to do something with this waste” (paraphrased). Others who were willing to make this trade-off suggested that we will likely continue to produce the waste, so new solutions will still be welcome, even if we dispose of what we already have.

Others clearly felt that *adaptability* needed to be protected. It is not clear whether this choice was a choice to willingly reduce *public health and safety* and *security* or whether this choice was seen as a better way to ensure *public health and safety* and therefore did not represent a trade-off, but rather the best of both objectives.

For those seeking to strike a balance between these difficult objectives, centralized storage was seen to be a useful compromise.

Environmental Integrity vs. Public Health and Safety

Environmental integrity versus *public health and safety* presented a similar challenge for many participants. Many see *environmental integrity* as a proxy for *public health and safety*; if you have a high standard of *environmental integrity*, then *public health and safety* is also protected. In this way, *environmental integrity* becomes inseparable from *public health and safety* and suggesting one should be traded-off for the other would be quite difficult for many to accept. Nonetheless, to the extent a clear trade-off could be identified, most would choose public health and safety.

Fairness to Current Host Communities vs. Fairness to Future Host Communities

This trade-off is very difficult for people as both are highly valued. Many participants could not choose between the two options. Achieving this balance is secondary to what they feel is best achieved by their trump objective, *public health and safety*. While *fairness* is something to be sought for all affected communities and persons, many felt that difficult and less-than-ideal choices would be required.

Public Health and Safety vs. Public Health and Safety

The most challenging of the trade-offs with which participants struggled were those that involved trading off different elements of *public health and safety*. It is the resolution of this struggle that appeared to lead most participants to prefer one management solution to another.

For example, the trade-off between the perceived public health and safety preserved by not having to transport the used fuel versus the perceived public health and safety that could be achieved if the fuel were located at a single remote site. Or, the

perceived public health and safety achieved by placing the used fuel deep below ground versus the perceived enhancement to public health and safety by being able to monitor the waste. For most participants it is the trade-offs and balance between these various manifestations of *public health and safety* that posed the real challenge. Among participants, there was great demand for more information on each of these scenarios in order to help them assess the trade-offs and make an informed choice.

Not Difficult:

For many participants, there was little or no apparent struggle to balance the objectives. For them, *public health and safety* (security) was the dominant objective and led them to choose a preferred management solution. All other objectives were subordinate and they, though still worthy objectives, could be traded off, or at least diminished, in order to achieve *public health and safety*. Though many participants shared a clear commitment to this objective, they did not all reach the same conclusion of a preferred management option. The participants with a clear commitment to *public health and safety* were divided in their expression of which management option they felt best achieved that objective.

Economic viability did not surface as part of a difficult trade-off for any participants. Participants frequently expressed a desire to ensure the project is well funded and that the cost is not left for future generations. As stated above, the price difference between the three options was not identified as a concern and as a result there was no suggestion that achieving *economic viability* would require a trade-off with another objective.

Worker health and safety did not surface as part of a difficult trade-off in the view of participants. Those who expressed opinions appeared to feel *worker health and safety* is an objective that need not be compromised with any of the management options.

4. WHAT IT IS ABOUT EACH OPTION THAT MAKES PARTICIPANTS FEEL THEIR OBJECTIVE IS ACHIEVED

Each participant has varied and complex reasons that he or she feels most comfortable with one management option over another. Nonetheless, there were a few particular factors that regularly arose as the strongest contributors to achieving particular objectives.

Centralized Storage

For many, the removal of the used fuel from population centres is the most important factor for ensuring *public health and safety* and the most significant benefit of centralized storage. The other important trait of centralized storage is that it allows the used fuel to be monitored, which was seen as another means to protect *public health and safety*.

In addition, some participants identified the single location of centralized storage as an important factor that contributed to the objective of protecting public health and safety.

Deep Geological Burial

The distance and permanence of the removal of the used fuel was by far the single greatest factor that provided participants with comfort that *public safety and security* would be protected with this management option. Another significant factor that contributed to many participants' sense that *public health and safety* would be assured was their belief that the deep geological environment is stable relative to the context provided by the other options.

Storage at Reactor Sites

The single biggest factor that led some participants to feel that storage at reactor sites best achieved their objective of *public health and safety* was the fact that it has proven to be safe so far. This is less of a positive reaction to the storage at reactor sites than a negative reaction to things that scare them (e.g. transportation of the used fuel or the geological integrity of the Canadian Shield).

5. WHAT PARTICIPANTS NEED TO BE ASSURED OF IN ORDER TO ACCEPT CERTAIN MANAGEMENT OPTIONS

To accept the deep geological burial management option, participants need to be assured that the material can be monitored and that an intervention can take place if something goes wrong.

For centralized storage and deep geological burial, participants need to be assured that the used fuel can be safely transported. Participants who were attracted by the idea of a single location and moving the waste away from larger population centres could become significantly conflicted when faced with the question of safe transportation. For some participants this was the only real barrier to selecting one of the centralizing options. If a centralized management option is recommended, a full explanation of how safe transportation will be achieved will be crucial for achieving public acceptance.

Participants who are anxious about transportation of the fuel are torn between various means to best achieve their security (public health and safety) objective. They are anxious about unpredictable or unknown eventualities and, as a result, many naturally gravitate to the one tested option that has a good safety record – on-site storage. This choice is motivated by *public health and safety* and fear of the unknown. If they can be reassured of the transportation, many of these would be much more inclined to accept one of the centralized options.

As one Pickering participant said of centralized storage, “It depends on how safe the transportation is. If it can be made impenetrable, the I am a lot more comfortable.”

6. THE CONSIDERATION OF FUTURE SCENARIOS HAD LITTLE IMPACT ON PARTICIPANT PERSPECTIVES ON THE VARIOUS OBJECTIVES

It was anticipated that participants would consider the objectives and required trade-offs through the lens of their impression of the present, with little consideration of how different the future could be. Therefore, throughout the course of the groups, participants were introduced to various scenarios of what the future could hold, encouraging them to consider these as they considered the objectives.

The introduction of scenarios did not have much of an impact on the views of participants. Once introduced, the scenarios were only infrequently cited by participants as factors driving their preferences or necessitating certain trade-offs. This is not to say that participants did not consider the objectives and state their choices in terms of considerations of the future. For many, such considerations were integral to their thinking and reasoning from early in the discussion. It was not clear whether the introduction of scenarios had little impact because participants preferred to think more about the future as equivalent to the current state, or whether such scenarios have already been considered in their minds and so represented nothing new. In either case, the introduction of scenarios did not appear to have a significant effect of causing participants to amend their views of the trade-offs and the various management options.

Perspectives on the future did tend to be fairly optimistic. For example, participants were introduced to the suggestion that future generations may not have the available funding to pay for the ongoing management of used fuel, thereby demanding steps be taken now to ensure future *economic viability*. Participants did not express particular concern that this scenario could occur and generally felt that, while it was most fair for current generations to pay for disposal and management of their own used fuel, the necessary financial means would continue to be present in the future.

7. THE KIND OF LANGUAGE PARTICIPANTS USE TO EXPRESS THEIR PREFERENCES

Despite considerable effort on the part of the moderator to focus the discussion around the objectives, participants do not naturally discuss the NWMO’s challenge in the language of the objectives. It was necessary for the moderator to continually remind participants of the objectives and to encourage the discussion to focus on the trade-offs and balances that would result in choosing one management option over another.

Participants tended to talk about the various options in terms of their anxieties with various technical aspects of each option, punctuated by regular requests for more

technical information and admissions that they lack the technical knowledge to make a fully-informed decision.

While the discussion and use of words and phrases to discuss the challenge was wide ranging, the following two points were observed across all the groups:

Security is a blanket term that really meant the broad protection of public health and safety. No participants seemed to talk about security exclusively in terms of protection from threat of theft or malicious attack of the used fuel.

Community is a term that participants associate with some population mass, not with a remote location where few tread, other than the workers who are involved in with site. The term community should not be used to represent a remote location where the waste might be located, as this will create confusion.

8. WHAT PARTICIPANTS SUGGEST IS IMPORTANT FOR IMPLEMENTATION

The discussion with participants regarding what was important for implementation was by no means an exhaustive discussion. The points below provide only some of the thoughts that are worth noting:

- Public transparency should be preserved throughout future stages of the project;
- The public should be presented with lots of information from experts on the various technical aspects of the options; and
- Second opinions should be sought on the merits and safety of all aspects of any proposal.

9. NO EVIDENCE OF REGIONALITY

We anticipated that we might see some unique or more intense views from the participants in Sault Ste. Marie, as a Northern community more closely connected with the Canadian Shield, and in Pickering and Saint John, as communities in close proximity to nuclear reactors. This did not prove to be the case. All communities had fairly passionate reactions to the problems, though they had spent no time thinking about it prior to the groups. The same kinds of arguments, reactions and attitudes arose in each city visited.

Pickering residents recognize that they were living with used fuel in their midst, but were no more or less likely to demand fairness for current host communities. It should be noted that most residents of Pickering appeared to assume that the fuel would eventually be moved from their community.

APPENDIX A: SUMMARY RESULTS OF GROUP EXERCISES

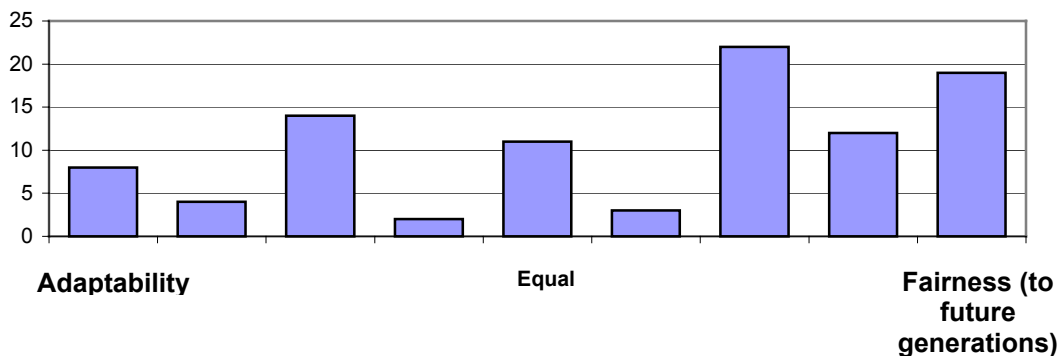
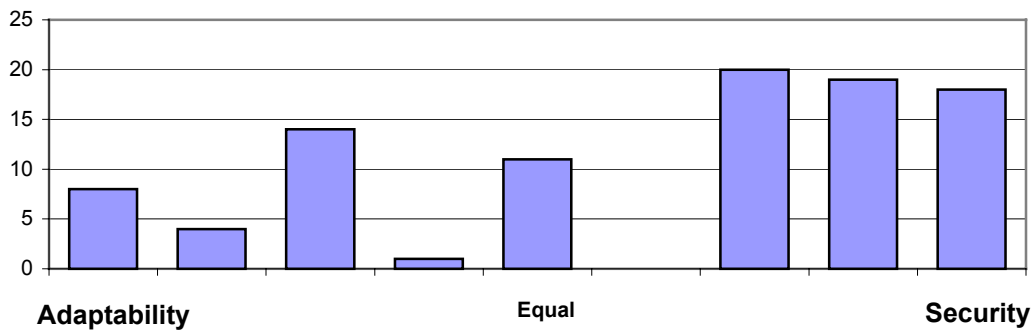
Please note, the following exercises were used as tools to engage discussion and do not provide a statistical representation of the Canadian public.

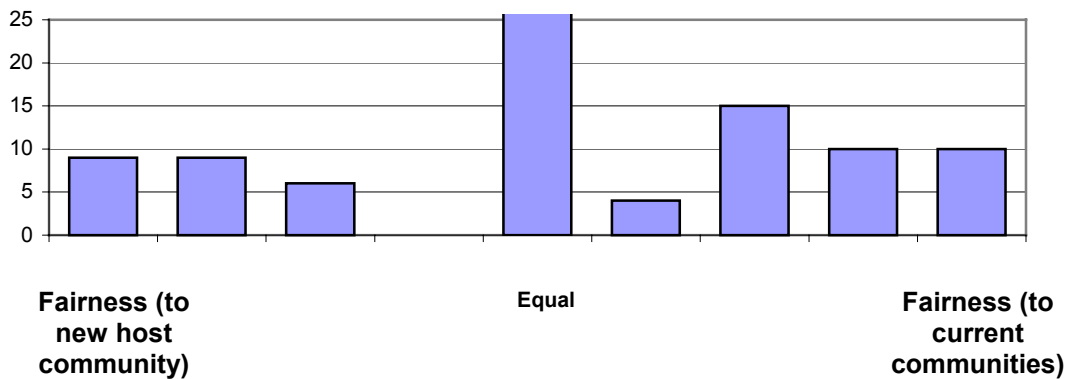
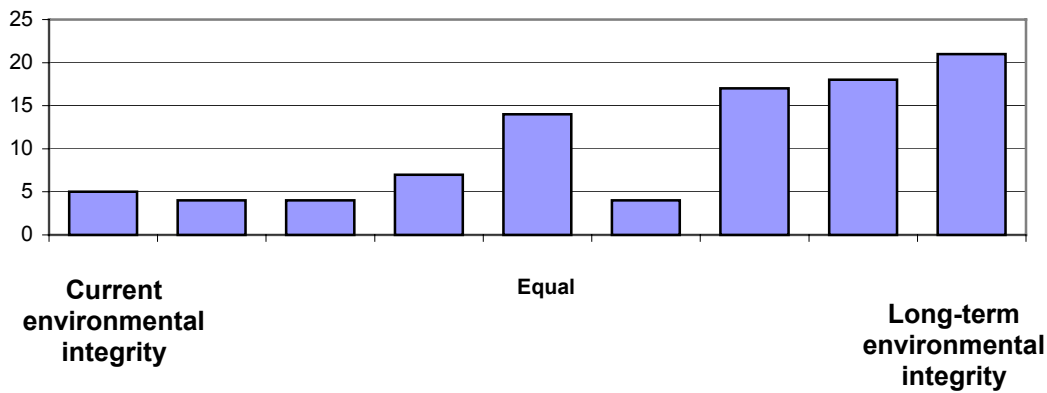
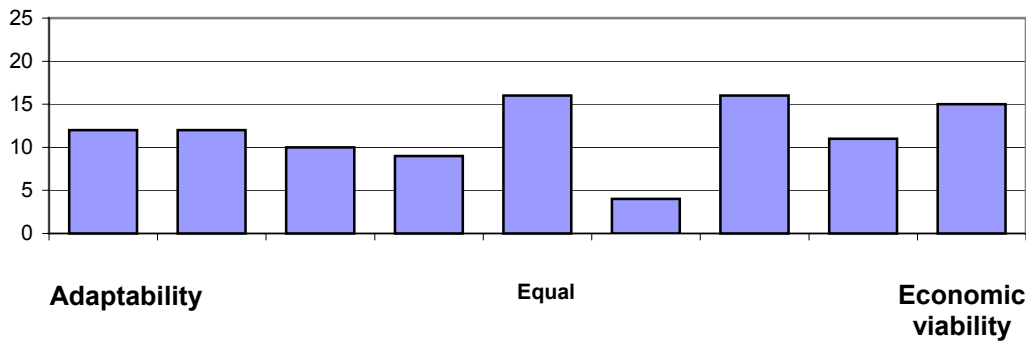
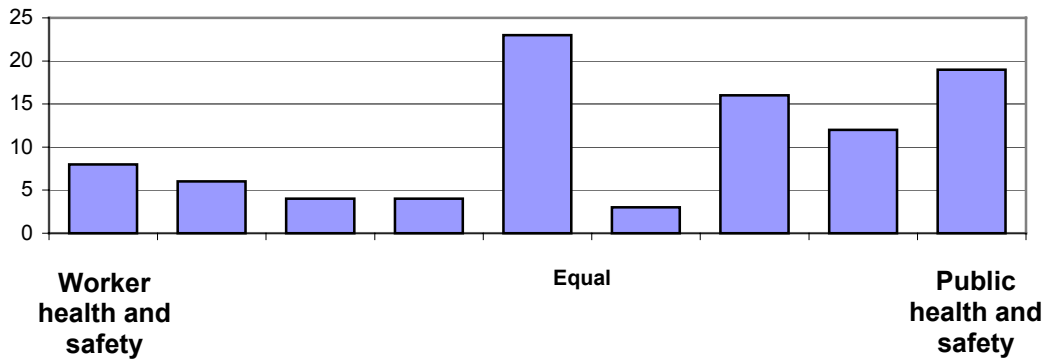
At one point during the discussion, participants were presented with some of the possible trade-offs that may be necessary for the NWMO to consider as it works toward recommending a single management option.

Participants were asked to consider the trade-offs between two specific objectives and indicate where they saw themselves along a continuum between the two objectives. In each case, they were asked to consider their personal preference in reference to consideration of one specific management option versus another, based on the suggestion that one management option may better achieve a certain objective than the other. Participants were asked to do this individually before a group discussion was held to help to examine their preferences and listen to why they made their individual choices.

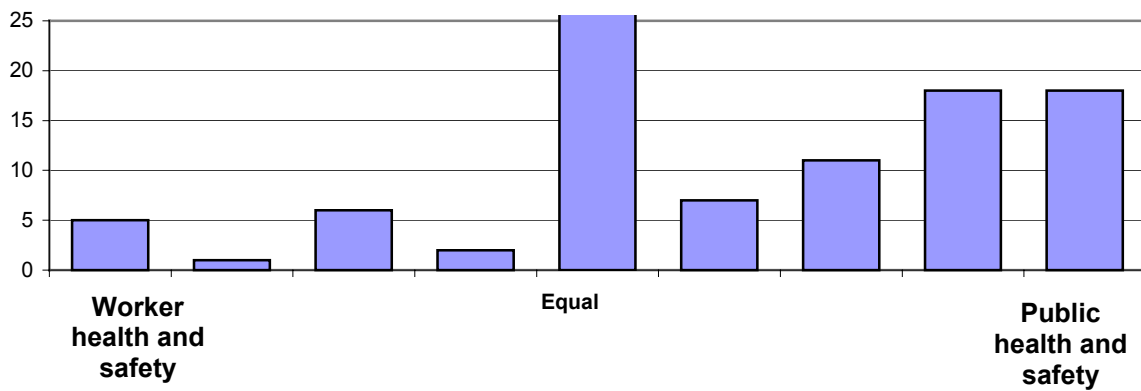
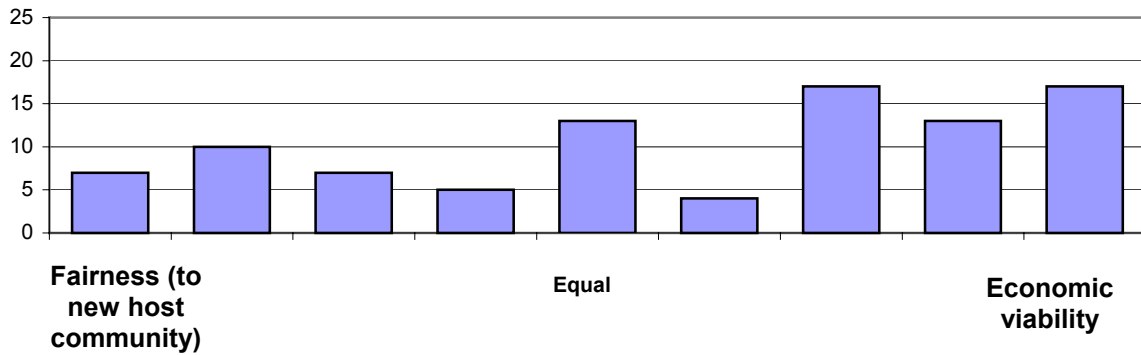
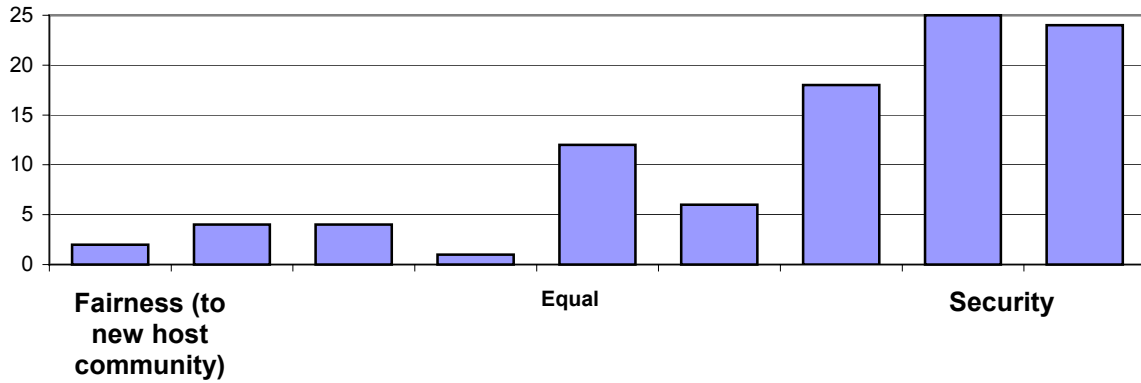
The graphs below provide an aggregate tally of where the individuals placed themselves on each of the trade-offs provided.

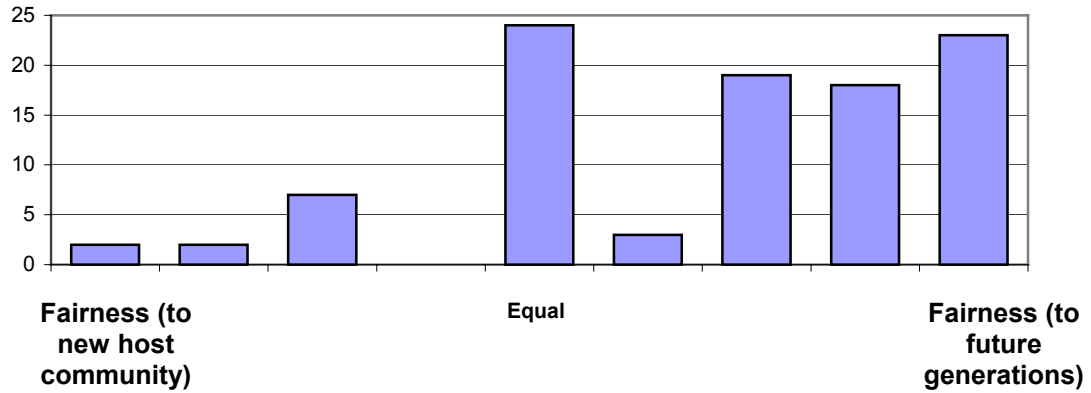
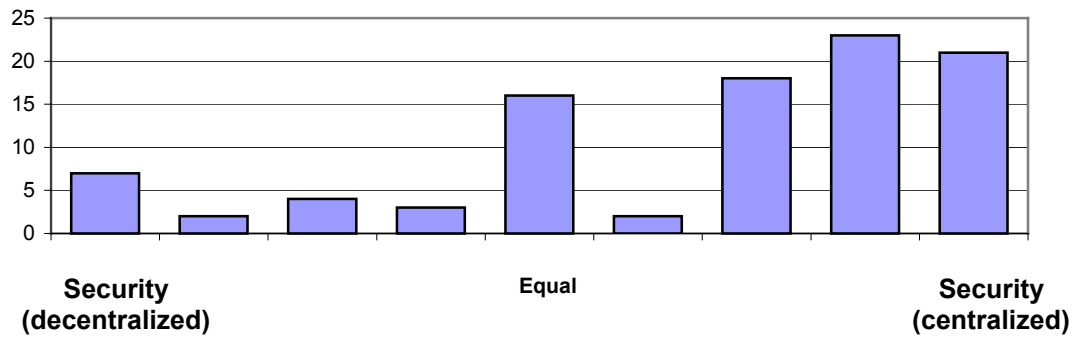
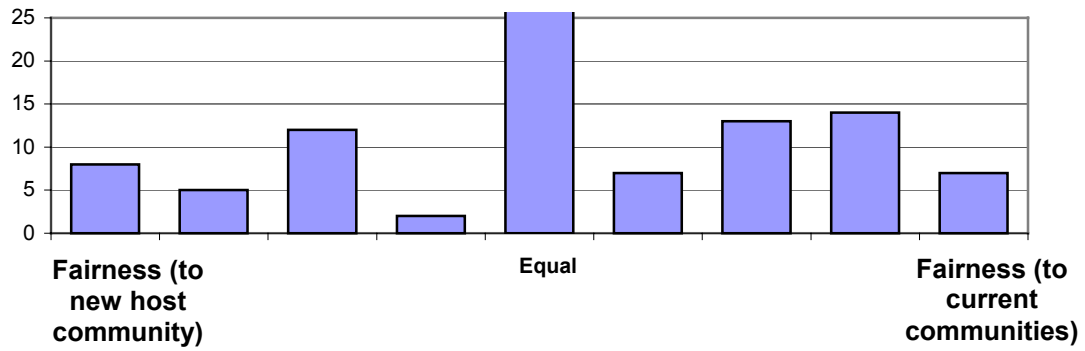
STORAGE AT REACTOR SITES VS. DEEP GEOLOGICAL BURIAL



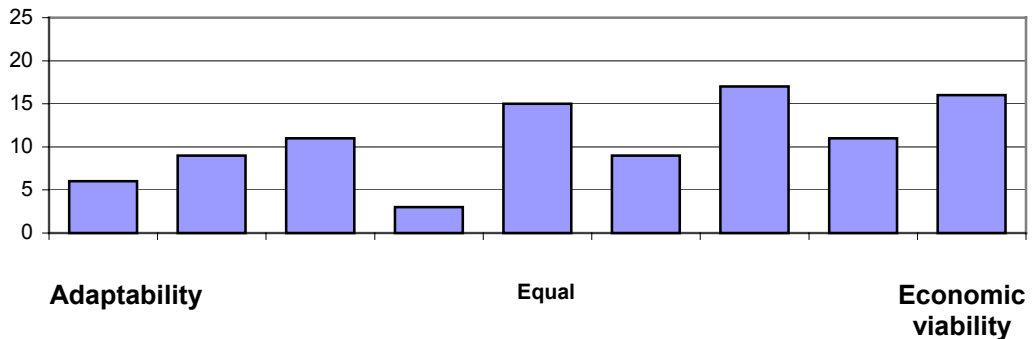
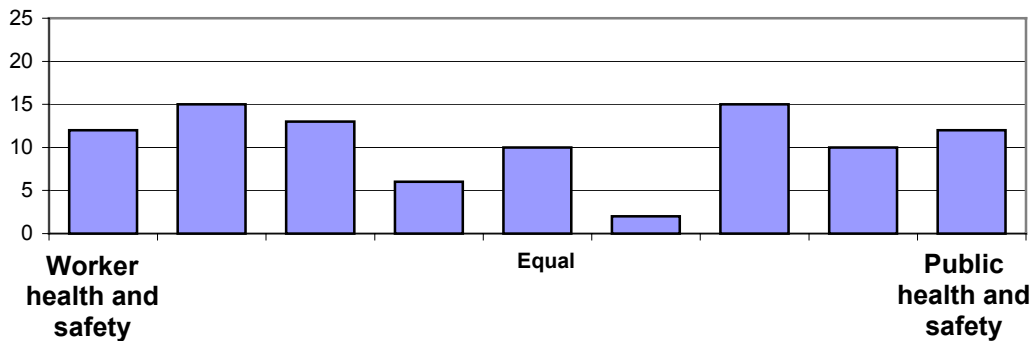
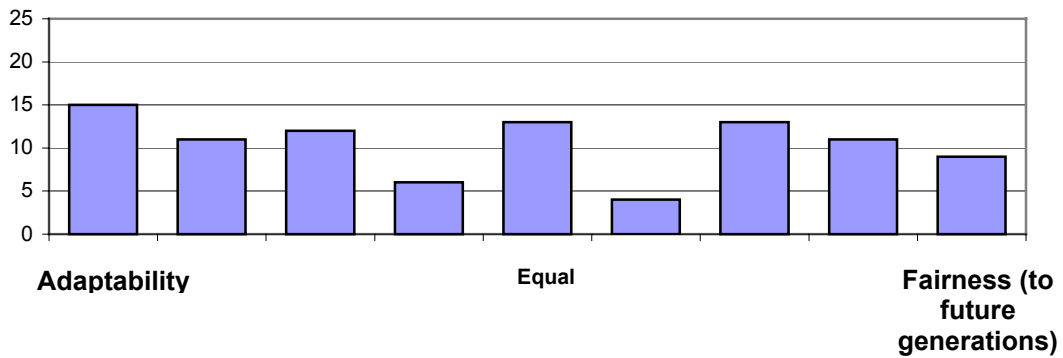
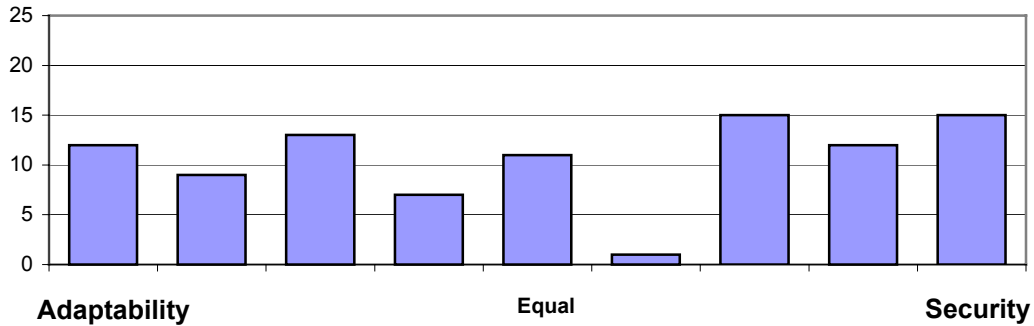


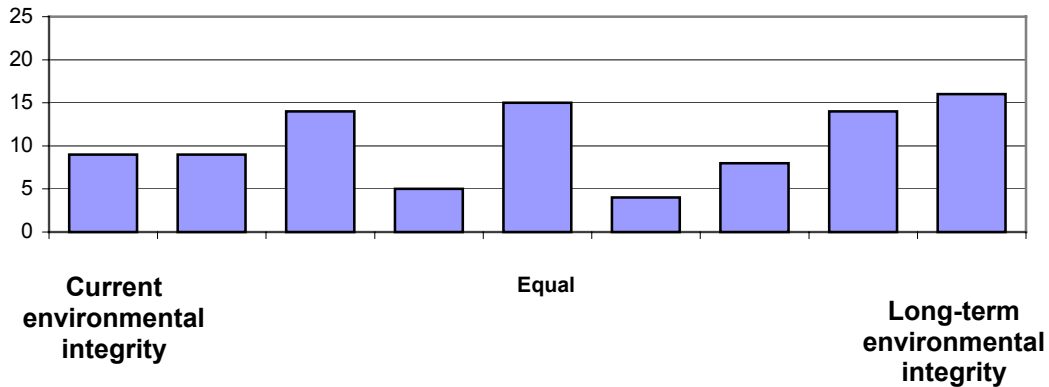
STORAGE AT REACTOR SITES VS. CENTRALIZED STORAGE





CENTRALIZED STORAGE VS. DEEP GEOLOGICAL BURIAL

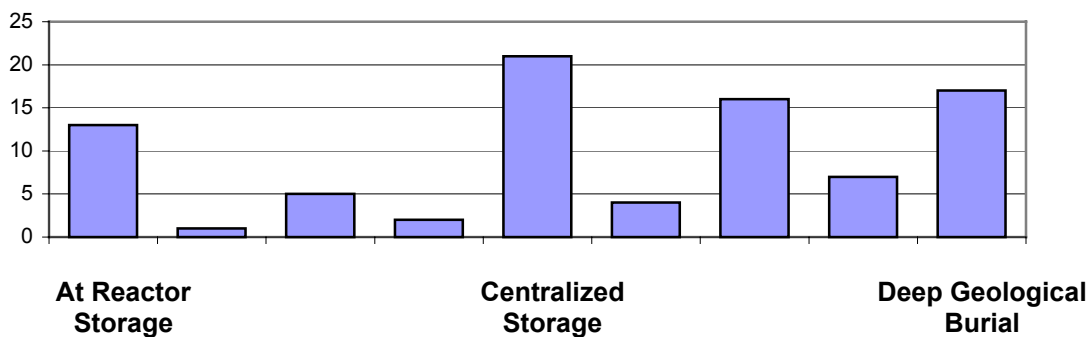




STATED PREFERENCE FOR VARIOUS MANAGEMENT OPTIONS

For the purpose of discussion, near the end of the groups participants were asked to identify their preferred management option in order to allow some discussion relating their choice to what they saw as the most important objectives. Please note, this was an engagement tool and offers no valid statistical perspective of the views of the Canadian public.

Participants were permitted to treat the three options as a continuum, allowing them to place themselves in between two management options as an indication of where they were leaning or if they were torn between two options.



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