

# NWMO Public Attitude Research and Dialogue – Workshop Technical Report

NWMO-SR-2017-04

October 2017

**Hill + Knowlton Strategies**

**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES



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# **NWMO Public Attitude Research and Dialogue – Workshop Technical Report**

**NWMO-SR-2017-04**

October 2017

Hill + Knowlton Strategies

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## ABSTRACT

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### Abstract

The NWMO commissioned Hill + Knowlton Strategies to lead a series of focus groups, workshops and a public dialogue on transportation planning for the long-term care of Canada's used nuclear fuel. Activities included 20 in-person focus groups (10 in Ontario, six in Quebec, and four in New Brunswick); a day-long public dialogue session; and two workshops with individuals involved in the site selection process in Ontario, one bringing together representatives from municipalities and indigenous communities.

These activities aimed to solicit participant input and engagement on five questions outlined in NWMO's Planning Transportation for Adaptive Phased Management discussion document (2016) as follows:

1. What basic requirements or factors should form the starting foundation for the APM transportation plan?
2. Which objectives, principles and key questions should guide development of an APM transportation plan?
3. How can we ensure the design and implementation of the APM transportation plan is sufficiently inclusive to ensure good decisions are made?
4. What information will we need from technical specialists to develop the plan and support decision-making?
5. What factors should be considered in future decisions about modes and routes?

The **NWMO Public Attitude Research and Dialogue: Workshop Technical Report** presents findings from two workshops held in Ontario. This report, together with the three other reports listed below present the composite findings from the Hill and Knowlton Strategies research:

1. The NWMO Public Attitude Research and Dialogue: Public Dialogue Technical Report.
2. NWMO Public Attitude Research and Dialogue: Focus Group Technical Report.
3. The NWMO Public Attitude Research and Dialogue: Integrated Report.

Research findings as well as ongoing conversations with communities involved in the siting process and others that are interested, will be used to develop the NWMO's draft transportation planning framework for the APM process.





# NWMO PUBLIC ATTITUDE RESEARCH AND DIALOGUE

## WORKSHOP TECHNICAL REPORT



### PREPARED BY

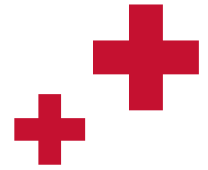
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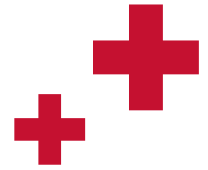
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## CONTENTS

<b>1. OBJECTIVES AND METHODOLOGY</b>	<b>1</b>
1.1. OBJECTIVES	1
1.2. METHODOLOGY	1
<b>2. SUMMARY OF KEY FINDINGS</b>	<b>3</b>
<b>3. DETAILED FINDINGS</b>	<b>6</b>
3.1. BASIC REQUIREMENTS OF THE APM TRANSPORTATION PLAN	6
3.2. GUIDING PRINCIPLES AND OBJECTIVES	10
3.3. ENSURING WE ARE INCLUSIVE	14
3.4. CONSIDERATIONS FOR THE SELECTION OF MODES AND ROUTES	15
3.5. THE SCIENCE BEHIND THE PLAN	16
3.6. FINAL COMMENTS - IS THE NWMO ON THE RIGHT TRACK?	17
<b>APPENDICES</b>	<b>18</b>
<b>BRUCE COUNTY</b>	<b>19</b>
A. BRUCE COUNTY AGENDA	20
B. BRUCE COUNTY PRESENTATION	22
C. BRUCE COUNTY HANDOUTS	46
D. BRUCE COUNTY WORKSHOP MATERIALS	49
<b>TORONTO</b>	<b>52</b>
A. TORONTO AGENDA	53
B. TORONTO PRESENTATION	54
C. TORONTO HANDOUTS	82
D. TORONTO WORKSHOP MATERIALS	84





# 1. OBJECTIVES AND METHODOLOGY

## 1.1. OBJECTIVES

The NWMO has made significant progress in implementing Adaptive Phase Management (APM), with seven Ontario communities actively engaged in the site selection process. As noted in the *Planning Transportation for APM Discussion Document* (the Discussion Document) – while it will be many years before used nuclear fuel is transported to a repository site, it is not too early to begin phased and iterative outreach to the public and other stakeholders to initiate a broader conversation about transportation planning.<sup>1</sup>

Two workshops were held in Ontario as part of a broader study aimed at helping the NWMO develop a draft transportation planning framework for APM. The broad objectives of these workshops were to:

- + Educate participants on the transportation planning process;
- + Seek input on the 5 discussion questions outlined in the Discussion Document; and
- +

## 1.2. METHODOLOGY

The first workshop was held in Toronto on June 15<sup>th</sup>, 2017 and the second, in the community of Ripley in Bruce County on June 23<sup>rd</sup>, 2017. In both cases, participation was by invitation only and the sessions brought together a cross-section of individuals who are or have been actively involved with the NWMO through the siting process:

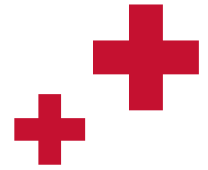
- + The Toronto workshop was held close to Pearson International Airport and was attended by 18 representatives from Northern Ontario siting communities and surrounding areas. Participants included Community Liaison Committee (CLC) members, along with representatives from First Nations and Métis communities in both Northern and Southern Ontario and Northern Ontario municipal associations.
- + The Bruce County workshop was held at the NWMO Learn More Centre in Ripley and brought together 13 representatives from the surrounding area, including municipal staff and interested members of the Huron-Kinloss and South Bruce CLCs.

Both workshops followed a similar design and explored the same questions, although the Bruce County workshop was abridged to a half-day:

- + Participants were assigned to tables of 6-8 participants (3 tables in Toronto, 2 tables in Ripley).
- + Both workshops began with an APM transportation overview by NWMO representatives, followed by a Q&A.
- + Participants were tasked with discussing the five broad questions outlined in the Discussion Document: the basic requirements of a transportation plan, guiding principles and objectives, ensuring inclusiveness,

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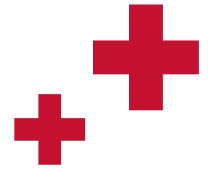
<sup>1</sup> *Planning Transportation for Adaptive Phased Management*. September 2016. NWMO.



selection criteria for transportation modes and routes, and the science behind the plan. The agenda for each workshop was adjusted based on the number of participants and length of the session (see *Appendix A – Toronto and Bruce County Workshop Agendas*).

- + Each discussion began with a brief overview of the topic (through a combination of short context-setting presentations, informational videos, handouts and references to the Discussion Document), followed by a brief Q&A with NWMO officials. Afterwards, a facilitator from Hill+Knowlton Strategies guided participants through a mix of individual reflection, table brainstorming exercises and plenary discussion. A member of the NWMO team sat at each table to act as a scribe to record the group’s discussions, using a worksheet provided for this purpose. Each table then nominated a speaker to report to the larger group in a plenary session. At the end of each segment, individual notes and table worksheets were collected for analysis purposes (see *Appendix B to D – Presentations, Handouts and Workshop Materials*).

This technical report summarizes the findings that emerged from the workshops. These results will be synthesized in a final report that will include the results of all other research components of the study.



## 2. SUMMARY OF KEY FINDINGS

The Toronto and Bruce County workshops were attended by a total of 31 participants, all of whom had a prior relationship with NWMO through their involvement on CLCs or other advisory committees. While some were newer to these discussions, all were actively engaged on the topic. Despite the difference in the participant mix of both groups (in Toronto, CLC members and municipal staff from Northern municipalities and First Nation and Métis representatives from communities near where the NWMO works; and in Bruce County, mainly members of local CLCs), the feedback from both sets of participants was highly consistent: the focus of each group's discussions varied according to the mix of experiences and perspectives in the room, but there were no significant divergences in opinions across groups on any given point. Participants were tasked with discussing the five broad questions outlined in the Discussion Document and several recurrent themes emerged from their comments.

### **Basic Requirements of the APM Transportation Plan**

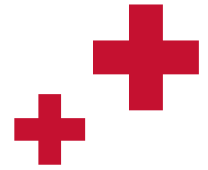
When discussing what needs to be included or addressed in the APM transportation plan, safety was systematically cited as the first preoccupation. Participants discussed the importance of addressing the following safety issues – emergency preparedness and response; the availability of alternate routes; logistical considerations, including the timing and frequency of transportation and the number of inter-modal transfers; and, the risks, hazards and condition of the selected routes and modes. They also noted the importance of security planning (whether mitigating the risk of terrorist attacks or of protesters interfering with transportation) and the need for this to be addressed as a distinct issue in the plan.

Having a strong communication and public education plan was almost equally important, given the high degree of fear and misinformation associated with nuclear issues. Participants called on the NWMO to undertake a comprehensive communications and engagement program on transportation, considering the importance of transportation in the siting process. Other suggestions encompassed the need to include a clear and transparent funding formula, along with guarantees that the necessary funding will be protected in the long-term; the need to address issues of compensation in the case of an environmental disaster (e.g. contamination) or adverse economic impacts (e.g. a prolonged road closure); and the need to consider the transportation requirements that could arise from the eventual use of small nuclear reactors in remote communities (e.g. in the Yukon).

Some participants also enquired whether an Environmental Assessment (EA) of the final site would include transportation and noted that should this be the case, the EA process would provide another forum for the public and stakeholders to express their views on Canada's plan, and transportation. Finally, participants suggested that transportation planning should build on lessons learned from the Lac Mégantic incident, the transportation of other dangerous goods and nuclear materials in Canada, the transportation of wind turbines and blades in Southern Ontario, and international experience.

### **Guiding Principles and Objectives**

In addition to building on earlier comments on the importance of safety, security and education/communication, participants discussed at some length the principle of “inclusiveness” and the extent to which it implied (or not) to the



idea of “consensus.” Participants applauded the spirit of this principle and viewed it as critically important. At the same time, most concluded that consensus could not be a condition of inclusiveness since achieving consensus on any given route would be both unlikely and unfeasible. Participants also made the following recommendations: protecting the environment merits a standalone principle; replace the word “aboriginal” with “indigenous” throughout the Discussion Document; include the notion of “Reconciliation” in the “Aboriginal rights, treaties and land claims” principle; elevate “fairness” from objective to principle; and recognize more explicitly the needs and role of municipalities and of the federal government in transportation planning.

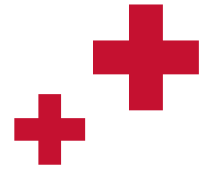
### **Ensuring We Are Inclusive**

Participants recognized that defining who needs to be involved to ensure good decisions are made with respect to APM transportation can be a particularly complex matter. In both workshops, participants’ initial response was that “everyone needs to be involved.” However, this was further nuanced as follows: ensure that all Canadians have some measure of awareness and understanding of Canada’s plan; ensure that those who are more directly affected by transportation have the opportunity to understand the plan and its potential impacts on them, and to have their voices heard; and ensure someone is empowered to make a transparent, fair and well-informed decision in the public interest. In this regard, participants stressed the importance of having clarity on who has the *authority* (moral and jurisdictional) to decide. Most indicated that the final decision should rest with the federal government.

Participants also noted that decision-making must take into consideration the Government of Canada’s duty to consult with First Nations and treaty rights, along with local decision-makers’ (indigenous and non-indigenous) duty to duly represent the needs and interests of their constituents. Municipal representatives also noted the limited jurisdictional authority of municipalities on transportation decisions, despite the risks (to people and the environment) and burden they may incur (e.g. transportation on municipal roads and bridges, provision of emergency services). In the end, most agreed that the “right to be informed” does not necessarily translate into decision-making power: “Just because you’re informed doesn’t give you a right to decide.”

### **Considerations for the Selection of Modes and Routes**

Discussions on modes and routes built on earlier topics, with participants providing additional insights on the factors or criteria that should help inform the selection of modes and routes. Again, all aspects of safety and security were cited as critical considerations, along with the need to assess the cost effectiveness of each route and mode (e.g. regarding equally safe routes or modes, the NWMO should prioritize the most cost effective option). The state of infrastructure (rail, roads, bridges) was also frequently cited as a concern, with participants wondering who ultimately would pay to upgrade and maintain this infrastructure (particularly in the case of municipal infrastructure). In addition to road and rail, participants in both workshops argued that water and air should not be eliminated outright, just as they believed the plan should be adaptable enough to leverage future advances in transportation such as autonomous vehicles and drones.

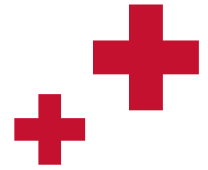


### **The Science Behind the Plan**

Participants generally supported the research program proposed by the NWMO, but suggested that further exploration of the following would be beneficial: testing of the transportation package that is current and reflective of the Canadian context and physical environment (e.g. extreme cold testing); an analysis of the jurisdictional and regulatory environment to ensure regulatory harmonization across levels of government and to protect the process from political interference; economic modelling information (that could be shared with the public) to address recurrent questions on the cost of transportation; and social research to assess whether views on the transportation of used nuclear fuel differ in Northern and Southern Ontario.

### **Is the NWMO on the Right Track?**

In closing, participants were asked to carefully consider everything they had heard and to indicate whether they felt the NWMO was on the right track with respect to the development of the APM transportation plan. Overall, they were positive about the direction they believed the NWMO was taking and applauded its effort in community engagement. However, all agreed that the conversation on transportation should continue, given its importance in the final siting decision. They called on the NWMO to push forward with broader and more proactive communications and engagement on the issue, particularly with youth and with communities along potential routes. Finally, participants shared that the workshops offered a welcomed forum for the exchange of ideas. Others, residing in siting communities, highlighted that the workshop helped them better appreciate the importance of transportation in the siting decision.



### 3. DETAILED FINDINGS

#### 3.1. BASIC REQUIREMENTS OF THE APM TRANSPORTATION PLAN

To help inform discussions on APM transportation, a NWMO official provided participants with a general overview of transportation planning, including: an overview of the APM safe management cycle, a video describing Canada's plan for the management of used nuclear fuel, the estimated timeline for transportation, and a video outlining the certification of package designs for the transportation of used nuclear fuel. Following a brief Q&A, participants were then invited to brainstorm the possible components of a transportation plan at their tables, before sharing their conclusions in plenary.

Toronto workshop participants were asked:

- + What do you think needs to be included or addressed in the APM transportation plan?
- + What kinds of questions and concerns need to be addressed in developing the plan?
- + What Canadian and international experience should be reviewed?

These questions were modified as follows for the Bruce County workshop, to accommodate the shorter session:

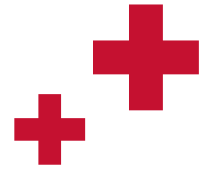
- + Based on your experience, what would you expect to see included or addressed in the APM Transportation Plan?
- + Who needs to be included in making decisions about modes and routes for APM transportation? (see Section 3.3.)
- + What do you think people will worry about when it comes to APM transportation (questions and concerns)?

When discussing what needs to be included or addressed in the APM transportation plan, workshop participants focused predominantly on matters relating to safety, security and education/communications.

#### Safety

Safety was seen by all as the starting point for any discussion on transportation and as a multi-faceted issue that requires a variety of factors to be addressed:

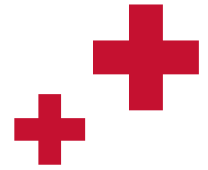
- + **Emergency preparedness and emergency response:** participants discussed at length the importance of ensuring adequate capacity for emergency response in the case of an incident, particularly in remote areas: "If there is a spill, how will it affect communities or the environment?" Participants cited the need for adequate training and equipment for first responders (e.g. helicopter access to remote areas, rapid access to towing equipment that could remove a 35-ton package from the roadway to minimize the duration of road closures); detailed emergency protocols; evacuation procedures; crisis communications plans; clarity on who has authority and jurisdiction and clear communication channels in the case of an incident. Participants from Northern Ontario also noted that the plan would have to consider the response protocol if an incident were to occur in a remote area or an unorganized community: "What happens if it's in 'middle of nowhere'?"



- + **The condition of the selected mode and route:** participants stressed repeatedly that the plan should assess the condition of the selected route and mode, and monitor it on an ongoing basis. This includes the state of key infrastructure (roads, rail, bridges), known hazards and the historical safety record (i.e. frequency and nature of incidents). Participants from Northern Ontario highlighted that “our Northern infrastructure is about 15-20 years behind” and that significant investments by the federal and provincial governments are required to upgrade and maintain transportation infrastructure (irrespective of APM transportation). Participants in both workshops also noted the potential impact on municipal infrastructure (roads, bridges), stressing that municipalities should not be burdened with the cost of upgrading these infrastructures to accommodate APM transportation.
- + **Logistical considerations:** participants cited by way of example the timing and frequency of transportation (e.g. participants from the North suggested avoiding nighttime driving); the number of inter-modal transfers that might be required (e.g. truck to train to truck); vehicle specifications; driver training and certification; security precautions (e.g. military or police convoy? Emergency response personnel on board the truck or train?).
- + **Alternate modes and routes:** participants suggested that the APM transportation plan should not focus exclusively on rail or road. They called on NWMO to not eliminate air and water transportation outright and to remain open and adaptive to future technologies (e.g. self-driving technology, drones, Hyperloop). Bruce County participants also suggested that including multiple routes would help share the risk among communities and avoid “showing favouritism.”
- + **Risk assessment:** participants cited a number of risks that should be documented, monitored and mitigated in the APM transportation plan, including environmental risks (extreme weather, wildlife); risks posed by human activity (high volume of tourists on local roads, protesters, other complex or hazardous transportation activities on the same routes, driver behaviour) and risks associated with the package itself (risks of failure in extreme conditions, risk of exposure to radiation in the case of an incident or during handling, risk of contamination).

## Security

Participants in both workshops noted that “safety” (e.g. of the environment, of people) and “security” were two different concepts and should be addressed separately. Security issues cited included the threat of terrorist activity and local risks (e.g. protesters) and were more frequently mentioned by participants in the Bruce County workshop. Participants discussed the challenge of striking the “right balance” between the public’s “right to know and make informed choices” (e.g. knowing the frequency, time and route of shipments so they can choose to leave during that time) versus the need for secrecy to mitigate the risk of attacks or tampering. While some felt that transparency was imperative, others struggled with just how much should be communicated to the public: “Is it safe/secure to notify [the public] of shipments? [Or should we limit notification to] just fire, police, emergency personnel?.” Others pointed out that many hazardous materials are transported by road and rail, without prior notification to the public and/or emergency services.



## Education/Communications

Participants noted that there is a high degree of misinformation/misunderstanding of nuclear-related issues by the public, including of Canada's plan for the long-term management of used nuclear fuel, the role and mandate of the NWMO and the actual (versus perceived) risk of transporting used nuclear fuel. Participants therefore stressed the importance of:

- + "Making the case" for moving used nuclear fuel;
- + Providing the public with information on the safety of the project ("Open houses work well"; "Have people learn and come to education sessions");
- + Engaging the public and communities along the route(s) early in the transportation discussion to "address fears, misconceptions about nuclear", "get the knowledge level up" and get "buy-in"; "help people understand that other hazardous goods being transported today that are far more nasty"; and
- + Having a "go-to person in each community that can answer questions."

Participants also discussed and recognized the challenges associated with educating and communicating with multiple communities, along what could be a very long route (e.g. from Pointe Lepreau, N.-B. to Ignace, ON). They therefore stressed the importance of being pragmatic in this regard and offered the following guidance:

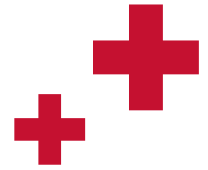
- + Those most directly affected should be engaged more directly, in particular, municipalities and First Nations and Métis communities: "We have to provide a level of comfort to municipalities, municipality has to be comfortable with the safety case."
- + The public should be informed of Canada's plan, at least "at a high level";
- + Consider how much (or how little) is currently being communicated around the transportation of other hazardous goods through communities, and what might be learned from that experience.

## Other Considerations for APM Transportation Planning

Participants also suggested the following should be included or addressed in the APM transportation plan:

- + **Funding:** participants stressed that the APM transportation must include a clear and transparent funding formula, along with guarantees that the necessary funding will be protected in the long-term (e.g. from political interference or the vagaries of the economy).
- + **Environmental assessment:** participants asked whether transportation would be included in an eventual environmental assessment (EA) of the host site and noted that the EA process would provide another venue for the public and stakeholders to express their view on Canada's plan, including transportation.
- + **Compensation:** some participants inquired if and to what extent compensation would be provided to residents and communities along the route in the case of an incident that would, for example, contaminate the environment (e.g. exposure to radiation) or disrupt economic activity (e.g. a road closure).





- + **Future nuclear sites:** one participant noted that Canada's plan should take into consideration interest in the eventual use of small nuclear reactors, particularly in remote communities (e.g. in the Yukon) and the associated need to transport nuclear material to and from these sites in the future.

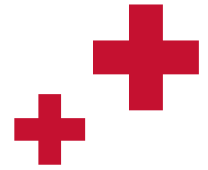
### Canadian and International Experience

Workshop participants discussed the importance of learning from past experiences with nuclear and the transportation of hazardous goods in Canada and abroad. They suggested that much could be learned from:

- + The Lac Mégantic incident;
- + The transportation of other dangerous goods (with some participants in the Bruce County workshop suggesting that this is an opportunity for the NWMO to "position itself as a leader in the transportation of hazardous materials");
- + The transportation of other large energy equipment (e.g. wind turbines and blades); and
- + Successes and failures in transporting nuclear materials elsewhere in Canada (e.g. the regular transportation of medical isotopes; the "lack of consultation with First Nations" over "liquid waste" from Chalk River; opposition to the transportation of radioactive steam generators from Bruce Power along the Great Lakes and St. Lawrence River; transportation of materials to and from the Port Hope Uranium Conversion Facility).

Participants also stressed the importance of learning from international experience and best practices:

- + Past experience in the transportation of used nuclear fuel in Europe and the United States, with a caveat that it is important to "acknowledge differences" between the nuclear industry in Canada, Europe and the U.S.;
- + Nuclear disasters such as Fukushima, given their prominence in the public domain and the need to address safety concerns; and
- + Available academic research.



### 3.2. GUIDING PRINCIPLES AND OBJECTIVES

The second topic of discussion centered on the principles and objectives that will guide the development of the APM transportation plan.

Toronto workshop participants were asked to brainstorm “what guiding principles and objectives must inform the development of the APM transportation plan?”, before reviewing and commenting a handout listing the NWMO’s Guiding Principles and Objectives (first at their table, and then in plenary). By contrast, Bruce County participants reviewed and discussed the Guiding Principles and Objectives handout at their tables and shared their conclusions in plenary. In both cases, participants were asked to consider:

- + Which, if any, of the principles and objectives identified in dialogue with Canadians during the development of APM should apply to transportation;
- + Whether anything could be changed or clarified; and
- + Which guiding principles and objectives they felt were most important.

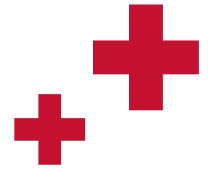
#### Guiding Principles

Unprompted discussions on this question in Toronto and prompted discussions in both workshops surfaced similar ideas and priorities: as in their earlier discussions, both groups emphasized the importance of safety, security, education and communication:

- + **Safety** was seen by all to be the foundational and most important principle. While **security** was seen to be equally important, participants reiterated that it should be discussed and treated as a distinct matter.
- + The notions of education and communication were seen to be implicit in the proposed principles, but not addressed directly. **Education** was discussed from various perspectives: as a way of countering the “media hype” and “issues of fear” surrounding the transportation of used nuclear fuel and to empower communities (municipalities, First Nation and Métis communities) to be active partners in this process. Participants also stressed the importance of transparent, proactive and effective **communications** and collaboration to build trust and establish the credibility and legitimacy of both NWMO and the APM transportation plan.

The principle of **inclusiveness** was also seen to be of critical importance and participants in both groups discussed the notion of “**consensus**” at some length. While this word does not appear in the current formulation of the guiding principles, many stated or understood that “the NWMO said it would seek consensus.” They suggested it would be important to clearly articulate whether consensus would be required to proceed with transportation, and by whom – with most participants believing that achieving consensus along a transportation route was both unlikely and unfeasible: “What is the threshold for consensus? You will never get everyone saying yes.” “What does it mean if one community says ‘No?’” Participants from Northern Ontario pointed out that this issue was of great importance in the North, given that “there are few or no alternative routes if someone says no.”

In relation to this point, participants in the Toronto workshop also discussed the differences in the rights and jurisdiction of indigenous and non-indigenous communities, highlighting that in many regards, “municipalities have no



power on this this, while First Nation communities do.” Participants stressed the importance of “respecting First Nations’ connection to the land” through dialogue and the incorporation of indigenous and local knowledge. A minority of participants suggested that the NWMO “had to respect a community’s right to refuse the plan.”

Finally, participants suggested that consideration should be given to integrating the following ideas in the guiding principles:

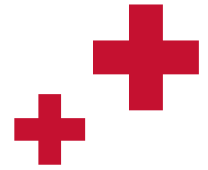
- + The principle of “reconciliation” with First Nations communities;
- + Protection of the environment as a standalone principle;
- + The notion of “adaptability” to “new technology, new regulations, and social expectations”, in keeping with the APM philosophy;
- + The idea of “fairness”, which for some belonged among the guiding principles rather than in the objectives;
- + Recognize more explicitly the needs and role of municipalities and of the federal government; and
- + State NWMO’s commitment to ongoing consultation and engagement.

When asked which principle (or objective) was most important, one participant summed up the general sentiment in both workshops by stating that “[they] are all equally important, since if any fails, the whole thing fails.”

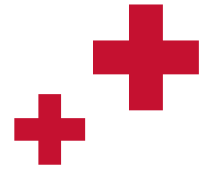
The following table summarizes the key points made by participants on each of the guiding principles:

**Table 3.2.1. Guiding Principles: Participant Feedback**

Guiding Principles	Comments
<p><b>Safety is the overarching principle guiding all APM planning and activities:</b> Safety, security, and protection of people and the environment are central and must not be compromised by other considerations.</p>	<ul style="list-style-type: none"> <li>+ “Never trump safety”</li> <li>+ Security and safety should be recognized as distinct and addressed accordingly.</li> <li>+ Environment “deserves its own principle.”</li> </ul>
<p><b>Meet or exceed regulatory requirements:</b> The plan must meet, and if possible, exceed all applicable regulatory standards and requirements for protecting the health, safety, and security of humans and the environment, and respect Canada’s international commitments on the peaceful use of nuclear energy.</p>	<ul style="list-style-type: none"> <li>+ All efforts should be made to exceed regulatory requirements (“Plan above the standard to maintain safety”).</li> <li>+ NWMO should verify that standards are objectively the best available standards (“Mégantic has shown that following standards may not be enough”).</li> <li>+ Add “now and in the future.”</li> </ul>



Guiding Principles	Comments
<p><b>Aboriginal rights, treaties and land claims:</b> The plan must respect Aboriginal rights and treaties, and take into account that there may be unresolved claims between Aboriginal peoples and the Crown.</p>	<ul style="list-style-type: none"> <li>+ Change “aboriginal” to “indigenous.”</li> <li>+ Include notion of “reconciliation.”</li> </ul>
<p><b>Inclusiveness:</b> The plan must respond to and address, where appropriate, the views of those who are most likely to be affected by the plan.</p>	<ul style="list-style-type: none"> <li>+ Clarify whether “inclusiveness” should be interpreted to mean “consensus.”</li> <li>+ Include notion of “collaborative decision-making.”</li> <li>+ Include notion of “education of all stakeholders.”</li> <li>+ Include notion of “continuous, open dialogue as the system evolves.”</li> <li>+ Emphasize need to include and educate those that are “directly affected.”</li> <li>+ Inclusiveness is “important but should not be to the detriment of the process.”</li> <li>+ Stress the importance of engaging youth given the long-term horizon of transportation and APM.</li> </ul>
<p><b>Informing the process:</b> The plan must be informed by the best relevant available knowledge, including science, social science, Indigenous Knowledge, and ethics. This information used to develop the plan must also be made public.</p>	<ul style="list-style-type: none"> <li>+ Emphasize importance of local (community) knowledge: “NWMO needs to be educated and listen to local experts and first responders” in order to fully understand local context for transportation.</li> <li>+ Include notion of “proactively informing” or “educating” stakeholders versus only informing the process.</li> </ul>
<p><b>Ongoing engagement of governments:</b> The NWMO must involve all potentially affected provincial governments in the development and review of the plan.</p>	<ul style="list-style-type: none"> <li>+ Recognize the role and importance of municipal governments and of the federal government.</li> <li>+ Highlight the importance of collaboration and coordination across all three levels of government and with Indigenous governments.</li> <li>+ Recognize importance of also engaging political parties.</li> </ul>

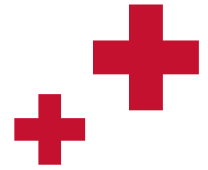


## Objectives

In both workshops, participants spent more time discussing the principles than the objectives and/or conflated the two. In general, participants agreed with the proposed objectives and the following tables summarizes their additional points specific to the proposed objectives:

**Table 3.2.2 Objectives: Participant Feedback**

Objectives	Comments
Protect public health and safety from the risk of exposure to radioactive or other hazardous materials, and from the threat of injuries or deaths due to accidents.	+ General agreement
Protect workers from and minimize hazards associated with managing used nuclear fuel.	+ General agreement + Protecting workers must include ensuring they are adequately trained and supported.
Ensure fairness in the distribution of costs, benefits, risks, and responsibilities.	+ Fairness could be a principle.
Ensure the well-being of all communities with a shared interest.	+ “Shared interest” is unclear.
Ensure the security of facilities, materials and infrastructure.	+ General agreement
Ensure that environmental integrity is maintained over the long term.	+ General agreement
Ensure economic viability of the used nuclear fuel management system.	+ Include notion of “accountability.” + Provide clarity on “who pays.”
Ensure a capacity to adapt to changing knowledge and conditions over time.	+ General agreement



### 3.3. ENSURING WE ARE INCLUSIVE

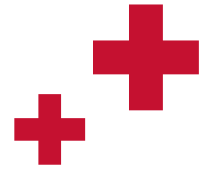
Workshop participants considered who needs to be involved to ensure good decisions are made with respect to APM transportation. Participants were asked to consider the distinction between those who need to be informed versus those who could or should play a more active role in decision-making.

In both workshops, participants' initial reactions were that "everyone needs to be involved." However, they quickly distinguished between the need to:

- + Ensure that all Canadians have some measure of awareness and understanding of Canada's plan;
- + Ensure that those who are more directly affected by transportation have the opportunity to truly understand the plan and its potential impacts on them, and to have their voices heard;
- + For "someone" (generally seen to be the Government of Canada) to make a transparent, fair and well-informed decision in the public interest; and
- + Have absolute clarity on who has the *authority* (moral and jurisdictional) to decide.

In keeping with their earlier comments on inclusiveness and the challenge of achieving consensus along any given route, participants noted it is "not practical to have the sign-off of everyone" and the potential exists that not everyone's questions or concerns will be addressed. Participants recognized that defining who has a say in decision-making, and to what extent, is a particularly complex matter. However, participants did generally agree that:

- + Communities along the transportation route need to be informed about transportation and "proximity to the route" should be a factor in determining the level of information provided and/or the influence a community could yield;
- + Questions relating to decision-making must take into consideration the Government of Canada's duty to consult with First Nations and that "First Nations are equal partners through/based on treaties";
- + Each community along the route will have its own traditions and processes for making decisions internally and elected officials need to duly represent their constituents (e.g. some may feel the need to hold a plebiscite or public meetings, while others may defer to the decisions of their elected representatives);
- + The "right to be informed" does not necessarily translate into decision-making power: "Just because you're informed doesn't give you a right to decide"; and
- + Municipal representatives reiterated the limited jurisdictional authority of municipalities in this context: "What level of 'yes or no' does the municipality have?" However, they stressed that municipalities are key stakeholders given their role in providing local emergency services: "Provide a level of comfort to municipality you are going through. Along the route, [you need to] cover costs, get them educated on the safety case."



Specific groups that need to be involved, as identified by workshop participants, include:

- + Environmental groups, such as Great Lakes groups or “outdoors people” groups;
- + Neighboring jurisdictions, including Manitoba, Quebec and the United States;
- + Relevant governmental organizations and bodies, including the Federal Departments of Natural Resources and Transport Canada, Provincial Ministries (Energy, Transport) and the Canadian Nuclear Safety Commission (CNSC);
- + The transportation industry and “private contractors on roads/highways”;
- + MP/MPP’s along the transportation route; and
- + Municipal authorities;

Additionally, some participants suggested the following:

- + The creation of “an advisory committee who understands the North”;
- + The engagement of youth, who “will be there when this plan is put in action”;
- + Participation in decision-making might also be enabled by the Environmental Assessment process, should it apply to transportation;
- + Different modes of transportation (e.g. rail, road, boat) will require the involvement of different stakeholders.

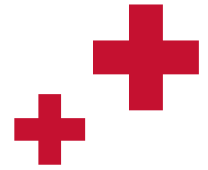
### **3.4. CONSIDERATIONS FOR THE SELECTION OF MODES AND ROUTES**

Participants for both workshops were provided with context about the modes (“how we transport”) and routes (“where we transport”) being considered by the NWMO for the transport of used nuclear fuel, including information on potential travel distances between interim storage sites and siting communities. Participants were then asked to discuss the factors or criteria that should be considered in future decisions about modes and routes.

#### **Modes**

Some participants in both workshops argued that all modes of transportation should be “equally evaluated”, suggesting that NWMO should not eliminate the water and air options out right. Participants noted the following with respect to the choice of transportation mode:

- + Safety and security should always be the first consideration, versus cost;
- + The cost of each mode should be carefully assessed and considered, e.g. “what’s the difference in cost between rail and upgrading roads?”
- + “Compare hazards/accident risks by mode” and ease of access for first responders and officials in the case of an accident;
- + Minimizing handling and transfers can minimize risks (particularly to workers);



- + The transportation plan must be able to adapt to and take full advantage of future innovations in transportation, including drones or autonomous automobiles;
- + Training, supervising and supporting drivers must be included in the discussion on modes until driverless solutions are available; and
- + If and how emergency services would travel with the container, e.g. by convoy? On-board the train or truck? By helicopter? “Dedicated NWMO response teams along the route?”

### Routes

When discussing the factors or criteria that should be considered in future decisions about routes, participants generally focused on the use of rail or road. Participants highlighted:

- + The practical aspects of transportation, including the state of infrastructure (“Canadian Railroads are in such poor shape it would require \$billions [to upgrade them]”) and the hazards of transportation in rural or remote areas (“Time of day [matters] - more dangerous at night due to wildlife”);
- + Political considerations in route selection: “GTHA - Mayors won't be fussy that they are known as nuclear community even though they are users.” The issue of politics was particularly pronounced with respect to using water as a route: “Can't use water for political reasons”;
- + The length of the route has direct implications for emergency response planning and capacity;
- + Consider building trust in the transportation plan by starting with “shorter hauls”; and
- + “Train routes are known” and thus more at risk of “sabotage.”

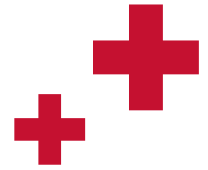
### 3.5. THE SCIENCE BEHIND THE PLAN

Workshop participants were presented with and asked to comment on the program components and activities that the NWMO has committed to completing to support the development of Canada's plan.

They generally supported the proposed research program and suggested the NWMO consider undertaking additional research and technology demonstrations in the following areas:

- + Given the effectiveness of the container testing video, it should be updated to make it more current and reflective of the Canadian context: “Would like to see testing videos with the actual container that will be used”; more exhaustive testing of the container under water (greater depth for a longer period); testing of the container in “extreme cold” circumstances;
- + Analysis of the jurisdictional and regulatory environment to ensure “regulatory harmonization” and “protecting the process from political interference.” Bruce County participants cited by way of example issues in the agriculture sector where a given product or process met all federal requirements but was subsequently overturned by the provincial government “for political reasons”;





- + Information about APM funding (that could be shared with the public) to address recurrent questions about “how much does it cost and who’s paying?”;
- + Whether views on the transportation of used nuclear fuel differ in Northern and Southern Ontario; and
- + Further testing of radiation and contamination risks (“What happens to the pellets or rods inside the package in the case of an incident?”).

When asked about what kind of specialists are needed to support the development of the transportation plan, participants in both workshops mentioned the need for media consultants and communications specialists to counter misinformation: “We need people who specialize in getting message out.” Participants felt this was needed in the face of organized opposition from ENGOs and environmental organizations that are “well-funded and media-savvy.”

### **3.6. FINAL COMMENTS - IS THE NWMO ON THE RIGHT TRACK?**

In closing, participants were asked to carefully consider everything they had heard and to indicate whether they felt the NWMO was on the right track regarding the development of the APM transportation plan.

Overall, they were positive about the direction they believed the NWMO was taking. Many shared that, for the most part, the NWMO “has done a good job at engaging communities” relative to other community discussions on energy and resource development.

Some noted that the NWMO has been “low key” in their area and “only engaged those involved in the project”, but not the broader community. Others wondered whether decisions on modes and routes had already been made and called on the NWMO to be forthcoming and transparent on the issue of transportation.

Everyone agreed that the discussion on transportation needed to be broadened “now, not later”, given its importance in the final siting decision and called for a “comprehensive engagement and communications program.” Bruce County workshop participants stressed the role and importance of the CLCs in proactively broadening engagement and community involvement as discussions on transportation planning move forward.

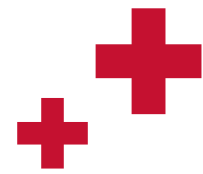
Some workshop participants also reiterated the following:

- + It is important for the NWMO to find a way to engage youth in the conversation because “they are the ones who will have to deal with this plan”;
- + Effective communications must include putting “nuclear science in layman’s terms”; and
- + Keeping “adaptability in mind” is core to the APM process.

Finally, participants in both workshops shared that the workshops were “informative” and offered a welcomed forum for the exchange of ideas. Others, particularly those residing in siting communities, highlighted that the workshop helped them better appreciate the importance of why transportation – in addition to the site itself – is an important criteria in the siting decision.

# APPENDICES

# **BRUCE COUNTY SESSION**



## A. BRUCE COUNTY AGENDA

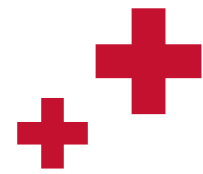


### Planning Transportation for Adaptive Phased Management

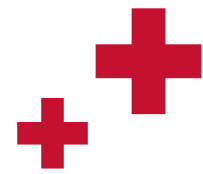
Huron-Kinloss Learn More Centre,  
46 Queen Street, Ripley ON N0G 2R0

Thursday June 23 2017  
AGENDA AT A GLANCE

TIME	ACTIVITY
9:30 – 10:00	<b>OPENING AND INTRODUCTIONS</b> <ul style="list-style-type: none"><li>• Opening and introductions (roundtable)</li><li>• Safety moment</li><li>• APM transportation overview + Certification package video</li></ul>
10:00 – 10:50	<b>TRANSPORTATION PLANNING FRAMEWORK</b> <ul style="list-style-type: none"><li>• Based on your experience, WHAT would you expect to see included or addressed in the APM transportation plan?</li><li>• WHO needs to be included in making decisions about modes and routes for APM transportation?</li><li>• What do you think people will worry about when it comes to APM transportation?</li></ul>
10:50 – 11:00	<b>STRETCH BREAK</b>
11:00 – 11:45	<b>MODES AND ROUTES</b> <ul style="list-style-type: none"><li>• What factors or criteria should be considered in future decision about modes (how we transport) and routes (where we transport)?</li></ul>
11:45 – 12:15	<b>THE SCIENCE BEHIND THE PLAN</b> <ul style="list-style-type: none"><li>• What research, information or technology demonstration might help us build a better plan and make better decisions?</li><li>• What kinds of specialists should we be consulting and engaging in the development and implementation of the transportation plan?</li></ul>



TIME	ACTIVITY
12:15 – 12:30	LUNCH
12:30 – 1:15	<b>GUIDING PRINCIPLES AND OBJECTIVES</b> <ul style="list-style-type: none"><li>• Based on your experience and knowledge of transportation issues, what guiding principles and objectives must inform the development of the APM transportation plan?</li><li>• Review the list provided:<ul style="list-style-type: none"><li>○ Is anything missing?</li><li>○ What could be changed or clarified?</li><li>○ What is most important to you?</li></ul></li></ul>
1:15 – 1:30	CLOSING



## B. BRUCE COUNTY PRESENTATION



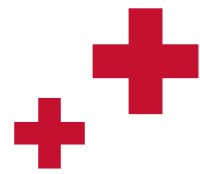
### Planning Transportation for Adaptive Phase Management

June 23, 2017



### Welcome





## Introductions

- NWMO
- Hill+Knowlton Strategies
- Today's guests



3



## Safety Moment

4





## Today's objective

To seek your input on the five questions outlined in the discussion document, *Planning Transportation for Adaptive Phase Management*.



5



## A brief review

- Question 1:** What basic requirements or factors should form the starting foundation for the APM transportation plan?
- Question 2:** Which objectives, principles and key questions should guide development of an APM transportation plan?
- Question 3:** How can we ensure the design and implementation of the APM transportation plan is sufficiently inclusive to ensure good decisions are made?
- Question 4:** What information will we need from technical specialists to develop the plan and support decision-making?
- Question 5:** What factors should be considered in future decisions about modes and routes?

6







## Today's focus and agenda

Time	Activity
9:30 – 10:00	Opening and Introductions
10:00 – 10:50	APM Transportation Planning Framework
10:50 – 11:00	Stretch Break
11:00 – 11:45	Modes and Routes
11:45 – 12:15	The Science behind the Plan
12:15 – 12:30	Working Lunch
12:30 – 1:15	Guiding Principles and Objectives
1:15 – 1:30	Closing

7



## How we'll work together



Presentations



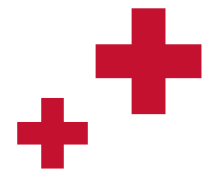
Personal reflection, table  
brainstorming and reporting



Plenary discussion

8





## Housekeeping



Emergency



Self-Care



Quiet!



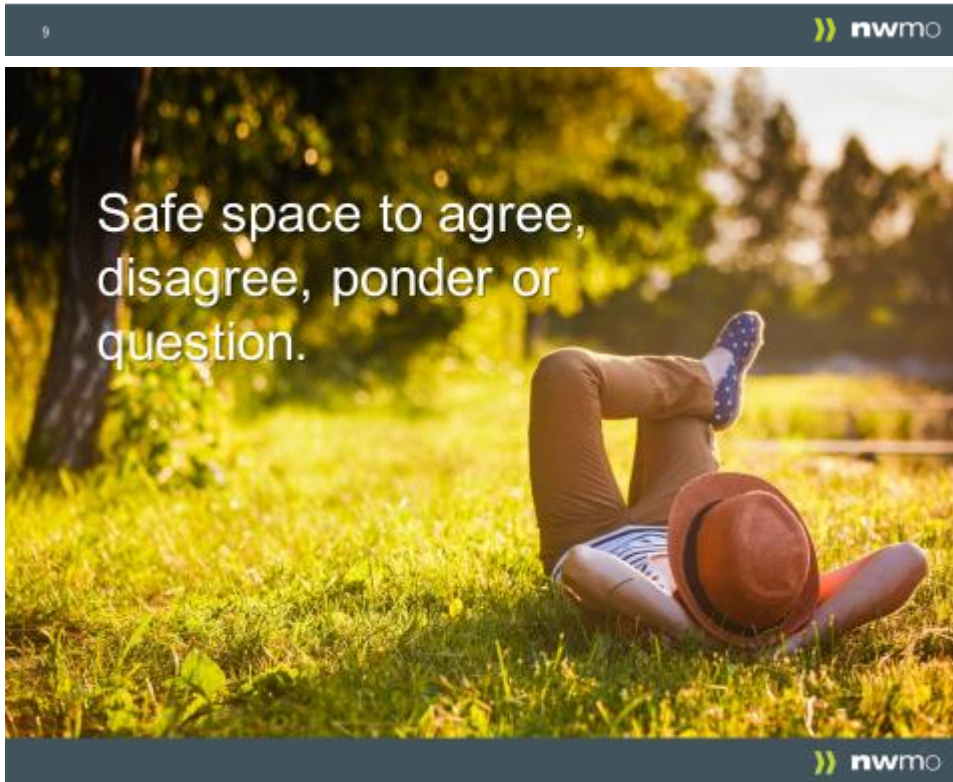
Ground Rules

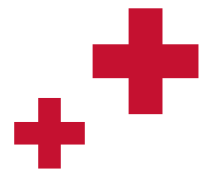


Parking Lot



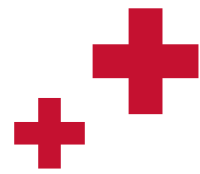
Private  
Comments





There are no bad ideas.





Share the airtime.

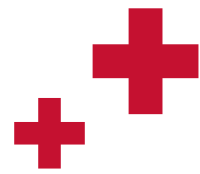


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Honour diverse perspectives.



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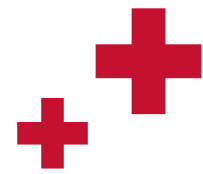


## APM Transportation

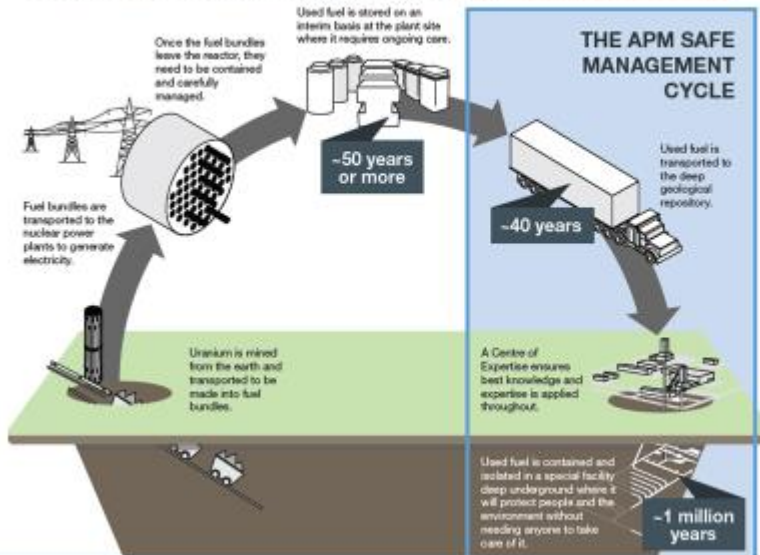


### Overview

- Within the next 30 years, Canada's used nuclear fuel will start to be moved from licensed interim storage locations to a deep geological repository.
- Transportation of used nuclear fuel is an important part of Canada's plan to protect people and the environment over the long term.
- Approximately 40 years of safe transportation, beginning in 2040 or so.



## Transportation planning framework



17

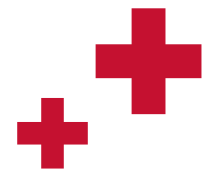


## Certifying package designs



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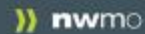
## Dialogue has started

Communities involved in the site selection process, and their neighbours, said they want to begin discussion to plan for the transportation of used nuclear fuel required by Canada's plan.

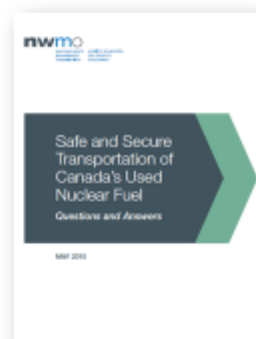
The NWMO developed a discussion document to help begin this conversation.



19

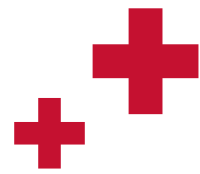


## Supporting learning and discussion



20





## Today's workshop is part of this dialogue

- Presentations to Community Liaison Committees, First Responders, working groups, community groups and others with an interest
- Community open houses
- Mobile transportation exhibit and NWMO transportation specialists at public events
- Presentations to transportation industry and other specialists at conferences
- Transportation dialogue project with Hill+Knowlton Strategies

21



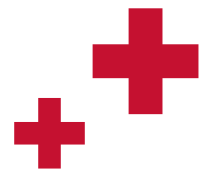
## Any questions?



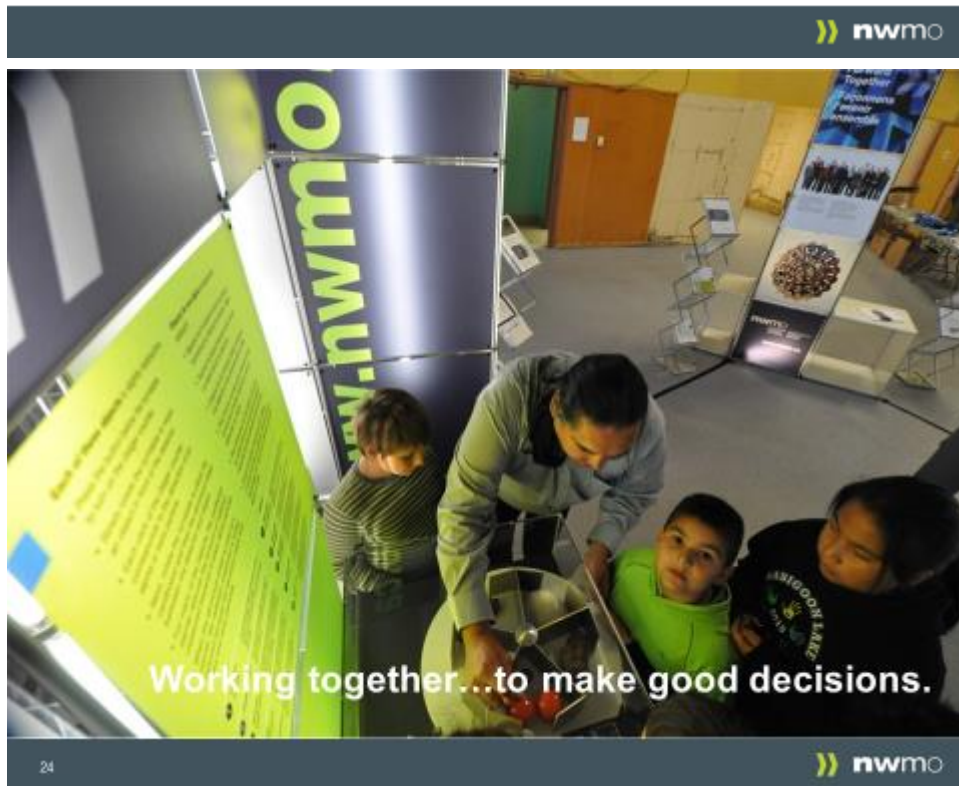
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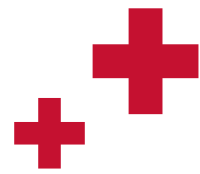






## Transportation Planning Framework






## A balancing act



25

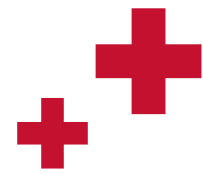
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## Table discussion

1. Based on your experience, **WHAT** would you expect to see included or addressed in the APM Transportation Plan?
2. **WHO** needs to be included in making decisions about modes and routes for APM transportation?
3. What do you think people will worry about when it comes to APM transportation (**questions and concerns**)?

26

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## Plenary



Highlights



Areas of consensus



Points of divergence

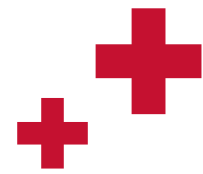
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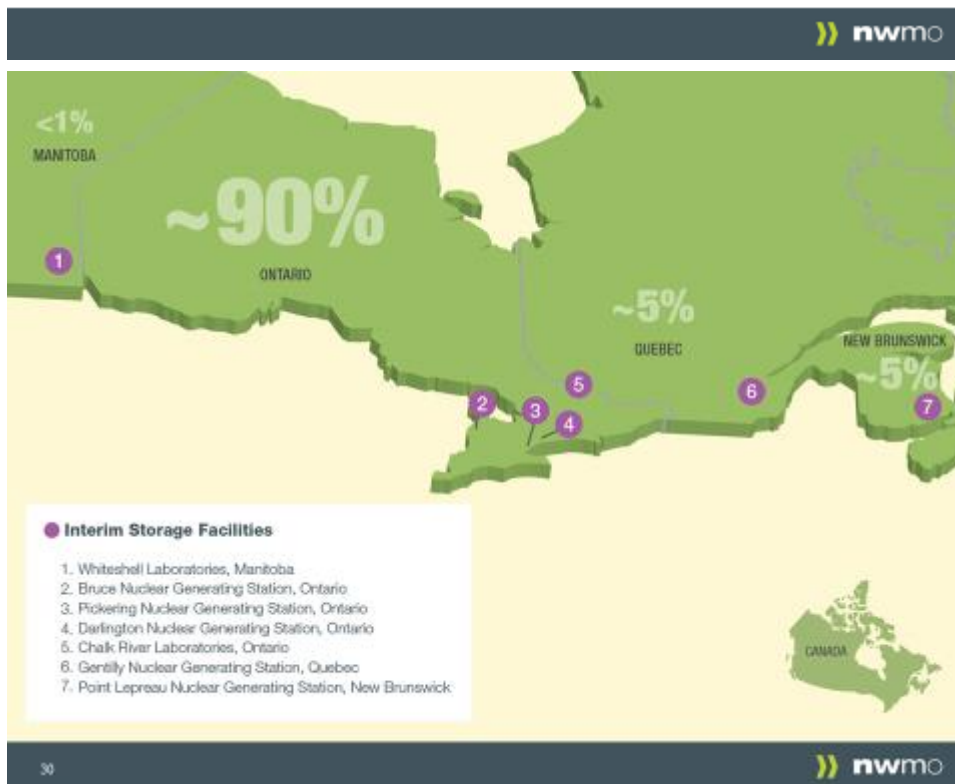
## Stretch Break

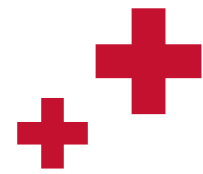
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## Modes and Routes





## Modes and routes





## Average number of shipments per year



The transportation program is expected to extend over approximately 40 years, based on current anticipated volumes from existing nuclear facilities.

33



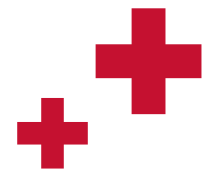
## Table discussion

1. What **factors or criteria** should be considered in future decisions about:
  - a) Modes (how we transport)?
  - b) Routes (where we transport)?



34





## Plenary



Highlights



Areas of consensus



Points of divergence

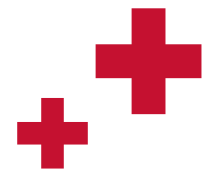
35



## The Science behind the Plan

36





## Work in progress

### Components – what?

- Plan components that will be shaped by research, technology development and demonstration activities
- Reflect regulation and best practices identified to date

### Activities – how?

- Activities the NWMO has committed to completing to support the development of Canada's plan

37



## Plenary discussion



What **research, information, or technology** development or demonstration might help us build a better plan and make better decisions?

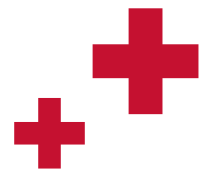


What kinds of **specialists** should we be consulting and engaging in the development and implementation of the transportation plan?

38







# Lunch Break

39





## Table discussion

1. Based on your experience and knowledge of transportation issues, what **guiding principles and objectives** must inform the development of the APM transportation plan?
2. Review list provided:
  - Is anything **missing**?
  - What could be **changed or clarified**?
  - What is most **important** to you?

41

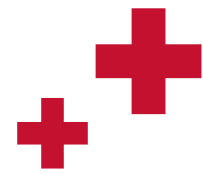


## Principles

- Safety and security is central
- Meet or exceed regulatory requirements
- Aboriginal rights, treaties and land claims
- Inclusiveness
- Informing the process
- Ongoing engagement of governments

42





## Objectives

- Protect **public health and safety** from the risk of exposure to radioactive or other hazardous materials, and from the threat of injuries or deaths due to accidents;
- Protect **workers** from and minimize hazards associated with managing used nuclear fuel;
- Ensure **fairness** in the distribution of costs, benefits, risks, and responsibilities;
- Ensure the **well-being of all communities** with a shared interest;

43



## Objectives

- Ensure the **security** of facilities, materials and infrastructure;
- Ensure that **environmental integrity** is maintained over the long term;
- Ensure **economic viability** of the used nuclear fuel management system; and
- Ensure a **capacity to adapt** to changing knowledge and conditions over time.

44





## Plenary



Highlights



Areas of consensus



Points of divergence

45

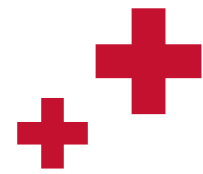


## Final thoughts

Is NWMO on the right track?

46



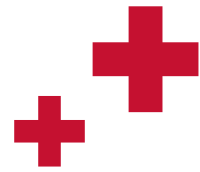


## Next steps

- Hill+Knowlton summary report
- Dialogue will continue in communities...and more broadly
- NWMO will prepare a report on *What We Heard*, and a draft framework emerging from the dialogue in 2018
- Suggestions?

47





## C. BRUCE COUNTY HANDOUTS



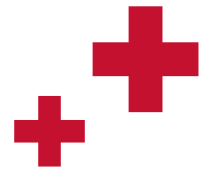
### Modes and Routes

#### Early Considerations on Modes:

- The number of times used nuclear fuel would be handled during the process, especially if multiple modes were used;
- The extent of contact of used fuel with the general public;
- Ease of access to the used nuclear fuel and package if an accident were to happen;
- The ability to minimize risk; and
- International experience and track record with each transportation mode.

#### Early Considerations on Routes:

- Is there a continuous public road or rail system connecting the interim storage facilities to the community? Is this system capable of supporting the volume of transportation that will be required for the duration of the transportation program?
- Are there design, operating or structural deficiencies that would limit the use of a segment of the system by heavy trucks or trains? If so, is there a plan in place to address these deficiencies?
- Are there two or more serviceable routes providing access from the interim storage facilities to the community? If not, is a second route planned?
- Are there travel limitations regarding the use of heavy trucks or rail cars due to reoccurring weather or seasonal conditions?
- Are there emergency response resources that can service these routes? If so, what are their capacities?



## The Science behind the Plan

### Program Components

*The following will be shaped by research, technology development and demonstration activities and reflect regulation and best practices identified to date:*

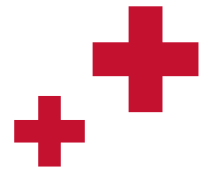
- A robust, tested and certified transportation package;
- A plan to meet commercial vehicle and railroad safety and security requirements;
- A Transportation Security Plan;
- An Emergency Response Plan;
- A plan for periodic reviews;
- A program for hiring high-quality and well-trained workers and vehicle operators;
- A plan for training and joint exercises with provincial and community emergency responders; and
- Procedures for safe and secure operations.

### Program Activities

*Activities the NWMO has committed to completing to support the development of the plan:*

- Identifying and technically assessing road and rail modes of transport and mode combinations;
- Studying and developing approaches to handling used nuclear fuel during transport, including logistics for transporting used nuclear fuel by road and rail from interim storage facilities to the siting regions;
- Assessing a set of bounding transportation accident scenarios as part of a transportation risk assessment;
- Identifying and technically assessing packaging options to ensure protection of the public and the environment during normal operations, as well as during accident conditions;
- Studying risk and approaches to controlling exposure to the public and workers;
- Identifying and designing the necessary transportation equipment and facilities;
- Outlining an approach for emergency response;
- Outlining an approach to shipment security;
- Constructing and testing all equipment required for loading, transporting and unloading used nuclear fuel transportation packages, including truck trailers and/or railcars;
- Developing updated package designs for transportation packages, with consideration of 'beyond-design-basis' scenarios;
- Reviewing and reporting on experience and best practices with transportation of hazardous materials, including transportation of nuclear waste in Canada and internationally, to identify lessons that can be applied to APM transportation;
- Completing public and worker dose assessments; and
- Securing and maintaining CNSC design certificates for road and/or rail transport packages.





## Principles and Objectives

Guiding the development of the APM transportation plan

*The NWMO's five fundamental values are integrity, excellence, engagement, accountability, and transparency. In addition to corporate values, there are principles and objectives that will shape APM transportation planning. A preliminary list of these is outlined below.*

**Principles** – The following initial set of principles emerged from conversations with citizens:

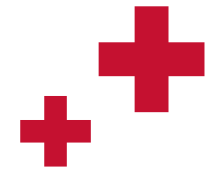
- **Safety is the overarching principle guiding all APM planning and activities:** Safety, security, and protection of people and the environment are central and must not be compromised by other considerations.
- **Meet or exceed regulatory requirements:** The plan must meet, and if possible, exceed all applicable regulatory standards and requirements for protecting the health, safety, and security of humans and the environment, and respect Canada's international commitments on the peaceful use of nuclear energy.
- **Aboriginal rights, treaties and land claims:** The plan must respect Aboriginal rights and treaties, and take into account that there may be unresolved claims between Aboriginal peoples and the Crown.
- **Inclusiveness:** The plan must respond to and address, where appropriate, the views of those who are most likely to be affected by the plan.
- **Informing the process:** The plan must be informed by the best relevant available knowledge, including science, social science, Indigenous Knowledge, and ethics. This information used to develop the plan must also be made public.
- **Ongoing engagement of governments:** The NWMO must involve all potentially affected provincial governments in the development and review of the plan.

**Objectives** – The following set of preliminary objectives were identified through dialogue with Canadians:

- Protect public health and safety from the risk of exposure to radioactive or other hazardous materials, and from the threat of injuries or deaths due to accidents;
- Protect workers from and minimize hazards associated with managing used nuclear fuel;
- Ensure fairness in the distribution of costs, benefits, risks, and responsibilities;
- Ensure the well-being of all communities with a shared interest;
- Ensure the security of facilities, materials and infrastructure;
- Ensure that environmental integrity is maintained over the long term;
- Ensure economic viability of the used nuclear fuel management system; and
- Ensure a capacity to adapt to changing knowledge and conditions over time.







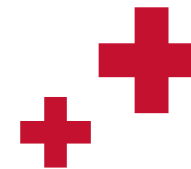
## D. BRUCE COUNTY WORKSHOP MATERIALS



TABLE DISCUSSION #1 – TRANSPORTATION PLANNING FRAMEWORK

Table #: \_\_\_\_\_

Based on your experience, WHAT would you expect to see included or addressed in the APM transportation plan?	WHO needs to be included in making decisions about modes and routes for APM transportation?	What do you think people will worry about when it comes to APM transportation (QUESTIONS and CONCERNS)?

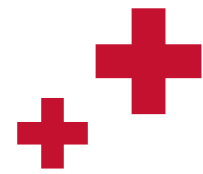


<i>"The NWMO has begun to reflect on the potential to identify or develop alternative routes for the transportation of used nuclear fuel from the locations where it is currently stored to each of the areas under study for the deep geological repository."</i>	
<b>Based on your experience, what factors or criteria should be considered in future decisions about modes (how we transport) and routes (where we transport)?</b>	
<b>MODES</b>	<b>ROUTES</b>



Based on your experience and knowledge of transportation issues, what guiding principles and objectives must inform the development of the APM transportation plan?	
Referring to your handout, are these the right principles and objectives to guide the development of a transportation plan? What would you add, change or remove?	Which guiding principles and objectives are most important? Why?

# TORONTO SESSION



## A. TORONTO AGENDA



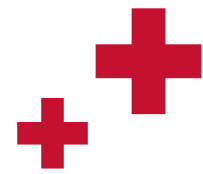
### Planning Transportation for Adaptive Phased Management

*Holiday Inn Toronto Airport East, Humber Salon A, 600 Dixon Road*

**Thursday, June 15, 2017**

#### **AGENDA AT A GLANCE**

TIME	ACTIVITY
9:00 – 10:00	<b>REGISTRATION AND HOT BREAKFAST</b>
10:00 – 10:20	<b>OPENING AND INTRODUCTIONS</b>
10:20 – 10:35	<b>APM TRANSPORTATION OVERVIEW</b> <ul style="list-style-type: none"><li>• NWMO Presentation and Q&amp;A</li></ul>
10:35 – 11:20	<b>TRANSPORTATION PLANNING FRAMEWORK AND CONTEXT</b> <ul style="list-style-type: none"><li>• What do you think needs to be included or addressed in the APM transportation plan?</li><li>• What kinds of questions and concerns need to be addressed in developing the plan?</li></ul>
11:20 – 12:30	<b>GUIDING PRINCIPLES AND OBJECTIVES</b> <ul style="list-style-type: none"><li>• To inform the development and implementation of the APM transportation plan</li></ul>
12:30 – 1:00	<b>LUNCH</b>
1:00 – 2:00	<b>ENSURING WE ARE INCLUSIVE</b> <ul style="list-style-type: none"><li>• Who needs to be informed or involved during transportation planning and implementation to ensure good decisions are made?</li></ul>
2:00 – 2:45	<b>MODES AND ROUTES</b> <ul style="list-style-type: none"><li>• What factors or criteria should be considered in future decision about modes (how we transport) and routes (where we transport)?</li></ul>
2:45 – 3:00	<b>THE SCIENCE BEHIND THE PLAN</b> <ul style="list-style-type: none"><li>• What research, information, technology development or demonstration activities might help us build a better plan and make better decisions?</li><li>• What kinds of specialists should we be consulting and engaging in the development and implementation of the transportation plan?</li></ul>
3:00 – 3:15	<b>CLOSING</b>



## B. TORONTO PRESENTATION

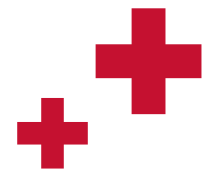


# Planning Transportation for Adaptive Phase Management

June 15, 2017

# Welcome





## Introductions

- NWMO
- Hill+Knowlton Strategies
- Today's guests



3



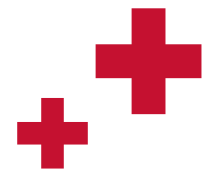
## Today's objective

To seek your input on the five questions outlined in the discussion document, *Planning Transportation for Adaptive Phase Management*.



4





## A brief review

- Question 1:** What basic requirements or factors should form the starting foundation for the APM transportation plan?
- Question 2:** Which objectives, principles and key questions should guide development of an APM transportation plan?
- Question 3:** How can we ensure the design and implementation of the APM transportation plan is sufficiently inclusive to ensure good decisions are made?
- Question 4:** What information will we need from technical specialists to develop the plan and support decision-making?
- Question 5:** What factors should be considered in future decisions about modes and routes?

5



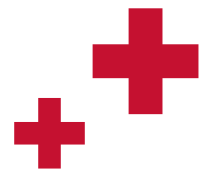
## Today's focus and agenda

Time	Activity
10:00 – 10:20	Opening and Introductions
10:20 – 10:35	APM Transportation Overview
10:35 – 11:20	Transportation Planning Framework and Context
11:20 – 12:30	Guiding Principles and Objectives
12:30 – 1:00	Lunch
1:00 – 2:00	Ensuring We Are Inclusive
2:00 – 2:45	Modes and Routes
2:45 – 3:00	The Science Behind the Plan
3:00 – 3:15	Closing

6







## How we'll work together



Presentations



Personal reflection, table  
brainstorming and reporting



Plenary discussion

7



## Housekeeping



Emergency



Self-Care



Quiet!



Ground Rules



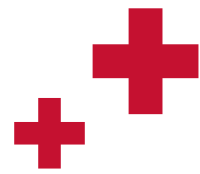
Parking Lot



Private  
Comments

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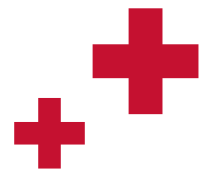




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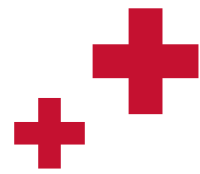


>> nwmo



There are no bad ideas.

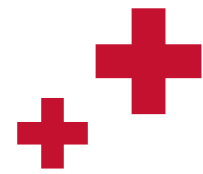




>> nwmo



>> nwmo



## Overview

- Within the next 30 years, Canada's used nuclear fuel will start to be moved from licensed interim storage locations to a deep geological repository.
- Transportation of used nuclear fuel is an important part of Canada's plan to protect people and the environment over the long term.

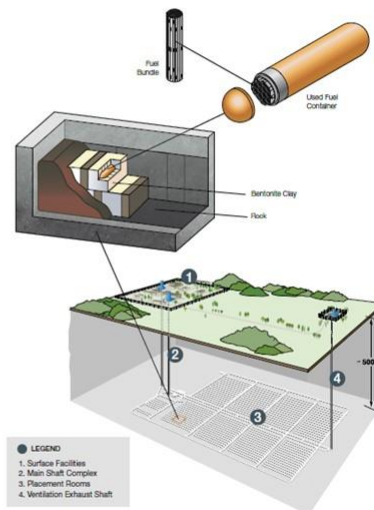
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## Overview

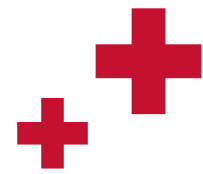
Involves:

- Taking the waste, which is currently stored at or near nuclear generating stations and research facilities, to a deep geological repository for long-term management.
- Approximately 40 years of safe transportation, beginning in 2040 or so.



16





## Average number of shipments per year



The transportation program is expected to extend over approximately 40 years, based on current anticipated volumes from existing nuclear facilities.

17



## Developing the plan

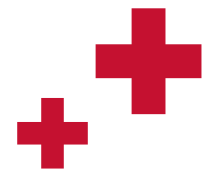
We have time to develop the plan and consider it carefully.

*Let's start by considering the principles, priorities, objectives and activities that should guide this planning, and the information we will need from technical and other knowledge specialists to make decisions in the future.*



18





## Dialogue has started

Communities involved in the site selection process, and their neighbours, said they want to begin discussion to plan for the transportation of used nuclear fuel required by Canada's plan.

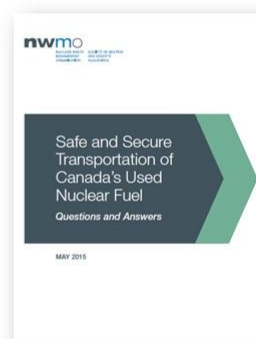
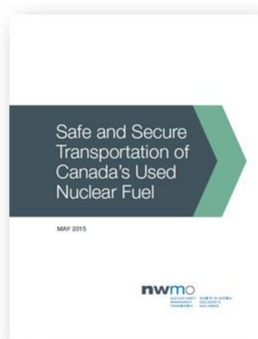
The NWMO developed a discussion document to help begin this conversation.



19

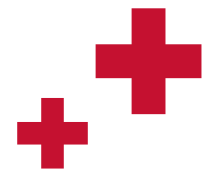


## Supporting learning and discussion



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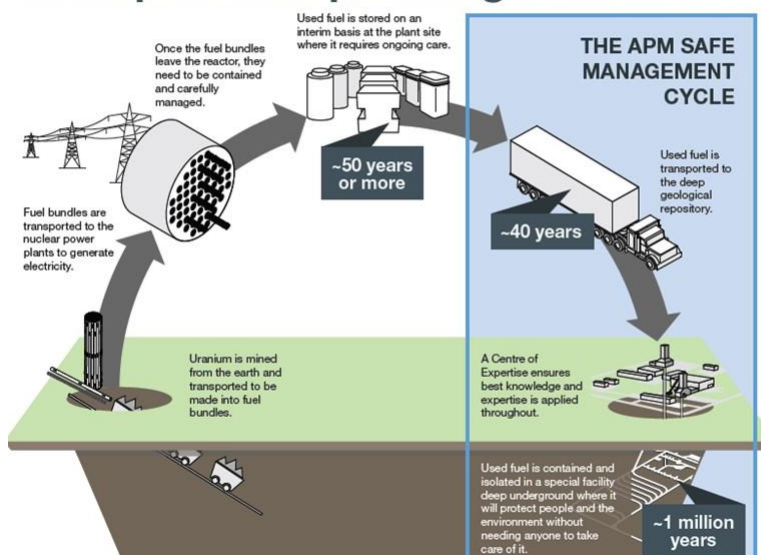
## Today's workshop is part of this dialogue

- Presentations to Community Liaison Committees, First Responders, working groups, community groups and others with an interest
- Community open houses
- Mobile transportation exhibit and NWMO transportation specialists at public events
- Presentations to transportation industry and other specialists at conferences
- Transportation dialogue project with Hill+Knowlton Strategies

21



## Transportation planning framework

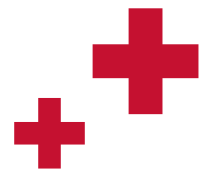


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Any questions?

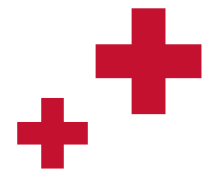


23



 **Transportation Planning  
Framework**





## Identifying the framework

The APM transportation plan will need to lay out:

- Clear objectives
- Issues to be addressed
- Factors to consider in decision-making
- Means to ensure that best knowledge, experience, and the values and priorities of citizens are included

25

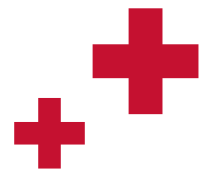


## Table discussion

1. What do you think needs to be **included or addressed** in the APM transportation plan?
2. What kinds of **questions and concerns** need to be addressed in developing the plan?
3. What **Canadian and international experience** should be reviewed?

26





## Plenary



Highlights



Areas of consensus



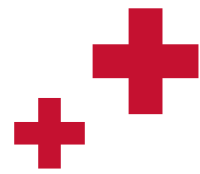
Points of divergence

27



## Transportation Planning Additional Context





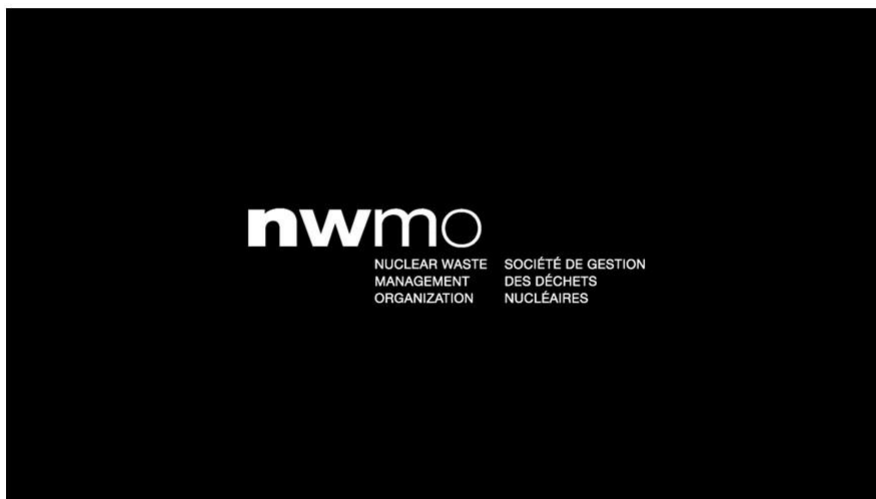
## Certifying package designs



29

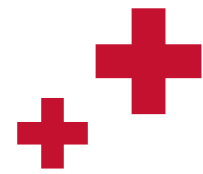


## International transportation experience



30





## Plenary discussion



Initial thoughts...  
What stands out for you?



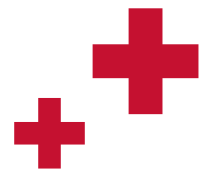
Do you have any questions or concerns?  
What else would you like to know?

31



## Guiding Principles and Objectives





## Table discussion – Part I

Based on your experience and knowledge of transportation issues, what **guiding principles and objectives** must inform the development of the APM transportation plan?

33

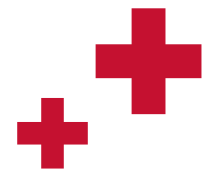


## Principles

- Safety and security is central
- Meet or exceed regulatory requirements
- Aboriginal rights, treaties and land claims
- Inclusiveness
- Informing the process
- Ongoing engagement of governments

34





## Objectives

- Protect **public health and safety** from the risk of exposure to radioactive or other hazardous materials, and from the threat of injuries or deaths due to accidents;
- Protect **workers** from and minimize hazards associated with managing used nuclear fuel;
- Ensure **fairness** in the distribution of costs, benefits, risks, and responsibilities;
- Ensure the **well-being of all communities** with a shared interest;

35

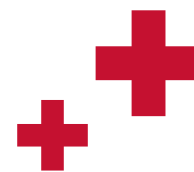


## Objectives

- Ensure the **security** of facilities, materials and infrastructure;
- Ensure that **environmental integrity** is maintained over the long term;
- Ensure **economic viability** of the used nuclear fuel management system; and
- Ensure a **capacity to adapt** to changing knowledge and conditions over time.

36





## Table discussion – Part II

1. Which, if any, of the principles and objectives identified in dialogue with Canadians during the development of APM should apply to transportation?
2. Which guiding principles and objectives are most important?

37



## Plenary



Highlights



Areas of consensus

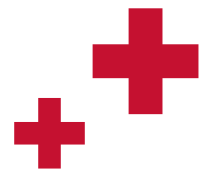


Points of divergence

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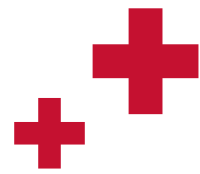




# Lunch

39





## Working together...

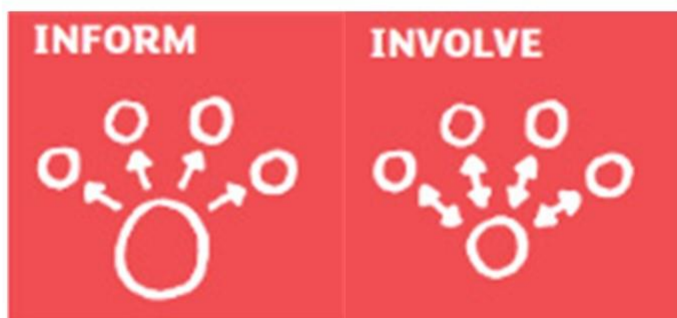


...to make good decisions.

41

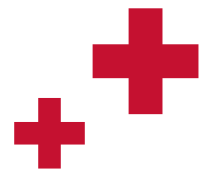


## Key considerations



42





## Tensions and trade-offs



43

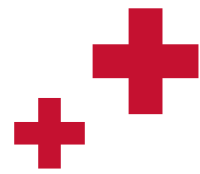


## Table discussion

1. Who needs to be **informed**?
  2. Who needs to be **involved** in decision-making?
- Consider...**
- Why?
  - When?
  - To what extent?
  - Tensions and trade-offs?
  - Concrete examples of how this has/could be done

44





## Plenary



Highlights



Areas of consensus



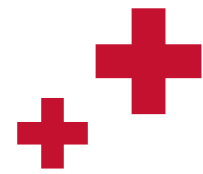
Points of divergence

45



## Modes and Routes



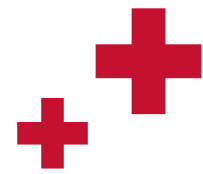


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48





## Table discussion

1. What **factors or criteria** should be considered in future decisions about:
  - a) Modes (how we transport)?
  - b) Routes (where we transport)?



49



## Plenary



Highlights



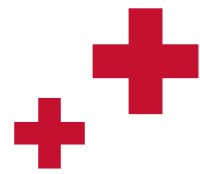
Areas of consensus



Points of divergence

50





## The Science Behind the Plan

51

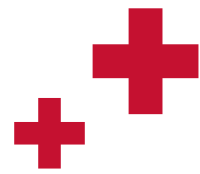


### Work in progress

- **Components – what?**
  - Plan components that will be shaped by research, technology development and demonstration activities
  - Reflect regulation and best practices identified to date
- **Activities – how?**
  - Activities the NWMO has committed to completing to support the development of Canada's plan

52





## Plenary discussion



What **research, information, or technology** development or demonstration might help us build a better plan and make better decisions?



What kinds of **specialists** should we be consulting and engaging in the development and implementation of the transportation plan?

53



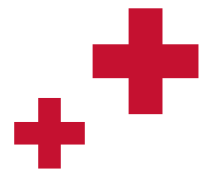
## Final thoughts

### Is NWMO on the right track?

54





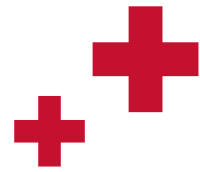


## Next steps

- Hill+Knowlton summary report
- Dialogue will continue in communities and more broadly...
- NWMO will prepare a report on *What We Heard*, and a draft framework emerging from the dialogue in 2018
- Other activities you suggest?

55





## C. TORONTO HANDOUTS



### Principles and Objectives

Guiding the development of the APM transportation plan

*The NWMO's five fundamental values are integrity, excellence, engagement, accountability, and transparency. In addition to corporate values, there are principles and objectives that will shape APM transportation planning. A preliminary list of these is outlined below.*

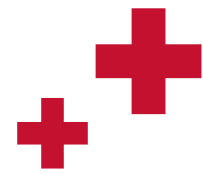
**Principles** – The following initial set of principles emerged from conversations with citizens:

- **Safety is the overarching principle guiding all APM planning and activities:** Safety, security, and protection of people and the environment are central and must not be compromised by other considerations.
- **Meet or exceed regulatory requirements:** The plan must meet, and if possible, exceed all applicable regulatory standards and requirements for protecting the health, safety, and security of humans and the environment, and respect Canada's international commitments on the peaceful use of nuclear energy.
- **Aboriginal rights, treaties and land claims:** The plan must respect Aboriginal rights and treaties, and take into account that there may be unresolved claims between Aboriginal peoples and the Crown.
- **Inclusiveness:** The plan must respond to and address, where appropriate, the views of those who are most likely to be affected by the plan.
- **Informing the process:** The plan must be informed by the best relevant available knowledge, including science, social science, Indigenous Knowledge, and ethics. This information used to develop the plan must also be made public.
- **Ongoing engagement of governments:** The NWMO must involve all potentially affected provincial governments in the development and review of the plan.

**Objectives** – The following set of preliminary objectives were identified through dialogue with Canadians:

- Protect public health and safety from the risk of exposure to radioactive or other hazardous materials, and from the threat of injuries or deaths due to accidents;
- Protect workers from and minimize hazards associated with managing used nuclear fuel;
- Ensure fairness in the distribution of costs, benefits, risks, and responsibilities;
- Ensure the well-being of all communities with a shared interest;
- Ensure the security of facilities, materials and infrastructure;
- Ensure that environmental integrity is maintained over the long term;
- Ensure economic viability of the used nuclear fuel management system; and
- Ensure a capacity to adapt to changing knowledge and conditions over time.





## The Science behind the Plan

### Program Components

*The following will be shaped by research, technology development and demonstration activities and reflect regulation and best practices identified to date:*

- A robust, tested and certified transportation package;
- A plan to meet commercial vehicle and railroad safety and security requirements;
- A Transportation Security Plan;
- An Emergency Response Plan;
- A plan for periodic reviews;
- A program for hiring high-quality and well-trained workers and vehicle operators;
- A plan for training and joint exercises with provincial and community emergency responders; and
- Procedures for safe and secure operations.

### Program Activities

*Activities the NWMO has committed to completing to support the development of the plan:*

- Identifying and technically assessing road and rail modes of transport and mode combinations;
- Studying and developing approaches to handling used nuclear fuel during transport, including logistics for transporting used nuclear fuel by road and rail from interim storage facilities to the siting regions;
- Assessing a set of bounding transportation accident scenarios as part of a transportation risk assessment;
- Identifying and technically assessing packaging options to ensure protection of the public and the environment during normal operations, as well as during accident conditions;
- Studying risk and approaches to controlling exposure to the public and workers;
- Identifying and designing the necessary transportation equipment and facilities;
- Outlining an approach for emergency response;
- Outlining an approach to shipment security;
- Constructing and testing all equipment required for loading, transporting and unloading used nuclear fuel transportation packages, including truck trailers and/or railcars;
- Developing updated package designs for transportation packages, with consideration of 'beyond-design-basis' scenarios;
- Reviewing and reporting on experience and best practices with transportation of hazardous materials, including transportation of nuclear waste in Canada and internationally, to identify lessons that can be applied to APM transportation;
- Completing public and worker dose assessments; and
- Securing and maintaining CNSC design certificates for road and/or rail transport packages.





## D. TORONTO WORKSHOP MATERIALS



TABLE DISCUSSION #1 – TRANSPORTATION PLANNING FRAMEWORK

Table #: \_\_\_\_\_

What do you think needs to be included or addressed in the APM transportation plan?	What kinds of questions and concerns need to be addressed in developing the plan?	What Canadian and international experience should be reviewed?



Part I: Brainstorm principles and objectives for the APM transportation plan	Part II: Review principles and objective outlined in discussion document	
Based on your experience and knowledge of transportation issues, what guiding principles and objectives do you think must inform the development of the APM transportation plan?	Which, if any, of the objectives and principles identified in dialogue with Canadians during the development of APM should apply to transportation?	Which guiding principles and objectives are most important?



**TABLE DISCUSSION #3 – ENSURING WE ARE INCLUSIVE**

Table #: \_\_\_\_\_

<i>"How can we ensure the design and implementation of the APM transportation plan is sufficiently inclusive to ensure good decisions are made?"</i>	
<b>Who needs to be informed, and why?</b>	<b>Who needs to be involved in decision-making, and why?</b>
<b>Are there some difficult decisions to be made in deciding who to inform versus who to involve? If so, what are they? How should they be addressed?</b>	



**TABLE DISCUSSION #4 – MODES AND ROUTES**

Table #: \_\_\_\_\_

<i>"The NWMO has begun to reflect on the potential to identify or develop alternative routes for the transportation of used nuclear fuel from the locations where it is currently stored to each of the areas under study for the deep geological repository."</i>	
<b>What factors or criteria should be considered in future decisions about modes (how we transport) and routes (where we transport)?</b> Based on your experience, what questions do we need to answer to make good decisions regarding modes and routes?	
<b>MODES</b>	<b>ROUTES</b>