

WHAT WE HEARD: IMPLEMENTING CANADA'S PLAN IN 2016

The Nuclear Waste Management Organization continued to implement Canada's plan to safely manage used nuclear fuel over the course of 2016, engaging in site selection activities in and around nine communities which expressed interest in learning about Canada's plan and the potential to host the project in the area. The plan, Adaptive Phased Management, has the organization pursuing a series of progressively more detailed studies of potential host communities and involves a significant program of local and regional engagement.

In 2016 engagement work was focused on continuing dialogue and supporting opportunities for learning and reflection with residents of interested communities, their neighbours and nearby First Nation and Métis communities. In the course of these activities, we have heard many questions and comments regarding the NWMO's mandate to safely construct a deep geological repository for used nuclear fuel in a willing and informed host community. This document summarizes that input for the year.

Over the course of the year, we held a broad range of one-on-one conversations as well as larger open-house and open-office discussions, presentations with groups, and participated at conferences and public events in and around the communities where we work. NWMO engaged with interested individuals and groups from siting areas through meetings and briefings, interim storage facility tours, monthly meetings of community liaison committees (CLC), community open houses, and festivals and events organized by communities and groups. Questions and comments are also expressed to the NWMO through its website or directed through CLC websites, municipal conferences and through meetings of the NWMO's Municipal Forum.

Based on a review of 2016 input, much of what we heard this year was in the spirit of continuing dialogue on key themes identified in previous years, especially health and safety, the APM Project and site selection process, the local implications of the project on communities, and transportation safety. These themes remain important topics of discussion in all communities engaged with the NWMO.

While the broad topics of interest are largely similar year-to-year, there is evolving sophistication with regards to the specific comments and questions communicated to the NWMO. As engagement and learning opportunities have intensified since the NWMO launched the site selection process in 2010, community considerations are becoming both broader and deeper. This reflects the ongoing process of community learning and increasing familiarity with the project, as well as a desire to understand the project's potential impacts on their communities.

As communities advance in the siting process, some additional discussion areas are emerging reflecting the new phases of work. These include a desire to understand the evolving timeline associated with the project, and how communities can support and contribute to activities strengthening partnership-building in the region.

FREQUENTLY ASKED QUESTIONS BY THEME

These eight themes run strongly throughout our conversations with communities. Typical questions or areas of interest are varied and include the following.

<p>HEALTH AND SAFETY</p> <ul style="list-style-type: none"> • How long will this radioactive material be dangerous? • How can you know it will be safe over millions of years? • How much radiation would this facility emit in a year? • Will this affect groundwater and nearby water ways like rivers, lakes, and the Great Lakes? • How will the environment be protected? • Would the driver of a transport vehicle with an NWMO package be safe? What would their dose level be? 	<p>WELL-BEING AND LOCAL FACTORS</p> <ul style="list-style-type: none"> • What are the local benefits of hosting? Will there be local jobs or infrastructure? • How do I get involved in my community's decision-making process? Is there a local committee? • How does the rock look here in the region? Is it suitable to site a repository? • Have you talked to [my neighbour] about this project yet? I think they would be interested to know. • What happens if local circumstances change? Can we opt out of the process? • How much land is required locally to build the repository and facilities? Is there enough in my community? • Will you be looking at Crown Land? • How many people have attended this event? How many of my neighbours are coming out to meetings? • Where is your local office? I want to come by and pick up some materials.
<p>NWMO, ADAPTIVE PHASED MANAGEMENT & SITE SELECTION PROCES</p> <ul style="list-style-type: none"> • Who is owns the NWMO? Who do you report to? How are you regulated? • How much nuclear fuel exists and how is it being managed now? • How was Adaptive Phased Management developed? Who approved it? Do Canadians support it? • How much will this project cost, and who are the used fuel owners that are paying for it? • How long will it take to find a site? How long will it take to construct, and how long will the repository operate? • What is a Deep Geological Repository and how will it isolate used nuclear fuel from people and the environment? • What is used nuclear fuel? 	<p>TRANSPORTATION</p> <ul style="list-style-type: none"> • What transportation route will you be using to get the used nuclear fuel from reactor sites to the repository? • Is this material safe to transport? What if an accident happens while on the way? • What modes can you use to transport used nuclear fuel? Road or rail? Is water being considered? • Will your drivers be transporting the used nuclear fuel even in the harsh, northern winter conditions? • Will you be tracking the transportation canisters? • Will the trucks or trains be emitting radiation? • Will the NWMO respect Indigenous jurisdiction with respect to transportation? • How does transportation by another organization of highly enriched uranium (HEU) differ from that of the CANDU fuel that the NWMO will transport?
<p>EVOLVING PROJECT TIMELINES</p> <ul style="list-style-type: none"> • Why is the timeframe for Phase 2 studies being extended? • Will all communities that began Phase 2 studies complete them? • When will we begin to see more activities and jobs in the area? 	<p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Who needs to be supportive of the project in our area in order for it to proceed? • How can I help build this partnership? • How will willingness and support be gauged? • Can a few people in an area who are opposed to the project prevent the project from proceeding in the area? • How can we help to get more people involved?
<p>BENEFITS</p> <ul style="list-style-type: none"> • How can we prepare people in the community and area to participate in the project, develop skills and more? • How will NWMO ensure that the community and people in the area will benefit? • How can we begin to plan for jobs and longer term economic development? 	<p>INTERWEAVING LOCAL AND INDIGENOUS KNOWLEDGE</p> <ul style="list-style-type: none"> • How will the NWMO address the UN Declaration of Rights on Indigenous Peoples in the storage of hazardous materials in Indigenous territories? • What are some examples of how NWMO is interweaving indigenous knowledge throughout the APM project?

Health & Safety

People and the Environment

The health and safety of people and the environment remained an important topic for discussion for many people in communities, with expressed interest in topics related to the safety case for the project. Others, and in particular those with longer involvement in NWMO learning programs, and/or with knowledge of, and confidence in, the safety case, have moved beyond a need to learn more about the health and safety case, and expressed greater interest in other project topics.

In 2016, the safety of water resources remained central to people's comments and questions. People continued to ask NWMO staff for details on the safety case to ensure the long-term safety of freshwater resources, including local aquifers, local rivers & lakes, and above all, the Great Lakes. People wanted to better understand the safety features of the multiple barrier system and the deep geological repository. Some told us that they will reserve judgement on the overall safety of the repository until they have more certainty that the safety features provide for the long-term protection of water resources.

Throughout 2016, NWMO scientists and staff spent time in siting communities, speaking to Councils, Community Liaison Committees, and other interested individuals and groups about the multiple barrier system that underpins the deep geological repository's safety case. This year, the NWMO presented updates to specific project components, notably, the development of the made-in-Canada design solution for the long-term storage containers. People were interested in the design features that will isolate the used nuclear fuel from the environment over very long periods of time. People expressed very positive feedback on opportunities presented by a made-in-Canada solution, replacing the earlier imported design.

Safety conversations with the public were supported with physical exhibits of both the copper and steel canister and the model used nuclear fuel bundles. The canister was specifically designed to store CANDU used nuclear fuel bundles. Both exhibits helped people to gain an understanding of the multi-barrier system concept and importantly, knowledge that the used fuel is a solid, not a liquid or gas. An updated pamphlet on the multiple-barrier system was made widely available in siting communities in 2016.

Over the ensuing years of the siting process, more work will have to be done to provide learning opportunities in order to build confidence that a deep geological repository is a safe and secure method for isolating used nuclear fuel from the environment.

A revised *Description of a Deep Geological Repository and Centre of Expertise for Canada's Used Nuclear Fuel* was also shared with communities in 2016. This document facilitated robust discussions about the repository, and the engineered design features that will keep people and the environment safe. People had previously expressed interest in the surface facilities associated with the repository. The revised *Description* provided illustrative details of the various surface facilities, including the used fuel packaging plant. It also contained additional details on the Centre of Expertise proposed to be established in or near the host community. The Centre will support the multi-year testing and assessment of the site on technical safety and community well-being.

APM Project & Site Selection Process

In past years, questions and discussion with the public gravitated around details of the Adaptive Phased Management project, including technical questions about the repository, and the questions about the selection process and steps to decide on the informed and willing host community. Capacity building and learning programs in the nine remaining siting areas, have addressed these high-level inquiries about the project. Interest in the APM project itself has become more refined with people wanting to learn more details, and we are finding that conversations are getting longer, and questions much more specific. Some of what we have heard about the APM project is captured under the themes such as Health & Safety, and Community Well-being. As communities advance in the siting process, some additional discussion areas have emerged reflecting the new phases of work. These include a desire to understand the evolving timeline associated with the project, how communities can support and contribute to activities strengthening partnership and region interests and benefits.

Project timelines

In 2016, the discussion has centered on project timelines, prompted for the most part by the NWMO's 2016 announcement of an extended project timeline for the selection of the **single site with strong potential for the project**. The timeline is now 2023. This decision was taken in recognition of the need to adapt to changing social circumstances and pace, and reflects an evolving understanding of the requirements for technical and social assessments in order to select a safe and secure site with a willing host.

Community conversation about, and reaction to, the extended timeline was evident in all siting regions. There was noted frustration amongst those supportive of the project and keen to move forward sooner. Still, most appreciated the extended timelines were needed to ensure that communities are fully informed and supportive, and people recognize that the NWMO needs to take the time it needs to get the siting right.

Partnership

People are keen to understand how partnership – a key objective of Phase 2 assessments – will be measured and willingness and support assessed. As communities and individuals are becoming more comfortable with the project and its safety, there is greater interest in understanding how, and to what extent the community, neighbors, and area, as a whole will benefit from the project. People are asking questions about definitions of community, and who is ultimately making decisions on behalf of the area. Answers to these questions are emergent, and will be worked out together, and through dialogue.

Regional engagement

Discussions on the benefits and opportunities of the project on neighbours, and on the broader area as a whole, is active in the siting areas. Broader regional conversations have expanded with outreach to regional economic development groups, forestry management groups, and emergency services groups for example.

Topics of interest to regional stakeholders tend to be related to economic development opportunities and questions about how economic benefits might be spread out within the region. There has also been exchange between Aboriginal leadership and municipal and CLC groups in particular around the topic of economic development collaboration and cultural awareness. Many people living around siting areas indicated that they viewed the local economy to be regionally-based, and that they pursue economic opportunities within a relatively wide radius of where they reside.

There has been increased participation of regional groups and individuals in Learn More Tours at the existing used fuel management facilities (operated by Ontario Power Generation), and the topics of interest to those learning about the project for the first time are very similar to those in siting areas. People are most interested in learning about the nature of the hazard, and how a deep geological repository will keep the material isolated from people and the environment.

A new brochure entitled *“Programs Around the World For Managing Used Nuclear Fuel”* (2015) was shared through NWMO’s engagement activities throughout 2016, including regional stakeholders. This brochure has been received positively, and has helped to further illustrate the concept of deep geological disposal as an international best practice and that Canada is not alone in pursuing a deep geological repository.

Well-being & Local Factors

We heard that NWMO's ongoing learning program this year contributed to deeper insight into how project activities could enhance community wellbeing and influence other local impacts. We have also heard that people especially appreciate learning experiences such as the CNS conference, interim storage tours, and expert guest speakers in the community.

People have been eager to obtain specific information on the economic benefits generated by project activities. In 2016, NWMO completed regional economic modelling presentations which provided information on employment, procurement and enhanced revenue to be generated, regionally. Economic modeling presentations were conducted in each of the four regions. People were interested in the types and numbers of direct, indirect and induced jobs generated over the project life cycle; the types of procurement opportunities generated by the project; additional spend in the community impacting the growth of local enterprise; measures to be taken that would ensure maximum benefits were retained by the host community itself and how this community would need to prepare to be in a position to optimize local benefits. In some communities, a historical legacy of boom and bust natural resource projects underpins community concerns about ensuring local and sustainable benefits.

Some specific questions pertaining to the project economic modelling included:

- Are costs of various transportation routes/options part of modelling?
- Can we expect to see much employment/work before the site is selected (2023)? How much to be spent during licensing phase?
- How important is a community's existing infrastructure/assets to the decision to site?
- Can we get additional levels of detail from the economic modelling? For example, what are the specific kinds of jobs (e.g. pipefitters, carpenters, engineers, etc.) and what are the numbers, and how can the community prepare to accommodate these?

Beyond the input received through presentations at the CLC meetings, Council and workshops, valuable conversations also took place in NWMO's network of community offices and through conversations with individuals and groups in the area.

Also of interest to communities has been the NWMO program to **build capacity in siting communities** to learn more about APM and support assessment activities. Working together with consultants, NWMO began discussions with the interested communities (municipalities) during the spring and summer of 2016 to better understand the types of activities which would be of most relevance to them.

Initial conversations with communities on this matter were generally received with interest. Some community feeling has been expressed that it may be too early to begin to think about capacity building associated with jobs directly connected to the project. For some, there are too many siting areas still involved in the process for communities to feel comfortable to begin to think about these kinds of future activities and there is concern that expectations may inappropriately be raised among community

members. However, there is strong interest in support for the development of basic and transferrable skills to take advantage of other economic development opportunities.

We heard that communities would be better prepared to engage in job-specific capacity building after a further narrowing down of the number of siting areas or communities in the process has been completed. The beginning of the construction phase of work, and ultimately the operations phase of work, is seen to be too far off to plan for today. However, communities do see value in a range of activities some of which are small, have general benefit, and could be seen as an initial demonstration by NWMO in the spirit of the type of partnership NWMO seeks to build with communities. It is these small activities with the potential for general benefit which are at the core of the initial program offer.

Through ongoing conversations, NWMO staff have repeatedly heard that NWMO will ultimately need to **provide youth and community members with educational and employment opportunities** if the project were to be located in the area. Over the course of this conversation, communities also talked about their interest in having the NWMO provide **early investments in infrastructure** as a way of building community capacity to learn effectively (such as being able to access online resources), and ultimately participate in the project.

Some specific questions related to capacity building included:

- Can we expect to see much employment/work before the site with **the highest potential is identified by 2023**? How much to be spent during licensing phase?
- How important is a community's existing infrastructure/assets to the decision to site?
- What kind of specific kinds of jobs can a community expect (e.g. pipefitters, carpenters, engineers, etc.), and will the community be able to accommodate them?
- What will the effect of the project be on tourism?
- What kind of training is available in the near future to build the kind of human resource capacity needed to accommodate this project?
- What resources are available to communities now in order to help build understanding of the project locally and with neighbours?
- How are youth being engaged? How can youth be retained in communities?

Conversations have also been specific to planning activities focused on 2016 surface-based site characterization and mapping and preliminary borehole where technical studies had advanced to that point. We heard about current use of the land, and sought input on how the technical studies might best be planned and executed to minimize disruption to current activities. Field based mapping and characterization plans and schedules were adjusted based on what we heard.

Early input gained in 2016 on the Centre of Expertise has been exploratory, yet positive. Although some individuals cautioned against an investment in detailed design discussions given that a facility would not be constructed for years to come, there was general enthusiasm about the opportunities presented by the Center and its potential as a community hub. We heard many good ideas for the Centre of

Expertise, ranging from the provision of **education/training** facilities, to an architectural design which harmonizes with the local environment and culture, and is illustrative of the unique partnership between the local municipality and neighboring First Nations.

In the fall of 2016, conversations began about how to plan drilling an initial borehole in several of the areas. Discussions began with how to work together to make decisions and extended to beginning to consider possible sites. This discussion will continue into 2017.

NWMO has taken steps to provide a greater local presence in interested communities over the last couple of years. This has included, a regular presence of NWMO staff, the establishment of Learn More Centers in communities and in 2016, the hiring of local engagement coordinators in several regions. People have responded very positively to these initiatives, and this has helped expand conversations in the broader area.

Interweaving Local and Indigenous Knowledge

In 2016, work advanced in collaboration with Aboriginal peoples in siting areas to interweave Western Science with Indigenous Traditional Knowledge. This included the provision of resources for communities to conduct their own studies, processes to work together to plan and implement field studies, and measures to determine if and how the community wishes to share its Indigenous Knowledge. Indigenous Knowledge of traditional and current land uses in and around interested communities combined with non-Aboriginal local knowledge helped to guide preliminary assessment studies in 2016.

NWMO's efforts to reach out to and engage First Nation and Métis communities have necessarily broadened through the period. Understanding the land from the perspective of the Aboriginal peoples in the area, and involving them in the conduct of field studies and reflection on whether the project is a good fit for the area, is an important focus of the broadened engagement at this phase of work. We have heard that learning together involves studies of traditional land use and ceremonies to seek guidance. We have also heard, and adopted in the NWMO process, that good decisions require interweaving western science with Indigenous Knowledge. This in turn requires the provision of resources for communities to conduct their own studies, to develop culturally appropriate processes to work together to plan and implement field studies, and to develop measures to determine if and how the community wishes to share its Indigenous Knowledge.

In discussions with local land users over 2016, the NWMO gathered details about the specific land parcels identified for preliminary studies, including observing general geologic features and studies of the local environmental features. Land users including hunters, trappers, anglers, camp owners, and recreational users all provided valuable insight into the uses and features of local land. The location of key ecological areas, such as breeding grounds, were identified, as were mineral and other rock outcroppings. Local access conditions were also frequently well-known and enthusiastically shared (e.g. "That land is flooded now," or "That area is only accessible from this way"), as were details around likely land-users (e.g. the presence of camps and trap lines), and the likelihood that nearby assessment activity would disturb people, animals or the environment. Combined with local Indigenous Knowledge that was shared in some nearby Aboriginal communities, this input helped the NWMO create a rich and detailed understanding of local geography and community land uses.

Transportation

The safe and secure transportation of used nuclear fuel continues to be a major area of interest and conversation in dialogue with communities, interested individuals and groups. Interest in understanding how used fuel can be transported safely and securely, and the importance of transportation in implementing the project leads to questions and active discussion interwoven throughout the broad dialogue about the project.

Through this dialogue, communities, interested individuals and groups are exploring the basis for confidence in safety of the transportation of used nuclear fuel. The NWMO is learning about the questions which need to be addressed, the testing which needs to be performed, and the values, objectives and processes which need to **guide planning of the transportation** of used nuclear fuel as part of the APM project. We continue to publish an annual *What We Heard* report on transportation themes, available on our website.

A major objective of community engagement over 2016 was to begin a discussion on transportation planning. A discussion document, *Planning Transportation for Adaptive Phased Management* was published to invite the public to help guide decision-making on this important issue. A draft of the document was shared with CLCs and community leaders over the year to solicit feedback, and input received from these initial reviews was positive. No major areas of concern were identified before the document was finalized in September, and engagement using this document initiated.

Transportation planning is still at a very early stage, and specific comment and input on the discussion document will be collected over the course of 2017 as it is introduced to the wider public in and around communities involved in the study process, First Nations, and Metis communities, and we invite input on five key questions:

- 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?

In addition to beginning conversations on planning, the NWMO continues to hear positive feedback regarding the **Used Fuel Transportation Package** mobile exhibit. This full-size UFTP has been touring siting communities since 2013 and we continue to hear that it is a very powerful tool in demonstrating how used fuel will be safely transported to a final repository site.

Residents of siting communities are now familiar with the sight of the UFTP at community events, and it continued to be a topic of conversation at fairs and festivals in the communities where we work. Given the often regional nature of community events like these, the UFTP mobile exhibit and associated

display serve as a starting point for discussion about APM, especially with those visiting from nearby towns, or even further afield. Many visitors note the size and robustness of the package, and can see with their own eyes how a used fuel bundle would be protected by the 30 centimetres of solid stainless steel, and redwood core impact limiter. Many visitors are curious as to the weight of the package (35 tonnes when loaded) and whether it would be able to travel down local highways and roads. Other questions posed by UFTP exhibit visitors included:

- Are costs of various transportation routes/options part of economic modelling?
- What route would NWMO use to transport to a siting community?
- How will NWMO ensure that the concerns of communities along transportation routes are addressed when conducting transportation planning?
- Who is responsible for the shipments? Will NWMO own the trucks and drivers or will it be contracted out? This makes a difference in quality of service, etc.
- Is efficiency of the mode considered? Are less shipments better? Why not have many railcars go at once? Is this a capacity issue at the receiving end?
- Will the trucks or trains be emitting radiation?
- Will the NWMO respect Indigenous jurisdiction with respect to transportation?
- How does transportation by another organization of highly enriched uranium (HEU) differ from that of the CANDU fuel that the NWMO will transport?

Social media & other online conversations

We continued to listen to online discussions about our work and activity in communities, and still receive many inquiries through our redesigned website. Online-only groups continue to operate in Hornepayne, Ignace, White River, Elliot Lake and other North of Huron communities, as well as in the Huron-Grey-Bruce area. These online groups tend to focus on sharing resources and news about local matters (e.g. CLC meeting dates, upcoming open houses and events, communities' and First Nations' ongoing involvement in the siting process, etc.), or other nuclear-related topics (e.g. nuclear technology and power production; radioactive waste management approaches in other jurisdictions, including Ontario Power Generation's low-level and intermediate waste DGR; news about the Canadian Nuclear Safety Commission, etc).

Project opponents, including national, regional, and local NGOs opposed to nuclear-generated electricity, continue to organize and share their thoughts and positions through websites and social media. We are aware of the progress of various local, regional and national citizen campaigns, petitions, and other forms of political expression. We continue to observe that while some online postings are written by local citizens in the communities where we work, those opposed to the nuclear industry living all across Canada continue to contribute to these local conversations, and local support for these external organizations and efforts generally appears to be limited at this time.

Implementation Plan 2017 - 2021

In 2016, the NWMO also received comment and direction from interested individuals and groups on our annually updated strategic plan, *Implementing Adaptive Phased Management*, which describes our strategic objectives and five-year work plan. The plan is regularly assessed, strengthened and redirected in the face of new information, advances in technology and science, evolving public policy and comments we receive through our engagement initiatives.

A draft of the 2016 to 2020 plan was released for public comment in August 2016, and we heard that the eight strategic objectives and associated activities were largely appropriate, and that future iterations might consider making clearer commitments to the safety of workers and the environment. Commenters also noted potential challenges around communicating the rationale for decisions around narrowing the number of communities, building confidence in safety with the public, and aligning the NWMO's activities with changing energy and environment policy.

Other submissions noted the *Plan* contained an improved discussion of the role of the regulator, and a few offered specific suggestions for changes to the revised *Plan*. An expanded discussion of What We Heard about the draft 2017-2021 *Implementation Plan* will be published alongside the finalized version of the document in March 2017.

CONTINUING DIALOGUE

Engagement is one of the Nuclear Waste Management Organization's fundamental values, and we seek participation of all communities of interest in dialogue to help implement Canada's plan.

In 2016 we heard from and engaged a broad range of interested communities, First Nation and Métis communities, individuals and organizations on an array of topics related to our mission and work program. This dialogue is reflected in and supported by discussions during engagement events such as open houses and trade show events, other in-person conversation, community group briefings, direct correspondence, organizing learning events in the community and at conference venues, and the production of informational materials focused on areas of interest expressed through dialogue. The production of *What We heard* documents is part of meeting our commitments to engagement and transparency, and we publish one or more annually on our website or as part of our *Implementation Plans*, or annual and triennial reports.

The NWMO continues to invite comments and suggestions about its work programs and plans, and thanks all those communities, individuals and organizations who continue to lend their thinking to ensuring the long-term containment and isolation of Canada's used nuclear fuel today and for generations to come.