

nwmo

NUCLEAR WASTE
MANAGEMENT
ORGANIZATION

SOCIÉTÉ DE GESTION
DES DÉCHETS
NUCLÉAIRES

Learning More Together

Summary
Triennial Report
2011 to 2013



**Nuclear Waste
Management Organization**

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A requirement of the *Nuclear Fuel Waste Act (NFWA)*, the *Triennial Report 2011 to 2013* reports to Canadians on the NWMO's activities over the past three years in implementing Canada's plan for the long-term management of the country's used nuclear fuel. Consistent with the requirements of the *NFWA*, this Triennial Report also presents the NWMO's future plans as set out in its strategic plan for the next five years (2014 to 2018).

Strategic Objectives

The NWMO will:

- Build sustainable, long-term relationships with interested Canadians and Aboriginal peoples of Canada, and involve them in setting future directions for the safe, long-term management of used nuclear fuel.
- Implement collaboratively with Canadians the process for siting a deep geological repository for the safe, long-term management of used nuclear fuel in an informed, willing host community.
- Refine and further develop the generic designs and safety cases for a repository for used nuclear fuel in both crystalline and sedimentary rock formations, and conduct technical research and development to ensure continuous improvement, consistent with best practices.
- Ensure funds are available to pay for the safe, long-term management of Canada's used nuclear fuel.
- Adapt plans for the management of used nuclear fuel in response to new knowledge, international best practices, advances in technical learning, insight from Aboriginal Traditional Knowledge, evolving societal expectations and values, and changes in public policies.
- Maintain an accountable governance structure that provides confidence to the Canadian public in the conduct of the NWMO's work.
- Build and sustain an effective organization with the social, environmental, technical and financial capabilities for the safe, long-term management of Canada's used nuclear fuel.

Following the Government of Canada's selection, in 2007, of Adaptive Phased Management (APM) as Canada's plan for the long-term care of used nuclear fuel, the NWMO developed and confirmed through public review seven strategic objectives that would serve as the foundation of strategic plans for implementing APM.

It is against these seven strategic areas that the NWMO presents both its achievements for 2011 to 2013 and its plans for 2014 to 2018. Highlights of past progress and future plans are presented in summary form in the sections that follow. A detailed account of the NWMO's past activities and future plans are provided in individual chapters and appendices of the *Triennial Report 2011 to 2013*.

Overview

Over the past three years, the NWMO has made significant progress toward implementing Canada's plan for the safe and secure long-term management of the nation's used nuclear fuel. It continued to build and enhance relationships with interested individuals and organizations, communities involved in the site selection process, and Aboriginal peoples. At the same time, the NWMO began the work of engaging neighbouring communities.

The nine-step site selection process, initiated in May 2010, has moved forward – initial screenings (Step 2) were completed, and 20 communities that expressed an interest in further learning chose to move into Step 3. By the end of 2013, the first phase of preliminary assessments was completed in eight communities and was ongoing in 12 other communities. Of the first eight communities to complete Phase 1 assessments, four were found to have strong potential to meet site selection requirements and identified for further study.

In parallel, optimization and improvement of designs, illustrative safety analyses, and related engineering and scientific methods helped ensure the repository will meet high technical standards. The work of the APM technical program was enhanced through extensive collaboration with universities and international partners. These partnerships helped ensure the best knowledge and understanding are being applied to the NWMO's work.

Financially, the NWMO fulfilled its obligations under the *NFWA* by completing a full update of lifecycle cost estimates for the APM program, including the transportation of used nuclear fuel, while also continuing to update trust fund contributions to reflect the latest lifecycle cost estimates and trust fund balances.

To ensure APM incorporates the latest scientific advances and is responsive to evolving societal expectations, the NWMO engaged in a program of continuous learning.

The NWMO sought advice from independent groups with a wide variety of perspectives, including its Advisory Council, Independent Technical Review Group, APM-Geoscientific Review Group, Municipal Forum, Elders Forum and its successor, the Council of Elders.

As an organization, the NWMO recruited staff and contractors with the skills to support the site implementation process as it moves forward.

Over the next five years, the NWMO will continue to work collaboratively with communities, interested organizations, and the public at large to implement the site selection process in a manner that is fair, transparent, and scientifically sound. Just as the process is community-driven, so is the pace at which it proceeds. Communities decide whether – and when – they are willing to progress to the next step.

The NWMO's key activities for the next five-year planning period include:

- Completing the first phase of preliminary assessments, which involves desktop studies and local engagement, for communities that have passed an initial screening *and* that requested the NWMO to initiate this step in the site selection process;
- Using findings from the first phase of work to identify communities with strong potential to meet the requirements of the project to be the focus of the next phase of study, which explores suitability of an area to host the project through fieldwork, more detailed studies, and broadened engagement; and
- Preparing to use findings from the second phase of preliminary assessments to guide identification of one or possibly two areas and sites to be the focus of later detailed site evaluations.

As the NWMO continues to learn from and work with communities, it will also continue to adapt the site selection process as appropriate in the light of new learning and evolving societal expectations.

The range of activities planned for the next five years will help advance future phases of field investigations and other detailed assessments, more intensive engagement with interested communities, transportation planning, and further refinements to repository design and the development of safety cases.

Strategic Areas of APM Implementation: Progress and Plans



Building Sustainable Relationships

Because APM will be implemented over many decades and will involve generations to come, its success depends on the NWMO's building and sustaining relationships that will support and direct implementation well into the future. Over the past three years, the NWMO expanded its engagement activities to include communities participating in the site selection process, and early outreach to Aboriginal and other communities in surrounding areas. At the same time, it continued to engage such groups as municipal organizations, Aboriginal communities and organizations, federal and provincial government officials, and youth.

The NWMO undertook a number of new communications initiatives, including an animated online introduction to used nuclear fuel and APM, a mobile transportation exhibit that shows how used nuclear fuel is being safely and securely transported in Canada and internationally, and publications explaining key aspects of APM. The Corporate Social Responsibility Program, which encourages youth involvement in science, added three new initiatives (the Science North School Outreach Program, Scientists in School, and Science Ambassadors) to the programs it already helps fund.

Over the next five years, the NWMO's engagement activities will be designed to further strengthen established relationships to sustain program momentum. These will include information sessions, briefings, joint projects and partnerships with governments (municipal, provincial, federal, and Aboriginal) and interested individuals and organizations. The NWMO will continue to work with its Council of Elders and Municipal Forum. It will also work together with potentially affected Aboriginal peoples. As the site selection process moves forward, the NWMO's engagement program has evolved to focus more directly on participating communities and the areas surrounding them. Over the next five years, Aboriginal peoples and surrounding communities, as well as communities along potential transportation routes as a large group with a shared interest, will become an important focus.



Collaboratively Implementing the Site Selection Process

The nine-step site selection process began in May 2010 with a broadly based communications program to inform Canadians about APM and the process itself (Step 1). Over the past three years, interested communities have learned more about APM and the site selection process. During that time, and as part of the process of learning more, the NWMO completed 22 initial screenings (Step 2), and began preliminary assessments (Step 3) in 20 communities. Preliminary assessments consist of two phases, and in 2013, the first phase was completed for eight communities. Of these, four were assessed as having strong potential to meet site selection requirements and were identified for further study. A strong showing of interest on the part of potential host communities allowed the NWMO to suspend new expressions of interest in the project effective September 30, 2012.

In all three years, the NWMO provided resources and opportunities for interested communities to learn more about the project and the site selection process. This included resources to seek independent advice, including staff at the Canadian Nuclear Safety

Commission and leaders from communities in other countries that have participated in a site selection process for a deep geological repository. Many communities in Step 3 of the site selection process established community liaison committees to facilitate community learning, help engage with Aboriginal peoples and other communities in the surrounding area, and provide guidance and feedback on preliminary assessments.

Over the next five years, the NWMO will continue to support and assist interested communities in learning more about APM, while also expanding its engagement with Aboriginal and other surrounding communities.

The NWMO will complete the first phase of remaining preliminary assessments and use these to identify a smaller number of communities that appear at this early stage to have strong potential to meet the project's requirements. In communities identified for further study, the NWMO will undertake more detailed technical and social assessments, including field investigations of potential sites. At the same time, it will also work with interested communities to engage Aboriginal and other communities in the surrounding area. As preliminary assessments are completed, the NWMO will continue to gradually narrow its focus to areas with strong potential to be suitable for hosting a repository. All evaluations will be undertaken in collaboration with communities.

The next five years of the site selection process will also involve broader engagement and study in areas surrounding potential siting communities, as well as an increasing focus on transportation planning. There will be increased engagement with regulatory authorities and all levels of government, transportation experts, and communities along potential transportation routes as a large group with a shared interest.

Ultimately, the project will only proceed at a site that can safely contain and isolate used nuclear fuel, and with the involvement of the interested community, First Nations and Métis peoples, and surrounding communities working together to implement it.



Optimizing Repository Designs and Further Increasing Confidence in Safety

The APM technical program works to improve the safety case for a deep geological repository where Canada's used nuclear fuel will be safely contained and isolated on an indefinite basis. It does so through three complementary programs: design optimization, building confidence in the understanding of geological and other processes that affect long-term safety, and illustrative repository safety assessments.

The program achieved a number of milestones over the past three years. These included:

- The completion of an update to the conceptual design and cost estimate for a deep geological repository and used fuel transportation system;
- The completion of two illustrative postclosure safety assessments – one in crystalline rock, the other in sedimentary rock;
- Refinements to site-specific natural analogue studies that help predict future site evolution from past system evolution and response to external disturbances; and
- A significant improvement in the neutron shielding performance of a conceptual used fuel transportation package; and the preparation of conceptual designs for the handling, transfer, loading, and sealing of used fuel containers.

Examples of ongoing studies include the performance of uranium dioxide, copper, and clay under geologic conditions, and the effects of glaciation on deep-seated groundwater system stability.

Over the next five years, the APM repository engineering program will be increasingly focused on large-scale engineering and demonstration projects. Specific objectives include:

- The design and manufacture of physical prototypes of the used fuel container;
- The establishment of a container, engineering, and test facility for both the repository and transportation containers;
- Completion of an integrated review of microbiological processes that could occur within the repository environment;
- Work with waste owners in planning for future transport of used nuclear fuel from the interim storage facilities where it is currently stored; and
- Completion of an update to the conceptual design and cost estimate for APM.

Collaborative research and other joint activities with universities and international organizations will also continue. To keep abreast of the latest international technical advances, the NWMO undertakes numerous joint research projects with its counterparts in other countries, including those of Sweden, Switzerland, Finland, France, and as of 2013, the United Kingdom. International joint projects include experiments at underground research facilities in Sweden and Switzerland.



Providing Financial Surety

The *NFWA* requires the NWMO to address the cost and funding of the long-term management of used nuclear fuel. This is to ensure the money necessary to pay for the long-term management of that fuel will be available when it is needed. The NWMO continued to fulfill this requirement between 2011 and 2013. It began a full update of the lifecycle cost estimates for the APM program in 2009 and completed it in 2011. This update includes the lifecycle cost estimates for a deep geological repository and related transportation of used nuclear fuel. In each of the three years, it updated the amount each waste owner must deposit for the next fiscal year. Over the next five years, the NWMO will continue to maintain and update cost estimates and adjust the funding formula as required.



Adapting Plans

It will take several generations to implement APM, and during that time, there will be many opportunities to continuously improve safety and performance, enhance effectiveness, reduce uncertainty, and refine the plan in response to evolving societal expectations. To keep abreast of new technologies and new ways of thinking, the NWMO engages in continuous learning and encourages the public to provide input on its five-year implementation plans.

Over the past five years, the NWMO pursued a number of approaches to learn from best practices and experience in project implementation in Canada and abroad. In addition to engaging in joint research projects with Canadian universities and nuclear waste management organizations in other countries, it continued to participate in the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development, where it regularly reported on its work and exchanged information on best practices in such areas as safety case development, community-driven site selection processes, and citizen engagement. The NWMO continued to monitor developments in

environmental and energy policies that might affect APM, including any new nuclear build.

To meet evolving societal expectations, the NWMO continued to seek guidance from holders of Aboriginal Traditional Knowledge about how best to interweave that knowledge in the NWMO's activities. In 2012, it organized a conference (the fourth International Conference on Geological Repositories) that brought together community leaders, regulators, and implementers from around the world to discuss how best to meet societal expectations in developing repositories.

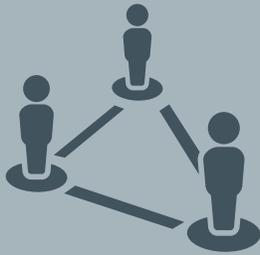
Over the next five years, the NWMO will continue to monitor and review national and international research, experience, and events for lessons learned and as an opportunity to consider refinements to APM. It will continue its exploration of best practices in engagement, capacity building, and community well-being, and will seek to build its understanding of how to interweave Aboriginal Traditional Knowledge in the site selection process. To keep abreast of the latest technical advances, it will continue to undertake joint research projects with Canadian universities and nuclear waste management organizations in other countries. It will also continue to be an active participant in such international organizations as the NEA. It will publish a preliminary technical assessment of Generation III reactor (CANDU and other) used fuel on deep geological repository design and safety, and will continue to monitor other developments in energy and environmental policy. As in previous years, it will continue to keep a watching brief on any new developments in reprocessing used nuclear fuel, while also monitoring potential new build so as to be ready to address any potential changes in volume and fuel types. Throughout, the NWMO will continue to seek public input on its work, including its five-year strategic plans.



Ensuring Governance and Accountability

Since its inception, the integrity of the NWMO's work has been guaranteed by multiple layers of oversight. Internally, the NWMO is governed by its Board of Directors. The *NFWA* requires the Board to appoint an Advisory Council to review and comment on the organization's work. There is a four-member Independent Technical Review Group (ITRG) that since 2008 has been conducting annual reviews of the APM technical program. Externally, the NWMO reports to the Minister of Natural Resources Canada on an annual basis. It submits an annual report to the Minister, and every three years, a Triennial Report. The NWMO also holds itself accountable to the public at large by posting key documents on its website, most notably, Annual Reports, Triennial Reports, minutes from the meetings of the Board of Directors and the Advisory Council, the ITRG's annual reports and the NWMO's responses to them, draft five-year implementation plans for public comment, research papers, the results of the NWMO's engagement activities, and studies (e.g., initial screenings and preliminary assessments) conducted as part of the site selection process.

The NWMO fulfilled each of these obligations over the past three years and will continue to do so in the years to come.



Building and Sustaining a High-Performing Organization

Implementing APM requires expertise in a wide range of fields – in geoscience, finance, social research, community engagement, engagement with Aboriginal peoples and Aboriginal Traditional Knowledge, communications, and many more. The NWMO's hires and contracts over the past three years evolved to meet these demands, and were complemented by investments in new business systems, most notably, state-of-the-art computer modelling. At the same time, several complementary initiatives helped in the vital task of sustaining the organization over the many generations it will take to implement APM. These included funding of programs designed to encourage youth involvement in science, and support to graduate students through the Natural Sciences and Engineering Research Council's (NSERC) Industrial Postgraduate Scholarships Program.

Over the next five years, the NWMO will continue to ensure it has the resources and expertise to carry the site selection process forward. Because its work will be increasingly community-focused, it is anticipated that hires of regionally based staff will increase as well. To support their efforts, the NWMO will expand local offices in communities with the most potential for successful implementation of the project.

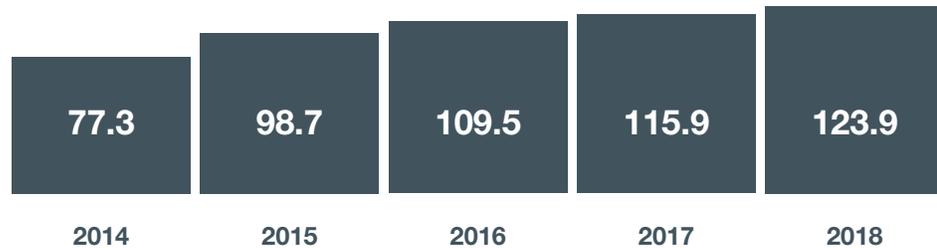


Other Activities

In 2009, Ontario Power Generation (OPG) contracted the NWMO to process technical services and other support through the regulatory approvals for OPG's proposed Deep Geologic Repository (DGR) Project for low- and intermediate-level waste from OPG-owned or operated reactors. This repository is separate from the APM repository for the long-term management of used nuclear fuel. In 2011, OPG further contracted with the NWMO to manage the detailed design of the DGR. Between 2011 and 2013, the NWMO made significant progress on the detailed design of the OPG repository.

In April 2011, OPG submitted to the Canadian Nuclear Safety Commission (CNSC) the Environmental Impact Statement, Preliminary Safety Report and other documents prepared by the NWMO. These documents were in support of OPG's application for a Site Preparation and Construction Licence for the DGR Project, and were later provided to the three-member Joint Review Panel established by Environment Canada and the CNSC in 2012. In June 2013, after 15 months of public review, the Panel determined that the documentation, along with additional information supplied by OPG, was sufficient to proceed to four weeks of public hearings starting in September 2013.

Within 90 days of the close of the public record for the DGR Project, the Panel will submit an Environmental Assessment Report to the federal Minister of the Environment outlining its conclusions, rationale and recommendations. Subject to the Government of Canada's decision, the Panel may then be authorized to make a decision on the application for a Licence to Prepare a Site and Construct a Deep Geologic Repository at the Bruce nuclear site in the Municipality of Kincardine. If a licence is issued, the NWMO would continue with the detailed design of the facility and provide construction services for the repository.

Five-Year APM Budget Forecast 2014 to 2018 (\$ million)

The NWMO's annual operations prior to the receipt of a construction licence are funded by nuclear fuel waste owners outside the trust funds outlined below. The NWMO's annual budget process is further described in chapter 9.1 (*Budget Forecast, 2014 to 2018*) of the *Triennial Report 2011 to 2013*.

Trust Funds

The *NFWA* requires that nuclear fuel waste owners establish and make annual deposits to trust funds that will address future financial costs of implementing APM, following receipt of a construction licence. As required by the *NFWA*, contributions have been made annually beginning in 2002.

Trust fund balances as of December 2013 are outlined below for each company. Every year, the NWMO must establish the level of trust fund deposits for each company for the upcoming year. The required level of 2014 deposits is presented in chapter 9.2 (*Financial Reporting Requirements*) of the *Triennial Report 2011 to 2013*.

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Total Trust Fund Deposits: Year 2014

Owner	Trust Fund Balances as at December 2013 (\$ million)	2014 Deposits to Trust Funds Required by Waste Owners* (\$ million)
	December 2013	2014
OPG	2,668	161
HQ	105	9
NBPN	104	6
AECL	42	2
Total	2,919	178

* Annual trust fund deposits are required to be made within 30 days of the submission of the Annual Report.

APM Milestone Achievements 2011 to 2013



Building Sustainable Relationships

- Worked closely with communities interested in exploring the APM Project to advance the site selection process on behalf of Canadians.
- Worked with the Municipal Forum to develop a better understanding of the needs and processes of municipalities involved in the site selection process and of the communities in the surrounding area.
- Worked closely with the Elders Forum and later the Council of Elders to incorporate Aboriginal Traditional Knowledge in the NWMO's work.
- Worked with Aboriginal communities, and regional, provincial and national Aboriginal organizations to provide briefings and involve Aboriginal peoples in the design, development, and decision-making for APM.
- Continued to strengthen relationships with federal and provincial governments and to brief elected representatives about the project and the site selection process.
- Supported initiatives designed to increase youth interest and participation in science, including Youth Science Canada, Shad Valley, the Science North School Outreach Program, and Scientists in School.
- Used a wide variety of communications media to keep communities and the public at large informed about the NWMO, its work, and the site selection process.

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Collaboratively Implementing the Site Selection Process

- Supported interested communities in learning more about APM and the site selection process.
- Completed initial screenings (Step 2) for 22 communities, and at the request of 20 interested communities, initiated the first phase of preliminary assessments (Step 3) of potential suitability for the project.
- Effective September 30, 2012, suspended new expressions of interest from potential host communities so that the NWMO could focus on working with the communities already engaged in the site selection process.
- Supported the formation of community liaison committees by Step 3 communities to facilitate community learning and to provide guidance in such areas as preliminary assessments and engagement with neighbouring communities.
- Completed Phase 1 preliminary assessments (Step 3) in eight communities, four of which were identified for further study.
- Provided resources to communities to seek independent advice, including meetings with the Canadian Nuclear Safety Commission and forums such as the 2011 conference of the Federation of Canadian Municipalities, the Canadian Nuclear Society's 2011 conference on Waste Management and Decommissioning and Environmental Restoration, and the 2012 International Conference on Geological Repositories.



Optimizing Repository Designs and Further Increasing Confidence in Safety

- Completed an update to the conceptual design and cost estimate for a deep geological repository and used fuel transportation system.
- Maintained and advanced geoscientific research specific to the long-term behaviour and evolution of deep-seated, low-permeability groundwater systems in crystalline and sedimentary bedrock settings.
- Worked collaboratively with Switzerland's nuclear waste management organization (Nagra) to develop copper coatings for repository containers using Canadian technologies developed by the National Research Council, the University of Ottawa, the University of Windsor, and the University of Toronto.
- Prepared conceptual designs for the handling, transfer, loading, and sealing of used fuel containers.
- Conducted site-specific natural analogue studies to help predict future site evolution from past system evolution and response to external disturbances.
- Collaborated with other nuclear waste management organizations in repository-related research activities at underground rock laboratories in sedimentary and crystalline rock formations.
- Completed two illustrative postclosure safety assessments – one in crystalline rock, the other in sedimentary rock.
- Conducted analyses specific to the safe and secure transportation of used nuclear fuel, including work that resulted in a significant improvement in the neutron shielding performance of a conceptual used fuel transportation package.
- Acquired the used fuel transportation package and upgraded the Canadian Nuclear Safety Commission certificate for that package to current regulations.

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Providing Financial Surety

- Completed a full update of the lifecycle cost estimates for a deep geological repository and related transportation of used nuclear fuel.
- Updated trust fund contributions to reflect the latest lifecycle cost estimates and trust fund balances.



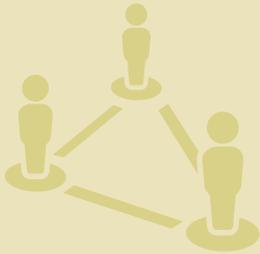
Adapting Plans

- Continued to solicit public input so that evolving societal expectations are reflected in implementing APM.
- Continued to monitor any developments in reprocessing used nuclear fuel and report findings to the public on an annual basis.
- Continued to partner with Canadian and international universities, nuclear waste management organizations in other countries, and international agencies to keep abreast of the latest advances in the field.



Ensuring Governance and Accountability

- Continued to seek independent review of the organization's work through an Independent Technical Review Group, Advisory Council, Municipal Forum, and a forum of Aboriginal Elders.
- Continued to update the CNSC and seek feedback as part of the organization's arrangement to obtain CNSC review of illustrative safety assessments for a used fuel repository in both crystalline and sedimentary rock formations.
- Ensured the organization's management system meets the highest standards by adding two new certifications to its existing Quality Management (ISO 9001:2008) certification: Occupational Health and Safety Management (CSA Z1000:2006) and Environmental Management Systems (ISO 14001:2004).
- Continued to report annually to the Minister of Natural Resources Canada, as required by the *Nuclear Fuel Waste Act*.



Building and Sustaining a High-Performing Organization

- Supported the site selection process by recruiting specialists in such areas as repository design and construction, environmental assessment, Aboriginal Traditional Knowledge, social research, municipal planning, ethics, finance, communications, and public engagement.
- Opened local offices in Step 3 communities.
- Promoted knowledge transfer to future generations by encouraging youth involvement in science and by providing financial support to graduate students through the NSERC's Industrial Postgraduate Scholarships Program.

APM Strategic Planning Milestones, 2014 to 2018



Building Sustainable Relationships

- Communications and media relations programs to raise awareness of APM Project.
- Engagement, education, outreach and capacity-building initiatives to support multi-generational involvement in APM Project.
- Relationship building with interested communities, First Nations and Métis peoples, surrounding communities and regions potentially affected by the APM site selection process.
- Working together with affected Aboriginal peoples as holders of Traditional Knowledge, users of environmental resources and environmental stewards, to be active participants in the site selection process.
- Collaborative work with, and advice sought from, the NWMO Council of Elders, Municipal Forum, community-based organizations, and national and provincial Aboriginal organizations.
- Developing and maintaining relationships with federal, provincial, regional and local governments.



Collaboratively Implementing the Site Selection Process

- Broadened engagement with interested communities, First Nations and Métis peoples, and surrounding communities to support more detailed reflection on the APM Project and to explore the potential to implement the project in partnership.
- Tailored communications and public engagement activities to support ongoing dialogue and learning about the project.
- More detailed evaluation of potentially suitable areas, focusing on geoscientific suitability, engineering, transportation, environment and safety, as well as social, cultural and economic assessment.
- Identification of potential transportation modes and routes to each potential repository site, evaluated against technical safety criteria and aligned with community input.
- Selection of one or two candidate sites for detailed site characterization and assessment.

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Optimizing Repository Designs and Further Increasing Confidence in Safety

- Advancement of technical program activities to optimize repository designs and safety assessments.
- Initiate proof test plans to demonstrate Canadian-engineered barrier systems in advance of submission of a site preparation and construction licence.
- Completion of the Canadian Nuclear Safety Commission pre-project reviews in crystalline and sedimentary rock.
- Continued studies, analyses and joint activities with international partners to improve understanding of key processes and confidence in the safety case for deep geological repositories.



Providing Financial Surety

- Completion of updated cost estimate for APM.
- Estimated financial implications of potential future scenarios of varying volumes of used nuclear fuel, when available.
- Identification as appropriate of implications for funding formula of potential new reactors or owners.
- Continued establishment of level of trust fund deposits by waste owners required annually.



Adapting Plans

- Reporting on projected used fuel inventories, emerging technologies and potential implications of any new nuclear reactor units for APM plan.
- Continued published reviews of developments in used nuclear fuel reprocessing and alternative used nuclear fuel management technologies.
- Tracking of expectations of citizens, including youth and interested organizations, to ensure site selection process continues to meet needs and expectations; adapting process as may be required as experience is gained.
- Interweaving Aboriginal Traditional Knowledge in APM program implementation.



Ensuring Governance and Accountability

- Oversight by NWMO Members, Board of Directors and Board Committees.
- Advice and independent comment by Advisory Council.
- Review of APM technical program by the Independent Technical Review Group.
- Assessments and audits of internal governance to maintain and achieve certifications to management system standards for quality, safety and environmental management.
- Interaction with the Canadian Nuclear Safety Commission for regulatory information and pre-project reviews for APM.
- Submission of annual and triennial reports to Minister of Natural Resources and the public.



Building and Sustaining a High-Performing Organization

- Further development of staffing capability, contractor capability, and business systems and processes.
- Continued support for regionally based staff and local information offices as required to support communities engaged in the site selection process.
- Continued staff support, funding and resources for potential host communities, First Nations and Métis peoples, and surrounding communities to build capacity to participate in the site selection process.

What We Heard as We Engaged Canadians

In May 2010, the NWMO initiated the process to select an informed, willing community to host a deep geological repository and associated centre of expertise. Over the past three years, the NWMO has worked with communities wishing to learn more about the Adaptive Phased Management (APM) Project and increasingly with Aboriginal peoples and other communities in the surrounding area to explore potential suitability through initial screening and preliminary assessments. Importantly, the APM Project will only proceed with the involvement of the interested community, Aboriginal peoples in the area and affected surrounding communities.

Between 2011 and 2013, the NWMO worked collaboratively with interested communities that passed an initial screening and elected to proceed in the site selection process to learn more about the project and to reflect on their interest in it. As well, the NWMO completed Phase 1 assessments with eight of the 20 communities involved in preliminary assessments (Step 3 of a nine-step site selection process), and through these studies, it worked with communities to foster further learning and reflection on their interest in the project. The NWMO also explored with communities the potential to meet the robust safety requirements of the project and for the project to foster well-being as each community defines it.

Over the course of working with communities, and communities learning about the project and reflecting on their interest, communities have raised many questions which have fueled dialogue and learning throughout the three years.

Key themes included:

- Understanding what used nuclear fuel is and the hazard that needs to be managed, including what radiation is and its potential health effects if not properly managed.
- Understanding how safety of people and the environment will be assured by the design of the deep geological repository, including “what if” scenarios if the repository does not operate as planned.
- Understanding how safety of people and the environment will be assured through the transportation of used nuclear fuel from where it is currently stored to a centralized facility, including “what if” scenarios covering road accidents and malevolent acts.
- Understanding how the long-term sustainability of the community might be fostered through the implementation of the project, including how long-term community objectives might be achieved, and how the NWMO and community would work together to accomplish this. Potential benefits include job creation, opportunities for youth, expansion of population, expansion of infrastructure, and enhancement of services and broadening of revenue streams for the community.
- Understanding how the project may affect important activities in the community such as hunting, fishing and trapping, and tourism.
- Understanding how property values, infrastructure, and revenue streams in the community might be affected.
- Ensuring the involvement of Aboriginal peoples and surrounding communities in the implementation of the project, were it to come to the area, and understanding how all would work together to implement the project. This includes discussion of the distribution of risks, costs and benefits.

Over the past three years, the NWMO has developed exhibits, brochures, and other information material to support this learning and discussion. It has facilitated a variety of community learning opportunities involving regulators, academics, and consultants working in the field, as well as exchanges with communities involved in similar processes

in other countries. It has also developed and refined resource programs for communities and Aboriginal peoples in response to their requests, along with exhibits and other learning material designed to help foster conversation in the community.

More broadly, and particularly among critics, conversation has continued about whether there are better technical approaches for the long-term management of used nuclear fuel, and whether more used fuel should be created.

Misinformation has circulated in some communities about the site selection process itself, the project, and the NWMO. This misinformation has included suggestions that the NWMO is targeting disadvantaged communities and that there is no foundation for confidence in the long-term safety of a deep geological repository and in its ability to safely and securely contain and isolate used nuclear fuel for the long time periods required. It will be important to address this misinformation as the site selection process proceeds and that those in the area surrounding interested communities engage in more intensive learning and reflection on the project.

The NWMO has received advice and guidance from Aboriginal peoples on how to incorporate Aboriginal Traditional Knowledge in NWMO processes overall, and in particular in the assessment of the suitability of potential sites. As the site selection process advances, with more intensive engagement of Aboriginal peoples at the local level in the conduct of assessment studies and decision-making, the incorporation of Aboriginal Traditional Knowledge in assessment activities will both broaden and deepen.

Finally, the NWMO continues to engage communities involved in the site selection process, as well as interested Canadians, in the design and refinement of its plans. This engagement includes:

- Developing and refining strategic plans;
- Designing of processes and approaches for studies;
- Developing communications materials to help build understanding of APM and the site selection process;
- Identifying areas for additional work; and
- Supporting informed decision-making.

The NWMO greatly appreciates the interest, involvement, and direction of communities and interested Canadians in the implementation of APM. It welcomes and invites comments, questions, and concerns that help advance dialogue, the learning process, and the safe, long-term management of Canada's used nuclear fuel.

For more details on what the NWMO heard over the past three years, please see chapter 8 (*What We Heard on Implementing Adaptive Phased Management*) of the *Triennial Report 2011 to 2013*.



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