



# Creating the future together

Annual Report 2023

*Check out the digital version of this annual report for more interactive and multimedia content.*



**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES



## **Land acknowledgment**

The Nuclear Waste Management Organization (NWMO) acknowledges that we have worked in many different Indigenous territories since the inception of the organization. We are grateful to the Indigenous and municipal communities that have worked with us over more than 20 years.

We further acknowledge that today we are working in northwestern Ontario in the traditional territory of Wabigoon Lake Ojibway Nation with the communities of Wabigoon Lake Ojibway Nation and the Township of Ignace.

In southern Ontario, we are working in the traditional territory of Saugeen Ojibway Nation (SON) with the two SON communities — Chippewas of Nawash Unceded First Nation and Chippewas of Saugeen First Nation — and the Municipality of South Bruce.

We further acknowledge that in both the northwest and the south, we have the privilege of working with other First Nations and organizations, with Métis communities and the Métis Nation of Ontario, and many municipal communities that have all expressed an interest in learning about our work.

As part of our commitment to Reconciliation, we recognize both the historic and current injustices far too many Indigenous communities endure. We pledge to do our part to support well-being in the communities with which we work.



NUCLEAR WASTE SOCIÉTÉ DE GESTION  
MANAGEMENT DES DÉCHETS  
ORGANIZATION NUCLÉAIRES

The Honourable Jonathan Wilkinson  
Minister, Energy and Natural Resources Canada  
Ottawa, ON K1A 0A6

March 2024

Dear Minister,

We are pleased to submit to you the Nuclear Waste Management Organization (NWMO) annual report for the fiscal year 2023.

We submit this report in compliance with Sections 16(1), 16(2) and 23(1) of the *Nuclear Fuel Waste Act*.

In fulfilling our obligations under Section 24 of the act, we are also making this report available to the public.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Glenn Jager', with a stylized flourish at the end.

Glenn Jager  
Board Chair

A handwritten signature in black ink, appearing to read 'Laurie Swami', with a stylized flourish at the end.

Laurie Swami  
President and CEO



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## Table of contents

Message from Glenn Jager, NWMO Board Chair .....	4
Message from Laurie Swami, NWMO President and CEO .....	6
Introduction to the NWMO .....	8
Aligning with Indigenous perspectives .....	20
Community engagement.....	24
Site assessment.....	33
Engineering, safety and technical research.....	36
International collaboration.....	40
Transportation planning .....	42
Organizational readiness .....	44
Preparing for regulatory decision-making .....	46
Governance and accountability .....	48
Ensuring funding is in place .....	56
Auditor's report and financial statements.....	64

## Message from Glenn Jager, NWMO Board Chair



It is exciting to see the progress that the Nuclear Waste Management Organization (NWMO) has made in 2023. The organization moved forward on the plan to safely manage used nuclear fuel long term, preparing to select a site for the deep geological repository and enter the regulatory decision-making process.

The Board's experience working in the nuclear and energy sectors have instilled in us the need for the NWMO's work, and the momentum this year demonstrates that Canada is embracing its shared responsibility for the future.

Canada can proudly say we are a global leader in nuclear energy technology as we — and many others around the globe — move towards a clean energy future. It is encouraging to see people and communities, both in the potential siting areas and more widely, gain a deeper understanding of nuclear energy and Canada's plan. That has been achieved through the NWMO's ongoing dedication to partnership, engaging with experts, sharing knowledge and answering questions.

The regulatory decision-making process that will follow site selection in 2024 will be rigorous and challenging, as it should be, to ensure the protection of people and the environment. The NWMO's ongoing engagement activities and technical leadership have positioned it well to be accountable to communities, government and regulatory expectations.

Site selection will only happen with informed and willing hosts, and following it, engagement will not stop. The NWMO's dedication to community willingness and well-being is a model for the rest of the world and has positioned Canada as a leader in nuclear waste management. The same best practices developed here and internationally for the siting of used nuclear fuel will be applied in developing the management of intermediate-level and non-fuel high-level waste — a new mandate for the NWMO.

In 2023, the federal government accepted the NWMO's recommendations for the Integrated Strategy for Radioactive Waste, an important milestone for Canada and the organization. As with Canada's plan for used nuclear fuel, a comprehensive strategy for other types of waste was needed, and the NWMO is well placed to take on its part — developing the plan to safely manage intermediate-level and non-fuel high-level waste.

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The Board is confident that the NWMO is prepared to navigate the work and dialogue ahead. It has always been an organization focused on preparing for the future and doing so in close collaboration with all Canada. I hope this report provides you with a clear vision on the efforts completed and about to be undertaken. I encourage you to join the conversations in the year ahead. As we look to the future, that collaborative spirit will guide us.

A handwritten signature in black ink, appearing to read 'Glenn Jager', with a stylized, cursive script.

Glenn Jager  
Board Chair

## Message from Laurie Swami, NWMO President and CEO



Our work at the Nuclear Waste Management Organization (NWMO) has always been about the future. Perhaps more than any other organization or project in Canada, our focus is on the very long term, to protect people and the environment for generations to come.

In a journey this multigenerational, every year counts. Looking back on 2023, our progress demonstrates not only that our work is on the right track, but also that we are ready for what is next: a new phase of Canada's plan for used nuclear fuel, and taking on an important new mandate that closes the remaining gaps on nuclear waste management.

I have this confidence because I know that we are never working alone. Resilient relationships, dialogue and shared decision-making have been the hallmarks of how we have operated since our very inception. They have shaped our success to date and will continue to do so in the years ahead.

This year, we continued to collaborate in Canada and internationally, and use our leading technical expertise to further build our understanding ahead of a key milestone we expect to achieve in 2024: selecting a site for Canada's deep geological repository for used nuclear fuel.

This will not be a decision the NWMO makes on our own. We depend on expertise from scientific experts, peer reviewers and Indigenous Knowledge Holders. We also have a high degree of regulatory oversight guiding our work.

Crucially, informed and willing hosts are foundational to the success of this project. In both the Wabigoon Lake Ojibway Nation-Ignace area and the Saugeen Ojibway Nation-South Bruce area, we have been working closely with communities as they determine how they will demonstrate willingness. To that end, we took steps towards developing hosting agreements, which will set out roles, investments and expectations that we will have for each other once the site is selected, and how we move forward together in the regulatory process.

We also continued to strengthen important partnerships with our international counterparts. This included signing a new milestone Statement of Intent to Co-operate on Used Nuclear Fuel Management with the United States Department of Energy and renewing a multi-year co-operation agreement with Andra in France. We also welcomed a number of international experts to both siting areas and the NWMO's own facilities, including a delegation from Korea Hydro & Nuclear Power, signing a Letter of Intent to further our collaboration and improve on new technology. These visits are incredible opportunities to share our knowledge and best practices with international leaders in nuclear waste management and learn from them in return.

Through it all, we remained steadfast in our commitments to protecting people and the environment, including water. Our [Water Statement](#) released this year outlines this purpose as a way to reinforce its importance, and reflects our ongoing commitment to protecting water, as well as our broader Reconciliation journey. It was created with input from Indigenous



peoples and aligns with Indigenous Knowledge, to ensure it was equally respected alongside western science. Similarly, our [Sustainability Statement](#) released this year acknowledges our organization's commitment to a sustainable future.

Looking ahead, site selection will be a key turning point for Canada's plan. It will mark the beginning of a transformation for our organization, including developing a plan to transition many of our staff to the selected siting area. This will happen alongside further site characterization activities to ensure the project is safe and that we are ready for the regulatory decision-making process, as well as new investments that contribute to community well-being. Our work to prepare for that process is already well underway. These are not small undertakings and will only be successful with continued collaboration.

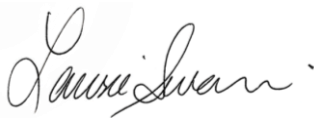
I am optimistic that we are ready. The community-driven site selection process and our ongoing engagement efforts around key issues truly make Canada an international leader in this type of project. I am grateful to the communities in both siting areas, as well as all 22 communities that initially raised their hands to express their interest in learning more about the project and their potential to host it. Their time, thoughtful questions and visions for the future of their communities are what make our work successful.

All this work is incredibly important as Canada looks to build infrastructure that helps to support Canadian energy security, support the fight against climate change, and bring international partners together in a time of global uncertainty. The NWMO is regularly sought after to contribute to discussions that help advance these global priorities.

Our decades of experience have now also opened a new door for our organization to help Canada meet another important challenge: safely managing intermediate-level and non-fuel high-level radioactive waste long term. We are excited for this new endeavour and look forward to working closely with local communities, Indigenous peoples, scientific experts, international leaders, the nuclear industry, governments and others to develop the plan for the safe, long-term management of these types of waste.

Moving forward from where we are today to where we are going tomorrow will take continued collaboration. As the proverb goes, "If you want to go fast, go alone. If you want to go far, go together."

I look forward to going far and creating the future together.



Laurie Swami  
President and CEO

## Introduction to the NWMO

*We continue to collaborate with Canadians and Indigenous peoples on Canada's plan for the safe, long-term management of intermediate- and high-level radioactive waste.*



Welcome to the Nuclear Waste Management Organization's (NWMO) annual report for 2023.

The NWMO is a not-for-profit organization tasked with the safe, long-term management of Canada's used nuclear fuel, in a manner that protects people and the environment for generations to come. The NWMO is also responsible for implementing the plan for Canada's intermediate-level and non-fuel high-level radioactive waste. Our annual report provides an overview of our activities to implement Canada's plan over the past year and an update on our financial position.

Submitting this annual report to Canada's Minister of Energy and Natural Resources and making it available to the public fulfils one of our obligations under *the Nuclear Fuel Waste Act (NFWA)* (2002).

As this year's report shares, we have made significant progress implementing Canada's plan for used nuclear fuel throughout 2023. We continued to collaborate with Indigenous peoples, communities, industry experts, government decision-makers, our international counterparts and others to prepare for what is ahead, including site selection for Canada's deep geological repository and the regulatory process to follow.

This milestone, which we expect to reach in late 2024, will mark a major turning point for our organization, and we are proud to say that we are ready. Along with advancing technical studies and building awareness through social engagement this year, we continued to engage in meaningful discussions with communities in and around the two remaining potential siting areas: the Wabigoon Lake Ojibway Nation (WLON)-Ignace area and the Saugeen Ojibway Nation (SON)-South Bruce area, both in Ontario.

We also began the work of developing partnership agreements with the potential host communities. These agreements outline roles, investments and expectations that we will have for each other once the site is selected, and how we move forward together in the regulatory process.

In addition to progress on Canada's plan, we are also beginning to prepare for an exciting new mandate. In 2023, we reached a key milestone in our work on Canada's Integrated Strategy for Radioactive Waste (ISRW), a comprehensive strategy that outlines the safe, long-term management of low-level, intermediate-level and non-fuel high-level radioactive waste.

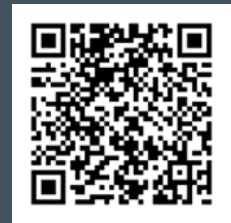
The federal government accepted the NWMO's recommendations in the strategy, which we developed following two years of engagement with Canadians, Indigenous peoples, waste generators and other key members of the public. The endorsement from the government sets in motion a new mandate for the NWMO to develop the safe, long-term management plan for intermediate-level and non-fuel high-level waste.

Each year, the NWMO publishes a report that provides an update on the amount of used nuclear fuel in Canada, as well as projections for future amounts from existing reactors and announced new nuclear projects. As the organization responsible for implementing Canada's plan for used nuclear fuel, we will be responsible for managing used fuel from expanded or new nuclear facilities built in the future, including small modular reactors.

We remain committed to co-creating a shared future built on rights, equity and well-being for Indigenous peoples. For example, this year, we continued mandatory staff Reconciliation training, continuous learning opportunities, informal training opportunities, staff support systems and community-driven work plans.

The NWMO is also committed to meeting all applicable regulatory standards and requirements for protecting the health, safety and security of people and the environment. The projects we are implementing are regulated by the Canadian Nuclear Safety Commission (CNSC), which administers its licensing system in co-operation with other federal, provincial and municipal government departments and agencies in areas such as public and worker health and safety, environmental protection and transportation. To learn more about how our work is regulated, visit our [regulatory oversight web page](#).

Following our commitment to continually adapt, we have developed an integrated digital experience that includes videos, animations, a search function and more. We encourage you to explore the digital annual report at [www.nwmo.ca/annualreport2023](http://www.nwmo.ca/annualreport2023).



## ADAPTIVE PHASED MANAGEMENT

### Technical method

- Centralized containment and isolation of used nuclear fuel in a deep geological repository
- Continuous monitoring
- Potential for retrievability
- *Optional* step of temporary storage (not included in current implementation plan)<sup>1</sup>

<sup>1</sup> We do not expect to need the optional step of temporary storage as used fuel will remain at interim storage facilities until the repository is operational.

### Management approach

- Flexibility in pace and manner of implementation
- Phased and adaptive decision-making
- Responsive to advances in technology, research, Indigenous Knowledge and societal values
- Open, inclusive and fair siting process to seek informed and willing hosts
- Sustained engagement of people and communities throughout implementation

Canada's plan for used nuclear fuel, known as Adaptive Phased Management, involves a technical plan and a phased and flexible implementation strategy. It is both a technical method (what we plan to build) and a management approach (how we will work with people to get it done). The technical method involves developing a deep geological repository in a suitable rock formation to safely contain and isolate used nuclear fuel. The management approach involves phased and adaptive decision-making, supported by public engagement and continuous learning.

Initially, 22 communities expressed interest in learning more and exploring their potential to host the project. Through progressive technical studies and engagement efforts designed to help interested communities learn more about the project, that list was gradually narrowed down. Since early 2020, we have been focused on two potential siting areas: the WLON-Ignace area and the SON-South Bruce area, both in Ontario. The WLON-Ignace area and the SON-South Bruce area have both been deeply involved since 2010 and 2012 respectively.

Canada's plan will only proceed in an area with informed and willing hosts. Working together with the communities in the potential siting areas, we continue to explore the potential for partnership, provide support for the processes they will use to evaluate and express willingness, and discuss how the project could be implemented in a way that enhances community well-being.

We are now approaching a significant milestone: we expect to select a site by late 2024. The work we are conducting today is laying the foundation for a transition to a new series of activities. Once a preferred site is selected, we will initiate the regulatory decision-making process, construct a Centre of Expertise and begin to transition our operations to the site.

Canada's plan is adaptive by design. The next phase of our work is fast-approaching, and we will be ready. This project is important for the potential siting areas, for the environment, for industry, and most of all, for protecting Canadians and Indigenous peoples for generations to come.

## INTEGRATED STRATEGY FOR RADIOACTIVE WASTE



In June 2023, we submitted the Integrated Strategy for Radioactive Waste (ISRW) to the Minister of Energy and Natural Resources for consideration. The Minister then endorsed our recommendations in October.

The strategy, which we developed at the request of the Minister, was intended to address some gaps in Canada's radioactive waste long-term disposal plans, particularly for low-level, intermediate-level and a small amount of non-fuel high-level radioactive waste. It does not duplicate or replace existing, long-term disposal plans already in place and progressing.

The strategy — a first-of-its-kind for Canada — makes two key recommendations:

- The disposal of **low-level radioactive waste** in multiple near-surface disposal facilities, with waste generators and waste owners managing implementation; and
- The disposal of **intermediate-level and non-fuel high-level radioactive waste** in a deep geological repository, to be implemented by the NWMO.

The integrated strategy was built through more than two years of engagement with Canadians, Indigenous peoples, and waste generators and owners, as well as studies of both technical considerations and international best practices.

With the endorsement of the Minister, the NWMO will now start developing a consent-based siting process for the deep geological repository recommended for intermediate-level and non-fuel high-level radioactive waste. This planning process is expected to conclude in 2025.

In addition to our work implementing Adaptive Phased Management, this new siting process will require informed, willing hosts. Communities that have participated in the siting process for the deep geological repository for used nuclear fuel may wish to participate in this new siting process if they would like, but it is not required.

### Types of radioactive waste

**Low-level waste** mostly comes from power plants, and medical, academic, industrial and other commercial uses of radioactive materials (e.g., mop heads, rags, paper towels). These items do not produce heat and contain radioactive levels that require containment and isolation for up to a few hundred years.

**Intermediate-level waste** includes used components such as filters, resins and pumps from power plants, research reactors and medical isotope manufacturers. This waste produces minimal heat, but requires a higher level of containment and isolation for longer time periods than is needed for low-level waste.

**High-level waste** includes mostly used nuclear fuel, and there is a very small amount of non-fuel high-level waste that comes from other activities such as medical isotope production. This waste generates a significant amount of heat and radioactivity and requires containment and isolation for hundreds of thousands of years in a deep geological repository.



*We're excited to advance Canada's Integrated Strategy for Radioactive Waste. Canadians and Indigenous peoples want action now to manage all types of radioactive waste, rather than leaving it as a burden to future generations. We are proud of our work, and with more than 20 years of experience advancing Canada's plan for used nuclear fuel, we are well positioned to develop a consent-based process to identify a site where we can dispose Canada's intermediate-level and non-fuel high-level waste.*

— **Sara Dolatshahi**  
Director of Strategic Projects at the NWMO

## INFORMING AND GUIDING OUR WORK

In 2024, the NWMO will undertake work to refresh our vision, mission and values to reflect the evolving nature of our work as we prepare to:

- Complete the [site selection process](#) for Canada's plan for used nuclear fuel; and
- Develop a new site selection process for Canada's plan for [intermediate-level and non-fuel high-level radioactive waste](#).

### ***Vision***

Our vision is the long-term management of Canada's nuclear waste in a manner that safeguards people and respects the environment, now and in the future.

### ***Mission***

The purpose of the NWMO is to develop and implement, collaboratively with Canadians, a management approach for the long-term care of Canada's used nuclear fuel that is socially acceptable, technically sound, environmentally responsible and economically feasible. The NWMO is also responsible for implementing the plan for Canada's intermediate-level and non-fuel high-level radioactive waste.

### ***Values***

<p><b>SAFETY</b></p> <p>We place all aspects of public and employee safety – including environmental, conventional, nuclear and radiological safety – first and foremost in everything we do.</p>	<p><b>INTEGRITY</b></p> <p>We act with openness, honesty and respect.</p>	<p><b>EXCELLENCE</b></p> <p>We use the best knowledge, understanding and innovative thinking, and seek continuous improvement in all that we do in our pursuit of excellence.</p>
<p><b>COLLABORATION</b></p> <p>We engage in a manner that is inclusive and responsive, and that supports trust, constructive dialogue and meaningful partnership.</p>	<p><b>ACCOUNTABILITY</b></p> <p>We take responsibility for our actions, including wise, prudent and efficient management of resources.</p>	<p><b>TRANSPARENCY</b></p> <p>We communicate openly and responsibly, providing information about our approach, processes and decision-making.</p>

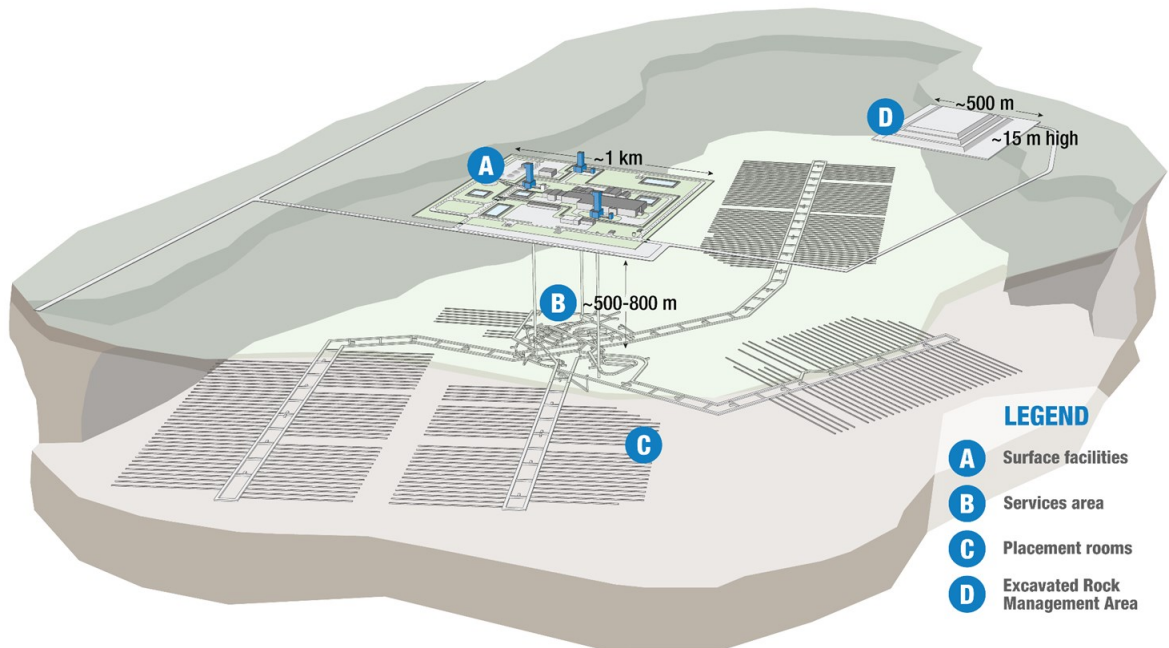
## AN ETHICAL AND SOCIAL FRAMEWORK

We are guided by an [Ethical and Social Framework](#) that was first published in 2004. It was developed with the involvement of leading Canadian ethicists and Indigenous thought leaders during the study phase of our work. We continue to build on this framework as the project moves forward.

The Ethical and Social Framework incorporates the following principles:

- Respect for life in all its forms, including minimization of harm to human beings and other sentient creatures;
- Respect for future generations of human beings, other species, and the biosphere as a whole;
- Respect for peoples and cultures;
- Justice across groups, regions and generations;
- Fairness to everyone affected, particularly minorities and marginalized groups; and
- Sensitivity to the differences in values and interpretation that different individuals and groups bring to the dialogue.

## THE DEEP GEOLOGICAL REPOSITORY FOR USED NUCLEAR FUEL



*This diagram shows a conceptual layout for the surface facilities, as well as an approximate area of 1,500 acres (600 hectares) for the underground services area and placement rooms in the deep geological repository, at the proposed site with crystalline rock. This design will continue to evolve as the project progresses and will adapt to changes in technology and future decisions about nuclear power generation that may change the volume or type of fuel to be managed.*

The deep geological repository uses a multiple-barrier system designed to safely contain and isolate used nuclear fuel over the very long term. Constructed more than 500 metres below ground, the repository will consist of a network of placement rooms that will store the used nuclear fuel.



At the surface, there will be facilities where the used fuel is received, inspected and repackaged into purpose-built containers encased in a bentonite clay buffer box, before being transferred to the main shaft for underground placement. There will also be facilities for administration, security, processing of sealing materials, quality control, and ongoing operation and monitoring of the site.

The repository will include a centralized services area that will allow for underground ventilation through three shafts located within a single, secure area. The layout also includes multiple access tunnel arms that will let our technical specialists situate the placement rooms in areas with the most suitable rock. The buffer boxes will be arranged in the horizontal placement rooms, and any spaces left over will be backfilled with bentonite clay pellets or chips.

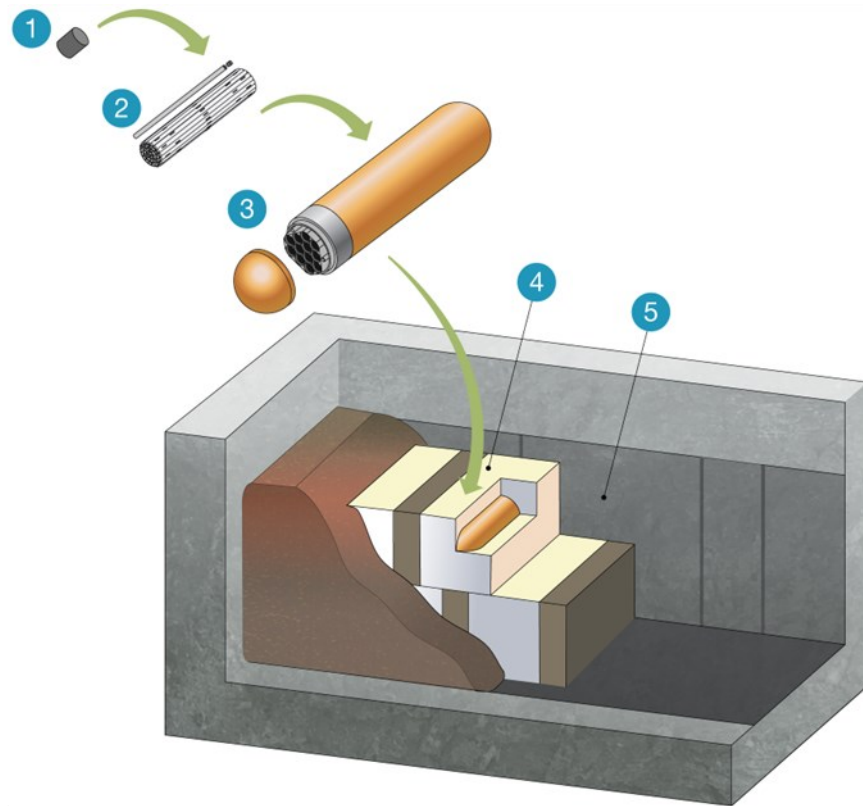
### THE MULTIPLE-BARRIER SYSTEM



*The NWMO completed a Used Fuel Container pressure test using a copper-coated steel container, engineered to resist corrosion and to withstand extreme conditions.*

A series of engineered and natural barriers will work together to safely contain and isolate used nuclear fuel within the repository. Each barrier will provide a unique and stand-alone level of protection, while serving as a backstop to the last barrier. If any of these barriers were to fail, another would be there to ensure any dangerous materials remain contained or isolated.

*This diagram shows the multiple-barrier system that will contain and isolate the used nuclear fuel.*



1. The first barrier is the fuel pellet. Fuel pellets are a very stable, solid ceramic, made from highly durable baked uranium dioxide powder. They are stored end-to-end in long tubes made of a strong, corrosion-resistant metal.
2. The second barrier is the fuel bundle, made from a highly corrosion-resistant material called Zircaloy, which contains a number of these tubes.
3. The third barrier is a copper-coated steel container. These containers are engineered to resist corrosion and are strong enough to keep the used nuclear fuel completely contained until its radioactivity decreases to safe levels. They are designed to survive underneath 3,000 metres of snow, ice and meltwater, in addition to up to 800 metres of rock and dirt, groundwater and pressure from the surrounding clay.
4. The fourth barrier is a buffer box made of highly compacted bentonite clay that encases each container. Bentonite clay is a natural material proven to be a powerful barrier to water flow. It is very stable, as observed in natural formations that are hundreds of millions of years old. It also naturally prevents microbial growth, which will help maintain the integrity of the container over a long time.
5. The fifth barrier is the rock itself, which will protect the repository from disruptive natural events, water flow and human intrusion.

## OUR PLANNING TIMELINES

Continuing to work collaboratively with communities, universities and research institutions, regulatory bodies, international waste management organizations and the greater industry, the NWMO continued to progress work on Canada's plan in 2023. As we progress towards selecting a site in 2024, the NWMO also remains on track to meet our construction and operations timeline. Additionally, as we advance plans for intermediate-level and non-fuel high-level waste, we will publish planning timelines accordingly.

Developing Canada's plan	2002	The NWMO is created.
	2005	As required by the <i>Nuclear Fuel Waste Act</i> , the NWMO completes <i>Choosing a way forward</i> , a three-year study of the alternatives for the safe, long-term management of Canada's used nuclear fuel. The study involved interested individuals, leading scientists and other experts, Indigenous peoples and the Canadian public.
	2007	Government of Canada selects Adaptive Phased Management (APM) and mandates the NWMO to begin implementation.
Developing the siting process	2008-09	Work takes place with citizens to design a process for selecting a central, preferred site for the deep geological repository and Centre of Expertise.
Identifying a site using the siting process	2010	The siting process is initiated.
	2010-15	Twenty-two communities initially express interest. In collaboration with interested communities, the NWMO conducts initial screenings, followed by preliminary assessment desktop studies and community engagement. Areas with less potential to meet project requirements are eliminated from further consideration.
	2015-24	The NWMO expands assessment to include field investigations. Areas with less potential are eliminated from further consideration as the narrowing down process continues.
	2022	The Government of Canada reaffirms that a deep geological repository is the best solution for Canada's used nuclear fuel (via the <i>Report of the Standing Committee on Environment and Sustainable Development on Canada and Radioactive Waste Management</i> ).
	2024	The potential host communities determine willingness. A single, preferred site is identified.
Towards construction	2025	Additional site characterization activities are initiated at selected site. The NWMO begins the federal impact assessment process and the Canadian Nuclear Safety Commission's (CNSC) regulatory decision-making process. An updated transportation planning framework is issued (updated every three years).
	2028	Impact assessment studies are submitted as part of the regulatory decision-making process. The grand opening of the Centre of Expertise is held.
	2030	The impact assessment is approved (estimate). The Licence to Prepare Site is granted (estimate).
	2031	The Licence to Construct application is submitted to the CNSC.
	2033	The Licence to Construct is granted (estimate). Construction begins.
Beginning operations	2040-45	Operations of the deep geological repository begin. Transportation of used nuclear fuel to the repository begins.
Extended monitoring	Post-operations	Decades of monitoring are initiated.

# THE NWMO BY THE NUMBERS (2023)

2

areas remain in the site selection process, both in Ontario: the Wabigoon Lake Ojibway Nation-Ignace area in the northwest and the Saugeen Ojibway Nation-South Bruce area in the south.

18

documents went through Reconciliation assessments, including a mix of policies, procedures, plans, standards, programs and scopes of work.

31

journal articles were supported by us to advance our technical work.

40

Mobile Learn More Centre events were held.

114

engagement activities were organized by us.

237

employees made up our workforce.

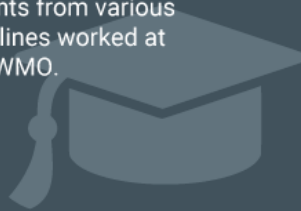
21

was the NWMO's age.



22

students from various disciplines worked at the NWMO.



49

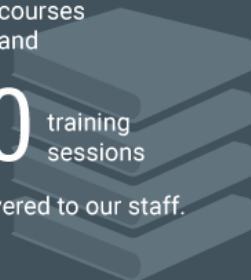
technical reports were published.



68 courses and

120 training sessions

were delivered to our staff.



114

local and regional community well-being initiatives were supported in the siting areas.



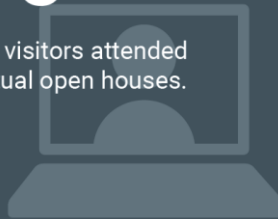
643

visitors attended tours at our Discovery and Demonstration Centre.



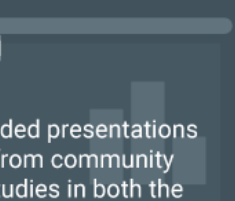
878

unique visitors attended our virtual open houses.



900

people attended presentations on findings from community well-being studies in both the Wabigoon Lake Ojibway Nation-Ignace area and the Saugeen Ojibway Nation-South Bruce area.



## Aligning with Indigenous perspectives

*The NWMO signed a Reconciliation Statement to affirm our commitment to Reconciliation with Indigenous peoples.*



Throughout 2023, we continued to build on our commitments to Reconciliation and aligning with Indigenous Knowledge. Collaboration and partnership remain at the heart of our work, including continuing to work closely with the Council of Elders and Youth to consider their advice and guidance.

### NURTURING OUR CULTURE OF RECONCILIATION

The NWMO is on a continuous learning pathway towards Reconciliation. This includes daily practices such as land acknowledgments and ongoing training and learning opportunities, as well as recognition and support of Indigenous-led events. The steps we took forward in 2023 built on momentum of the past few years, including the release of our *Reconciliation Policy* in 2019 and our first-ever annual Reconciliation Report in 2022.

Among our key milestones in 2023 was the development of a new Reconciliation tool kit for employees. It will serve as a continued learning support in the NWMO's Reconciliation journey by bringing together aspects of our Reconciliation Training Program, while also creating opportunities to reflect and take action.

This complemented ongoing meaningful learning opportunities for the NWMO's staff to support their personal and professional Reconciliation journeys. Reconciliation training sessions in 2023 covered topic areas such as the complex history between Indigenous peoples and Canada, unpacking identity and how that impacts relationship building, understanding the unique relationship that Indigenous peoples have with land, historic and contemporary treaties, as well as learning about Métis peoples and their history.

In 2023, we also successfully applied a Reconciliation lens to our work using our Reconciliation assessment tool, which was designed to create dialogue about how to better align our work with Indigenous Knowledge and our commitment to Reconciliation, as well as any potential limitations that may prevent us from doing so.

As a result of these initiatives, we are now better equipped to create intentional space in our work so that we can apply Indigenous Knowledge and Reconciliation values. Employees across the organization now better grasp the critical role that water and environmental protection have played within Indigenous cultures for generations.

## ALIGNING WITH INDIGENOUS KNOWLEDGE



*Rebekah Wilson, Reconciliation Coordinator at the NWMO, facilitates a workshop on “Understanding Reconciliation and Indigenous Knowledge” at the 2023 Pathway to Increase Standards and Competency of eDNA surveys (PISCeS) conference as part of the NWMO eDNA program in collaboration with the University of Guelph.*

We remain committed to respecting Indigenous voices and honouring Indigenous worldviews — and recognize that doing so improves both the quality of our technical work and ability to engage with communities.

Our *Indigenous Knowledge Policy* (2020) outlines how aspects of Indigenous Knowledge systems can be respectfully aligned with the implementation of Canada’s plan. As the policy states, “Indigenous Knowledge is an evolving, complex and sophisticated system of knowledge drawing on millennia of wisdom and experience. It is an evolving knowledge system that ranges in diversity from governance, ecology, biology, ecosystems, harvesting, science and other aspects. It constantly grows and expands with the experience of new generations.”

Throughout our work this past year, the NWMO engaged Indigenous communities and local Indigenous Knowledge Holders in the areas surrounding interested communities to find ways to apply Indigenous Knowledge to the site selection process and protect it in its application.

As one of the first organizations in North America to implement an *Indigenous Knowledge Policy*, we are well positioned to discuss how we align with Indigenous Knowledge in all aspects of our work. A testament to this occurred in November, when members of Parliament called upon the NWMO to share best practices that will inform how the federal government can better integrate Indigenous Knowledge into its own policy-making process. Our President and CEO Laurie Swami appeared before the House of Commons Standing Committee on Science and Research to highlight our leadership and expertise in this area, sharing key lessons learned. As she emphasized, maintaining a community's ownership over its own knowledge is essential, as is ensuring that the necessary mechanisms are in place to protect it — as the NWMO has done with our *Indigenous Knowledge Policy*.



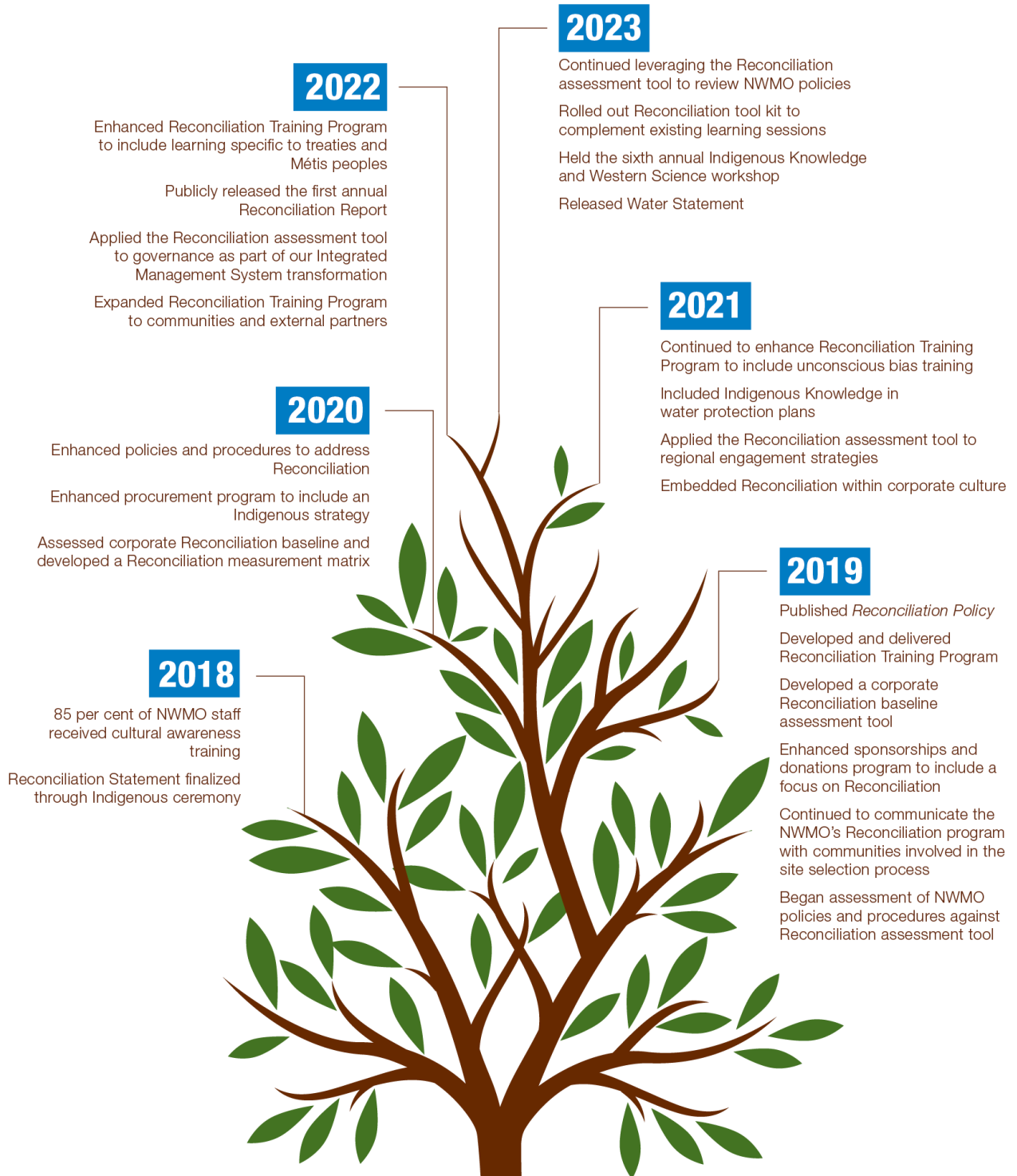
*Milestones like the Water Statement and Sustainability Statement reflect the NWMO's commitment to working with Indigenous peoples and ensuring Indigenous voice is part of our thinking and design of programs. Continuing to ensure collaboration and co-creation on work like this is central to Reconciliation.*

— **Bob Watts**

Vice-President of Indigenous Relations and Strategic Programs at the NWMO



# NWMO RECONCILIATION JOURNEY



## Community engagement



*A delegation from one of our siting areas, with community members from South Bruce, Huron-Kinloss and Brockton, visited Finland's deep geological repository for high-level nuclear waste. Photo source: Municipality of South Bruce.*

Throughout the year, we continued helping members of the public understand our work, ask questions and provide feedback. Strong engagement with Canadians and Indigenous peoples was especially critical in 2023 as we move closer to selecting informed and willing hosts for Canada's deep geological repository.

Connecting with our international counterparts was also a priority this year. We made an important investment in 2023 in organizing delegations of Canadians and Indigenous peoples — including members from both siting areas — to travel to Finland and tour what will be the world's first deep geological repository for high-level nuclear waste. This experience provided community leaders and residents with a hands-on opportunity to learn about Finland's project and its scientific process.

Delegations from Finland, Sweden and the United States also visited both potential siting areas here in Canada, to share experiences and learnings from their own site selection processes with local and regional community members. This was in addition to another visit welcoming experts from United Kingdom's Nuclear Waste Services to discuss best practices in nuclear waste management.

Finally, we continued to foster our relationships not only with governments, but also with the nuclear industry and civil society organizations, including environmental and labour groups and think tanks. These initiatives will play an important part in building social acceptability for the project as we move closer to site selection and beyond.

## MUNICIPAL ENGAGEMENT ACTIVITIES



*NWMO staff engage with attendees at the Northwest Nuclear Exploration Event in the Township of Ignace.*

As we move closer to site selection, we remain focused on ensuring municipalities understand the technical aspects and potential benefits of Canada's plan. In 2023, we advanced negotiations around hosting agreements in both siting areas. The hosting agreements will detail the commitments made by the NWMO should the site be selected to host the project.

This progress was in addition to ongoing engagement with people in both areas. Two key events in 2023 were organized in close partnership with the siting areas' municipalities and industry groups. With the NWMO's support, the Municipality of South Bruce hosted the first-ever South Bruce Nuclear Exploration Forum, while the Township of Ignace hosted the Northwest Nuclear Exploration Event. These events brought together hundreds of attendees to learn more about safety, the environment, safe transportation, international experiences, Indigenous Knowledge, the project's socio-economic impacts, regulations, the Integrated Strategy for Radioactive Waste (ISRW) and more.

In South Bruce, we designed and executed the South Bruce Doorstep Discussion Initiative — our first-ever door-to-door campaign to enhance our outreach efforts within the municipality. Over the course of the summer, we visited close to 1,000 residents, successfully increasing the NWMO's visibility, building on existing relationships and beginning many new ones.

This achievement was in addition to a newly designed borehole tour experience in the Saugeen Ojibway Nation (SON)-South Bruce area. These tours successfully give interested community members a better sense of the area's geology, the stability of the rock and the reality of what the repository could ultimately look like.

In the northwest, we purposefully expanded our engagement efforts outside our own Learn More Centre. This included holding several "Get to know the NWMO" sessions at various community venues. Many of these events featured third-party speakers, offering opportunities for community members to hear from experts outside the NWMO about the project and its potential benefits.



*Our work this year was an important reminder that face-to-face conversations can drive stronger relationships and mutual understanding. Our first-ever doorstep initiative was a major success, allowing us to connect directly with more people in the community.*

— **Michael Pahor**

Site Director for South Bruce at the NWMO



*Engaging with people and organizations in this area, including critical voices, is essential in our consent-based siting process. We're proud to keep finding new ways to answer important questions, address common misconceptions and share learnings about the project.*

— **Joanne Jacyk**

Site Director for Ignace at the NWMO

## INDIGENOUS ENGAGEMENT



*Amy Ingram (right), Senior Liaison Advisor in Indigenous Relations at the NWMO, with Ontario Regional Chief Glen Hare, attend a Little Native Hockey League event.*

As our work advances and we move closer to site selection, we continued to seek to understand how Canada's plan for used nuclear fuel might benefit each region under consideration and be respectful of the rights of Indigenous peoples.

We actively engaged with Indigenous peoples and communities, both on and off reserve, to provide information about Canada's plan throughout the year. This included hosting and attending community events, open houses, drop-in sessions, cultural gatherings, youth conferences, cultural awareness workshops, assemblies, conferences and special occasions.

In southern Ontario, we also continued our virtual home visits, an opportunity to build relationships with Indigenous peoples. This initiative began during the pandemic in 2020, and through it, we meet with groups or families virtually, sharing information with participants and giving them the opportunity to ask questions.

Through our work with First Nation and Métis communities, we continue to listen to concerns and learn what is important to community members, to understand how the project might benefit each region under consideration and to be respectful of the rights of Indigenous peoples. We are also aligning with Indigenous Knowledge in both technical safety and community well-being aspects of the site selection process.

The interests, concerns and counsel of Indigenous peoples are integral to the NWMO's work. We are grateful to be able to engage with Indigenous peoples on a regular basis.



*Listening to and learning from Indigenous peoples continues to be integral to our work at the NWMO. We are grateful for the opportunity to be present at community events and cultural celebrations and look forward to continued collaboration.*

— **Lise Morton**  
Vice-President of Site Selection at the NWMO

## YOUTH ENGAGEMENT

*Thomas Reilly, Senior Scientist in Safety Assessment at the NWMO, presents a nuclear fuel bundle to a GENESIS class from Sacred Heart High School in South Bruce as part of the NWMO Discovery and Demonstration Centre tour.*



Our work is multi-generational, which means supporting the communities of tomorrow is a priority — including through youth-focused programs. With that in mind, we built on our long-standing connections with people under 35 in 2023.

Among residents in both siting areas, creating opportunities for young people to live and work where they grew up is top-of-mind. It is why we are actively investing in the workforce of tomorrow, especially by supporting education across a number of subjects, including science, technology, engineering and mathematics (STEM) learning.

In both siting areas, we continued to invest in educational programs that support youth skills in geology, environment, technology, media and Indigenous teachings. Much of this work focused on building transferable skills and training to equip community members to work at the eventual Centre of Expertise. We also supported learning about the nuclear industry and our work through visits to nuclear facilities and our Oakville Discovery and Demonstration Centre.

Our annual [youth engagement report](#) outlines the NWMO's activities and educational initiatives, partnerships, sponsorships and donations. Engaging young people will continue to be a priority as we move closer to site selection and the years to follow.



*Canada's plan is multi-generational, and the work we do now to educate and engage youth will benefit us all in the years to come.*

— **John Kielty**  
Senior Advisor in Municipal Relations at the NWMO

## DIGITAL ENGAGEMENT

Our digital channels have been an important tool for sharing information about the NWMO’s activities, announcements and engagement activities this year, along with those of our partners in Canada and around the world.

In 2023, we modernized our website to better engage our online community about our work, as well as enhance our cybersecurity. In addition, through our multiple social media channels, we connected with online community members, including in and around siting areas, about events, community initiatives and project information. Social media has remained a key channel for answering questions and addressing misinformation, and we continuously experiment with new formats of content to increase audience engagement.

By strengthening our efforts throughout 2023, we have increased our audience on social media and look forward to continuing to inform and engage with people who want to learn more about the NWMO’s work.



*The NWMO was active on social media throughout 2023, sharing educational content about used nuclear fuel and Canada’s plan, and stories from siting area communities.*

## GIVING BACK THROUGH SPONSORSHIPS AND DONATIONS

*The NWMO was a title sponsor of the Big Brothers Big Sisters Golf Tournament in Wingham, Ont., where local youth participated with staff from our South Bruce team.*



A core part of our work is ensuring that participation in the project fosters the long-term well-being of the siting areas. This came to life in 2023 through continued support for programs centred on education, environment, cultural initiatives and youth sports.

Sponsorship programs demonstrate our commitment to being a good corporate neighbour in and around the potential host communities. In fact, 2023 marked an increase in the number of local and regional initiatives that we supported when compared to recent years. Overall, we funded 114 local and regional initiatives that are directly supporting the well-being of Indigenous and municipal communities.

A notable new partnership was with Aboriginal Peoples Television Network (APTN), supporting its Indigenous Day Live Event. This new relationship also demonstrated our ongoing commitment to Reconciliation.

We also continued supporting the GENESIS program in the SON-South Bruce area, which provides hands-on experience in environmental studies to high-school students.

Key sponsorship agreements were also renewed with Right To Play Canada, Scientists in School, Shad Canada, the Gord Downie & Chanie Wenjack Fund, and Science North.

Several of these organizations' activities reflect our interest in fostering a culture of science and in supporting youth pursuits in science and technology.



## GOVERNMENT ENGAGEMENT

Fostering relationships with government — inside our borders and internationally — and ensuring they are up to date on project advancements is essential to building support for Canada's plan.

As we prepare for site selection and the next steps in the regulatory decision-making process, we regularly engaged governments and municipal associations across Canada, so they can in turn make informed decisions.

In 2023, our strides on this front apply to Canada's plan now and the NWMO's evolving mandate. The strength of our efforts to build trust with government became clear this fall as the Minister of Energy and Natural Resources endorsed the NWMO's recommendations in the Integrated Strategy for Radioactive Waste.



*We continued to work closely with elected officials this year. Our notable co-operation agreements with other countries and progress on the Integrated Strategy for Radioactive Waste reflect our ongoing commitment to engagement.*

— **Dakota Kochie**

Director of Government and External Relations at the NWMO

## PARTNERSHIP

The NWMO follows a partnership road map that outlines how we are working closely with communities in each siting area to develop and refine the vision each one has for the project.

In 2023, our focus was on developing partnership agreements with potential host communities. These agreements outline roles, investments and expectations that we will have for each other once the site is selected. They also detail how we move forward together in the regulatory process.

Additionally, we made vital progress on planning the Centre of Expertise, a multimillion-dollar investment that will be designed in detail and constructed in the selected siting area. Regardless of which site is selected, the Centre of Expertise will be an anchor for the community.

It will be home to active technical and social research, as well as technological demonstration programs, with contributions from scientists and other experts in a wide variety of disciplines from both the NWMO and around the world. An engineering test facility will be located within the Centre of Expertise to continue the development of materials and equipment to be used in the repository, and to support the construction and operation of the facility in the future.

Over the past year, we built momentum by developing the facility requirements and the contracting strategy for the Centre of Expertise, which will be an important landmark for local residents and visitors from around the world. In August, we published a report on the initial municipal visioning for the centre, summarizing the work completed with both siting areas over the past three years. That included online and in-person engagement and written input on the centre's role in community well-being and its design, including feedback on the proposed architectural concept renderings. Communities will continue to be engaged throughout the design and other steps in the lead-up to the centre's opening.

### ALIGNED PARTNERSHIPS

Through a schedule developed and agreed upon with partners

### INVESTMENTS

Identify and deliver investments that drive capability and economic prosperity for partners

### IDENTIFY REQUIRED PARTNERSHIPS

Identify required partnerships with whom, at what level, in what combination, and when

### DEVELOP VISION FOR THE PROJECT

Develop the project vision that will meet the NWMO's and community's interests, and potential partners as well

### VALUES AND PRINCIPLES TO GUIDE PARTNERSHIP DISCUSSIONS

Agree on common values and principles to guide partnership discussions

*Starting from the bottom and moving upwards, the road map guides our discussions about partnership with communities.*

## Site assessment



*Since early 2020, we have been focused on two potential siting areas: the Wabigoon Lake Ojibway Nation (WLON)-Ignace area and the Saugeen Ojibway Nation (SON)-South Bruce area (pictured), both in Ontario.*

Based on years of technical study, we have determined both sites being considered for the repository could safely host the project. That conclusion was published in our 2022 *Confidence in safety* reports, and this year, the work continued in our intensive technical and safety assessment program to further reinforce those findings.

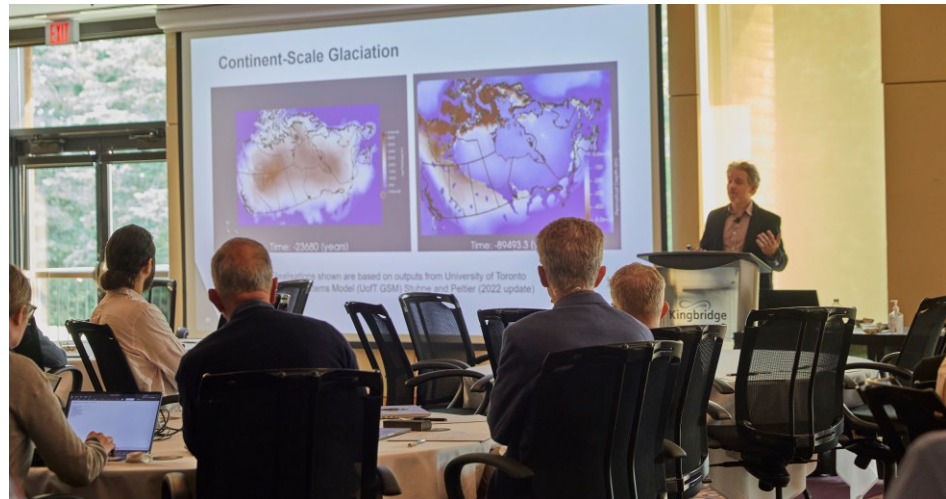
In 2023, we continued to gather and assess more geoscientific data, which improves our site models and confidence in site safety. This work is important for building on our technical and scientific understanding of both sites, so we can advance repository design and prepare for the regulatory decision-making process after a site is selected.

Specific work this year included advancing our three-dimensional understanding of the geosphere, meaning the rock formations around the repository. Since 2017 in the Wabigoon Lake Ojibway Nation (WLON)-Ignace area and 2021 in the Saugeen Ojibway Nation (SON)-South Bruce area, we have been conducting research to further increase understanding of the areas' geology. This has included borehole drilling and seismic surveys, activities that provide a clearer understanding of the properties beneath the surface of the earth.

Along with technical and safety assessments, we continued to share information and engage with the public. This meant working in collaboration with leading scientific and nuclear industry organizations, academia, geological surveys and regulators, as well as with the NWMO's international Geoscientific Review Group, which reviews our geological data and site understanding.

We have shared our geological understanding of both sites with a wide variety of audiences at technical conferences, including our annual Geoscience Seminar, as well as in person, at virtual community events and through tours to the field sites in 2023.

*Andy Parmenter, Director of Geoscience at the NWMO, presents at the NWMO's annual Geoscience Seminar in 2023.*



All this work has helped us prepare for the next phase of site characterization activities, which will begin once a site is selected in late 2024. Ongoing and future technical work will include further geological studies to support engineering design and safety analyses to confirm and build on the results to date.



*Our technical achievements are integral to creating confidence in this project's safety, and in turn, supporting a consent-based siting process. We're proud of the work our team has done at the scientific and engineering level, and to support community education and engagement.*

— **Lise Morton**  
Vice-President of Site Selection at the NWMO

## ADVANCING ENVIRONMENTAL MONITORING AND SOCIO-ECONOMIC STUDIES

Collecting baseline data supports our understanding of the environment before project development begins, so we can take measures to limit or avoid effects, and adapt the repository design as needed. This year, we completed reports summarizing the first year of biodiversity and environmental sampling in both the WLON-Ignace area and the SON-South Bruce area. These results were shared with the communities in both siting areas through presentations and online.

In the WLON-Ignace area, we also initiated our air monitoring program to better understand the existing characteristics of the natural environment, and completed an updated social, economic and health baseline report.

In both siting areas, these baseline studies are conducted in close collaboration with Indigenous peoples, municipalities and local residents.

## REAFFIRMING OUR COMMITMENT TO WATER AND SUSTAINABILITY

In 2023, we reached an important milestone with the release of our [Water Statement](#), which outlines how vital water protection is to Canada's plan. Water protection has been a common theme in discussions with Indigenous peoples and Canadians since the NWMO's inception in 2002.

The NWMO Water Statement begins with an acknowledgment of truths, before outlining how the NWMO is committed to water protection in all our work by considering how the agency of water (from surface to underground) may be in relationship with Canada's planned deep geological repository and its surrounding area.

In addition to the new Water Statement, we also published our first [Sustainability Statement](#), which provides the basis upon which short- and longer-term sustainability priorities and goals for the NWMO can be established. As we embark on our journey to manage Canada's used nuclear fuel and intermediate-level waste, we have pledged to implement sustainable principles and practices, drawing from the best of Indigenous Knowledge and western science.

Both of these milestone documents are anchored by the NWMO's *Reconciliation Policy* (2019), which outlines the importance of working with Indigenous peoples, and our *Indigenous Knowledge Policy* (2020), which recognizes that Indigenous Knowledge systems emphasize the interrelationships among all components of the environment.

## Engineering, safety and technical research



*This year, we completed the final pressure tests on our Used Fuel Containers, further enhancing our confidence that its design is safe.*

### ENGINEERING

Advancing the design of the deep geological repository and continuing to develop the project's safety assessments were key engineering program priorities throughout 2023.

Among our achievements this year were progressing the repository design and the conceptual design of the Used Fuel Packaging Plant, and completing the final pressure tests of the Used Fuel Containers. This work built on the successful proof test completed in 2022: a series of demonstrations to ensure that elements of the multiple-barrier system design are performing as expected.

Progress on repository design this year included the design of surface site layouts and infrastructure, the layout of the underground facilities and panels in which the Used Fuel Containers will be stored, as well as the systems to support the repository.

The Used Fuel Packaging Plant conceptual design includes the layout of the plant, the development of the plant processes and systems, and a study on the operational handling of the Used Fuel Container.

Pressure tests on the Used Fuel Containers were part of the proof test program that began in 2014 and culminated in the successful test in 2022. The final pressure tests of the Used Fuel Containers were completed in 2023 and were successful. They showed that the containers easily handle even conservative estimates for the maximum pressure that may develop within the underground repository. After successive pressure cycles that would correspond to many glaciation events, the containers are mechanically unchanged.

In fact, even when extreme pressures far exceeding realistic conditions are applied to a container, it still remains leak-tight, meaning that the used nuclear fuel will be contained safely for beyond-design events. This test validated our design analysis and computer simulation models, further enhancing our confidence that the design is safe.



*We exposed Used Fuel Containers to pressures above any realistic scenario to demonstrate they will remain leak-tight.*

## SAFETY AND TECHNICAL RESEARCH

In 2023, we continued to develop the safety case for the repository project, which involves gathering evidence to show the project is safe from a technical and social perspective, and advancing the preliminary site-specific safety analyses for both potential repository sites.

Our analysis of long-term safety this year looked at the potential consequences on people and the environment if the multiple-barrier system, specifically the Used Fuel Containers, were to fail. We considered various unlikely scenarios, assuming several to all containers failing because of unexpected conditions in the repository (for example, unexpected groundwater chemistry or microbial activity) or due to extreme glaciation. Our analysis considered a future person with an “imaginary maximum” lifestyle, an entirely theoretical lifestyle designed to receive maximum potential exposure. For example, this person is assumed to live above the repository and only drink water from a deep well located wherever there is the greatest dose potential. We also considered several local lifestyles in both areas, including rural residents, town residents and residents who live off the land. In all scenarios considered this year, the estimated impacts from the repository at either site were well below the natural background and the regulatory dose limits. Our safety analyses continue to demonstrate that the project would be safe at either site.

Additional studies this year also reinforced our confidence that the rock formations in either area can support the deep geological repository for the very long term, regardless of extreme scenarios.

Earthquakes are one of several factors to be examined in the repository site evaluation process. Both potential siting areas are known to have low seismic activity. Neither site has shown seismic activity that would make the site unsafe.

In 2023, we advanced work on understanding future seismic activity focused on northern Ontario. This involved working closely with Natural Resources Canada to build baseline calculations and methodologies that can predict long-term seismic activity within a crystalline shield environment, which applies to the rock at the Revell Site in the Wabigoon Lake Ojibway Nation (WLON)-Ignace area. These are based on a multidisciplinary approach that looks to estimate the strength, frequency, effects and location of historic earthquakes. We also installed a microseismic monitoring network (nine stations in the WLON-Ignace area and five stations in the Saugeen Ojibway Nation-South Bruce area) within a 50-kilometre radius of our sites for the purpose of detecting small earthquakes.





*A microseismic station gathers information to further understand the potential for earthquake activity in one of our potential siting communities.*

A project started at the end of 2023 is the seismic hazard assessment. This project will take the data we have been collecting from the regional seismic monitoring and from the microseismic stations in our potential siting communities and help us develop tools to assist in predicting the magnitude and frequency of future seismic events around the repository for the next 1 million years. Results of the work will be available in late 2026. Seismic studies will continue and be updated throughout the operation of the repository and beyond.

A testament to these efforts — and all the work undertaken in the area of seismic activity over the past decade — is an article published in PAGES Magazine in late 2023 that summarizes the collaborative work undertaken by the NWMO and Natural Resources Canada in northern Ontario. A journal paper on the study will also be submitted in 2024.

In total, we supported 31 journal papers and six technical reports in 2023, reinforcing our leadership in safety, engineering, and scientific and technical research. We also continued to demonstrate international collaboration and leadership as we developed peer-reviewed data and publications that will contribute to both the engineering design and safety assessments of the repository.



*We're proud to continue collaborating closely with academia, government and international organizations as we advance Canada's plan for used nuclear fuel. Our work together in 2023 continued to reinforce our commitment to safety and our confidence that a deep geological repository in either potential siting area can be constructed and operated safely.*

**— Chris Boyle**  
Vice-President and Chief Engineer at the NWMO

## International collaboration



*In April, we signed a five-year extension of our co-operation agreement with our French counterpart Andra.*

This year was a remarkable one for expanding the NWMO's already strong international partnerships. In April, we signed a five-year extension of our co-operation agreement with our French counterpart Andra. The extension reinforces that France and Canada recognize that the safe, long-term management of radioactive waste and used nuclear fuel is of the utmost priority. It also reflects the reality that both countries have significant expertise and experiences they can share to make sure that both people and the environment are protected for generations to come.

We also signed a Statement of Intent to Co-operate on Used Nuclear Fuel Management with the United States Department of Energy (DOE) in May. The agreement reflects the U.S. and Canada's shared commitment to safely managing used nuclear fuel, including that from small modular reactors. Through knowledge sharing empowered by the agreement, the U.S. will learn from the NWMO's experience as it builds its own consent-based siting process. It also lays the groundwork for a program of exchanges and visits, enabling the NWMO and DOE leaders to learn from each other through hands-on experiences in each other's organizations.

International co-operation agreements like these play a critical role in fostering the global development and demonstration of technology, sharing countries' experiences and keeping parties informed of developments in repository design. Through these agreements, we are actively learning from the science and technical innovations of the jurisdictions we collaborate with internationally and sharing our own learnings.

While the NWMO is not the first to implement a deep geological repository project, we are among those at the front of the pack. This was clear in our leadership at international gatherings this year and as we welcomed experts from around the globe to learn from our work.

This included a delegation from Korea Hydro & Nuclear Power in the fall. Together, we signed a Letter of Intent to further our collaboration and improve on new technology, adding to our track record of strong international relationships.

Over the course of 2023, we were also active at a number of important meetings and events, including with the International Atomic Energy Agency and the Nuclear Energy Agency and at the fifth annual Canadian Conference on Waste Management, Decommissioning and Environmental Restoration, which welcomed more than 400 participants from 11 countries.

Alongside this key event, we invited conference delegates to our Oakville Discovery and Demonstration Centre, where we shared our technologies with a broad range of key international experts, while also learning from their experience. This was in addition to separate visits from the Korea Atomic Energy Research Institute and the Australian Radioactive Waste Agency (ARWA) immediately before and after the conference. Like Canada, Korea has operating CANDU reactors, so there is considerable overlap between our programs, while ARWA has made Reconciliation with the Indigenous people of Australia an important attribute of their program, similar to the NWMO's commitment to Reconciliation.



*Our work throughout 2023 has strengthened Canada's leadership in safe used nuclear fuel management on the world stage. As more countries advance their plans for repositories, we are excited to continue playing a leadership role, sharing our knowledge and insights as we continue to also collaborate and learn from others' experiences.*

— **Lisa Frizzell**

Vice-President of Communications at the NWMO

## Transportation planning

*Canada's plan for the safe, long-term management of used nuclear fuel includes transporting it from current interim storage facilities to a deep geological repository, a system of naturally occurring and engineered barriers, to be centrally contained and isolated over the long term.*



An essential part of Canada's plan for used nuclear fuel will be safely transporting used nuclear fuel from the interim storage facilities where it is safely stored today to the eventual site of the deep geological repository. While this work is not expected to begin until the 2040s, when the repository is operational, we are already planning for it — always with safety in mind and by responding to meaningful input from Canadians, Indigenous peoples and organizations with a shared interest in future transportation.

In 2023, we engaged with more communities, interest groups and Indigenous peoples than in any previous year, supporting awareness about Canada's plan and the NWMO's collaborative approach to transportation planning. We participated in more than 50 meetings and engaged with more than 5,000 people on the topic of transportation in 2023 alone, deepening our relationships and sharing information about the priorities that the potential host communities have identified as most important to them.

For example, we continued engaging with first responders across Ontario by attending five first responder conferences and meetings. At these conferences, we not only shared information about our *Preliminary transportation plan*, but also sought feedback on what information is important to first responders and how they think the project may impact the important work they do.

We also collaborated with the Council of Elders and Youth to understand how to align our transportation planning efforts with Indigenous Knowledge. As transportation planning advances, we continue to engage First Nation and Métis communities and apply a Reconciliation lens to this work. For example, we continue to explore how we can align our work with the Seven Sacred Teachings — a set of teachings on human conduct towards others — and learn how we can include community voice in our planning.

We also continued to meet with municipalities, both in the potential siting areas and more broadly across Ontario. By sharing our learnings and expertise, the NWMO also continued to play an important leadership role on used nuclear fuel transportation in Canada and internationally. This included presenting at PATRAM, an international symposium on the packaging and transportation of radioactive materials. We also expanded our engagement to include the broader transportation industry across Canada, by sharing our lessons learned on long-term collaborative planning at the Transportation Association of Canada's annual conference.

As we move ahead, we are continuing to anchor our work in collaboration and underlining the importance of the transportation planning process as we implement Canada's plan.



*When the time comes, Canada's used nuclear fuel will be moved from interim storage through municipal communities and the traditional territories of Indigenous peoples, to the eventual repository site. That means it's crucial for our transportation planning to reflect public priorities and concerns. While we've engaged with more people in 2023 than in any previous year, we know there is more work to do and look forward to building on the relationships we are forging in the years to come.*

— **Caitlin Burley**

Director of Strategic Programs and Transportation  
at the NWMO

## Organizational readiness



*In 2023, we ensured that we have the expertise and technological resources in place ahead of site selection in 2024 and the regulatory decision-making process that will follow.*

As we move forward with Canada's plan for used nuclear fuel, we are enhancing our capabilities and processes to deliver this major infrastructure project — and take on new challenges, including implementing the long-term plan for intermediate-level and non-fuel high-level waste. In 2023, that work included ensuring we have the expertise and technological resources in place ahead of site selection in 2024 and the regulatory decision-making process that will follow. We have also begun new initiatives to ensure we are ready for the activities that will follow site selection for Canada's used nuclear fuel repository.

### ORGANIZATIONAL TRANSFORMATION

Staying ready to adapt to new technologies, best practices and new phases of our work is fundamental to our way of operating. With that in mind, we undertook several transformational initiatives in 2023. These initiatives ensure that our organization and people are ready to begin implementing the next phases of Canada's plan for used nuclear fuel, while continuing to develop the site selection plan for an intermediate-level and non-fuel high-level waste repository.

The activities underway will strengthen engineering, construction planning and regulatory decision-making activities over the next decade. These initiatives span several aspects of the NWMO's work such as our information and digital technologies, organizational culture, financial controls and funding access, project management, and engineering and design.

Some activities are designed to meet the specific needs and risks of future project phases such as enhancing processes to make our procurement process more efficient and implementing a new cost management tool that supports broader efforts related to regulatory decision-making. Others are foundational pieces that are already being implemented such as improving our cybersecurity readiness.

## PREPARING TO MOVE BEYOND SITE SELECTION

While the process to select informed and willing hosts for Canada's used nuclear fuel repository is still underway, many of our efforts in 2023 were focused on preparing for the activities that will follow that milestone. As the project becomes a more tangible reality in one of the two potential siting areas, we will be ready.

We continued to develop the plans to transition many of our people and operations to the repository site over time. This mobilization is a major task, and planning has already been taking place for several years to ensure qualified, competent staff are trained and available to work in whichever area is selected to host the repository. As part of our transition-to-site plan, we will also strive to maximize job opportunities in the local siting area and surrounding region, including First Nation and Métis communities, and to invest in training and education.

Another notable step was issuing a Request for Supplier Qualification (RFSQ) — kickstarting the multi-year procurement process to select suppliers that will work with us to deliver Canada's plan for used nuclear fuel. These suppliers will support several key category scopes of work such as nuclear and conventional surface facilities, sinking of shafts, underground mining and construction.



*As we move closer to site selection, we are preparing not only for that milestone, but also for what comes next. From ensuring our team members have the resources and tools they need, to crafting future-looking strategies, we're staying ready for what the next decade of implementing Canada's plan for used nuclear fuel will look like.*

— **Derek Wilson**  
Chief Operating Officer at the NWMO

## Preparing for regulatory decision-making

*The work to support regulatory decision-making processes will require extensive engagement with and participation from Canadians and Indigenous peoples to ensure key issues are meaningfully addressed. Pictured here is a workshop on valued components held in Ignace.*



Following site selection in 2024, the regulatory decision-making process will begin. In 2023, we continued to build our readiness for this rigorous process, which is designed to ensure the project will protect people and the environment.

This will include submitting an impact assessment, the requirements of which are set out in the *Impact Assessment Act*. It involves a detailed analysis of the project's contributions to sustainability and environmental, socio-economic and health impacts, as well as impacts on the rights of Indigenous peoples.

The work to support regulatory decision-making processes will require extensive engagement with and participation from Canadians and Indigenous peoples to ensure key issues are meaningfully addressed. Technical materials will have to meet the requirements of the *Nuclear Safety and Control Act*. While the Impact Assessment Agency of Canada is responsible for the oversight of the initial approval process for the project, the Canadian Nuclear Safety Commission (CNSC) will regulate its entire life cycle.



The materials we develop for the regulatory process will need to meet the requirements of the impact assessment and CNSC licensing. The work of preparing those materials has begun, and as they are further developed, the NWMO will continue to engage with the Indigenous and municipal communities.

To ensure we are prepared for the regulatory decision-making process, we also increased our dialogue with the Impact Assessment Agency of Canada, the CNSC, Natural Resources Canada and other federal departments to provide insight into our ongoing work and to seek guidance to support preparation of regulatory submissions.



*As we move closer to site selection, we remain committed to meeting all mandated regulatory standards and requirements for protecting people and the environment. Our work throughout 2023, in close collaboration with municipalities, Indigenous peoples and other key parties, was focused on ensuring that when the regulatory decision-making process begins, we are ready.*

— **Allan Webster**

Vice-President of Regulatory Approvals at the  
NWMO

## Governance and accountability



*As part of good governance, NWMO management keeps the Board of Directors informed of the safe, long-term implementation of Canada's plan.*

Canadians and Indigenous peoples can trust that the organization responsible for the safe, long-term management of Canada's intermediate- and high-level radioactive waste has a strong governance structure in place.

Transparency is one of the NWMO's corporate values and is built into our governance structure, underscoring our commitment to communicate openly and responsibly, and to provide information about our approach, processes and decision-making. The NWMO is guided by a [Transparency Policy](#) that is aligned with all relevant freedom of information, access to information and privacy legislation.

The NWMO is federally mandated under the *Nuclear Fuel Waste Act (NFWA)*. Our members are provincially owned corporations that produce used nuclear fuel. As a not-for-profit corporation, the NWMO falls under the *Canada Not-for-profit Corporations Act*.

We are governed by a nine-member Board of Directors that is elected by the member organizations. The Board represents a range of perspectives from within and outside the nuclear industry and takes a leadership role in developing the corporation's strategic direction.

The Advisory Council, an independent advisory body established under the *NFWA*, provides ongoing advice to the NWMO.

Sharing information and encouraging an exchange of perspectives are fundamental to our mandate to implement Canada's plan. That is why we also seek independent review of our work through a number of external committees, including the Council of Elders and Youth, Municipal Forum, Geoscientific Review Group, Environmental Review Group and Site Selection Review Group. This helps ensure we are continuously pursuing excellence.

The NWMO's integrated management system ensures we are well equipped to execute our mandates, while protecting people and the environment for generations to come. In 2023, we continued to enhance our management system to make sure it supports staff in executing their work in a manner that is appropriate for our evolving program and operations.

## **ANNUAL AND TRIENNIAL REPORTING TO THE MINISTER**

In accordance with the *NFWA*, the NWMO produces an annual report every year that is tabled in Parliament and published on our website. The Minister of Energy and Natural Resources issues a statement on it each year.

Every third year, the NWMO also produces a triennial report as required by the *NFWA*. The last triennial report was for the 2020-22 period and was published in March 2023.

## **REPORTING TO MEMBER ORGANIZATIONS**

The founding members of the NWMO are Ontario Power Generation, New Brunswick Power Corporation and Hydro-Québec. The Membership Agreement and bylaws set out member roles and responsibilities in support of the objectives of the *NFWA* and the NWMO's implementation mandate. The NWMO regularly briefs our member organizations and holds an annual general meeting.

## **INTEGRATED MANAGEMENT SYSTEM**

The NWMO continues to focus on ensuring our integrated management system supports our work on the project for the long-term management of used nuclear fuel. That includes meeting the requirements of the Canadian Nuclear Safety Commission and protecting people and the environment for generations to come. This is particularly important as we get closer to selecting a site for the deep geological repository in 2024 and then begin the regulatory decision-making process.

In 2023, we continued to augment our management system to satisfy the CSA N286-12, *Management System Requirements for Nuclear Facilities*. This included transforming the governance within 20 programs to ensure applicable regulatory requirements were met in a way that provided efficient and effective work processes for NWMO staff. We also reinforced the connection between nuclear safety culture and both the management system and continuous learning and improvement program to help staff understand the importance of their contributions to the NWMO's nuclear safety culture. These initiatives are important to support the initiation of the regulatory decision-making process that will follow site selection.

## BOARD OF DIRECTORS

**Board Chair:** Glenn Jager

**President, CEO and Director:** Laurie Swami

**Directors:** Lesley Gallinger, Sean Granville, Ronald L. Jamieson, Jason Nouwens, Josée Pilon, Subo Sinnathamby and Beth Summers.

The [Board of Directors](#) convened five formal meetings in 2023. In addition to its regular meetings, the Board holds a strategy session each year with the NWMO's executive team to consider long-term challenges and opportunities.



**Board of Directors** (from left to right, starting with top row): Glenn Jager, Laurie Swami, Lesley Gallinger, Sean Granville, Ronald L. Jamieson, Jason Nouwens, Josée Pilon, Subo Sinnathamby and Beth Summers.



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**Committees of the Board***Audit, Finance and Risk (AFR) committee*

The AFR committee is responsible for monitoring the integrity of the NWMO's internal control and management information systems, making recommendations to the Board for the approval of the annual financial plans, ensuring the integrity of the NWMO's reported financial performance, and providing oversight of the NWMO's pension fund. The AFR committee met four times in 2023, and had one joint AFR-Human Resources, Compensation and Governance committee meeting.

As of Dec. 31, 2023, the committee had five directors: Beth Summers (Chair), Lesley Gallinger, Glenn Jager, Ronald L. Jamieson and Josée Pilon.

*Human Resources, Compensation and Governance (HRCG) committee*

The HRCG committee is responsible for overseeing the NWMO's human resources functions, including compensation practices, human resources policies, organization design, labour relations, the pension plan and governance. The HRCG committee met four times in 2023 and had one joint AFR-HRCG committee meeting.

As of Dec. 31, 2023, the committee had five directors: Lesley Gallinger (Chair), Sean Granville, Glenn Jager, Josée Pilon and Beth Summers.

*Project Oversight committee*

The Project Oversight committee provides oversight of the NWMO's project planning and execution, including safety, recommending new projects for Board approval, project planning and controls, contracting strategies and contractor performance, technical matters and project risk as it relates to the implementation of Canada's plan. The Project Oversight committee met four times in 2023.

As of Dec. 31, 2023, the committee had four directors: Sean Granville (Chair), Lesley Gallinger, Jason Nouwens and Subo Sinnathamby.

*Siting committee*

Through the Siting committee, the Board maintains oversight of the site selection process and advises on, oversees and monitors any identified risks associated with its execution. The committee met four times in 2023.

As of Dec. 31, 2023, the committee had five directors: Ronald L. Jamieson (Chair), Sean Granville, Glenn Jager, Jason Nouwens and Subo Sinnathamby.



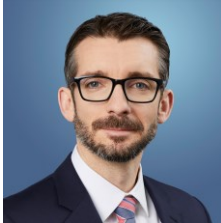
## OFFICERS (as of Dec. 31, 2023)

### Board Chair:

Glenn Jager

### President and CEO:

Laurie Swami



### Vice-President and Chief Engineer:

Chris Boyle

### Vice-President of Communications:

Lisa Frizzell

### Vice-President of Site Selection:

Lise Morton



### Chief Financial and Risk Officer:

Jeff Quick

### Vice-President of Human Resources, and Chief Ethics Officer:

Jennifer Spragge

### Vice-President and General Counsel, and Board Secretary:

Doug Taylor



### Vice-President of Indigenous Relations and Strategic Programs:

Bob Watts

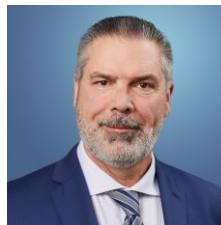
### Vice-President of Regulatory Approvals:

Allan Webster



### Chief Operating Officer:

Derek Wilson



**Executive Committee** (from left to right, starting with top row): Laurie Swami, Chris Boyle, Lisa Frizzell, Lise Morton, Jeff Quick, Jennifer Spragge, Doug Taylor, Bob Watts, Allan Webster and Derek Wilson.

**ADVISORY COUNCIL**

The **Advisory Council** is an independent, arm’s-length body that reviews and comments on the NWMO’s work, as required by the *NFWA*. Its reports appear in the NWMO’s triennial reports, published every three years.

The Advisory Council’s role is to:

- Ensure the views of the public and communities of interest are considered and reflected in a thoughtful, balanced way in the proposed approaches and reports of the NWMO; and
- Assist the NWMO in ensuring our processes are of good quality and are open, transparent, thorough and sound.

As the NWMO’s work progresses towards site selection, and as affected Indigenous organizations and potential host regions are identified, the *NFWA* requires that representatives from these communities be included in the Advisory Council.

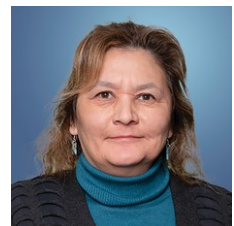
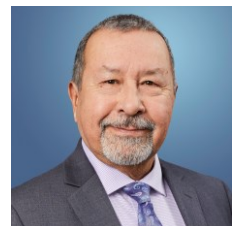
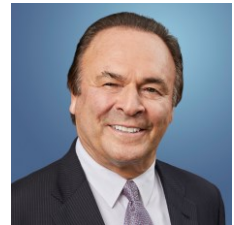
**Council members**

There are currently nine Advisory Council members, representing a broad range of expertise, including engineering, community engagement, public affairs, environment, sustainable development, Indigenous relations, Indigenous Knowledge and community-based research.

As of Dec. 31, 2023, the members are: David R. Cameron (Chair), Donald Obonsawin (Vice-Chair), Joseph Cavalancia, Monica Gattinger, Dean Jacobs, Diane M. Kelly, Dougal McCreath, Stella Swanson and Linda Thompson.

During 2023, the Advisory Council continued to provide advice to the NWMO in these key areas:

- Site assessment, engineering and technical transportation activities;
- Plans for establishing the final siting decision process and community willingness;
- Partnership development and community well-being funding to support building partnership agreements;
- Assessments of risks related to the NWMO’s work;
- Development of the NWMO’s transportation planning framework;
- Business planning activities and recovery plans related to pandemic delays;
- Development of the NWMO’s regulatory plans;
- Topics related to used fuel transportation;
- Reconciliation and Indigenous Knowledge activities; and
- Technical matters related to long-term safety.



**Advisory Council** (from left to right, starting with top row): David R. Cameron, Donald Obonsawin, Joseph Cavalancia, Monica Gattinger, Dean Jacobs, Diane M. Kelly, Dougal McCreath, Stella Swanson and Linda Thompson.



### **COUNCIL OF ELDERS AND YOUTH**

The [Council of Elders and Youth](#) is an independent advisory body with members from Indigenous communities across Canada. It provides counsel to the NWMO on the application of Indigenous Knowledge in the implementation of Canada's plan, and on enhancing the development and maintenance of good relations with Indigenous communities.

Knowledge Holders have much traditional knowledge to share with others. One of their roles is to aid decision-making based on this ancient knowledge. The NWMO is honoured to have received the counsel of Knowledge Holders over the past several years, including the period covered by this report.

### **MUNICIPAL FORUM**

The [Municipal Forum](#) is an assembly of municipal leaders with experience and expertise in municipal issues and challenges. Established by the NWMO in 2009, in collaboration with the Federation of Canadian Municipalities, the Municipal Forum provides advice on municipal perspectives and processes to help guide the NWMO's engagement and outreach. It helps the NWMO incorporate best practices when communicating with local governments and associations, as well as helping us understand the needs and practices of municipalities that are considering hosting the project.

### **ENVIRONMENTAL REVIEW GROUP**

The [Environmental Review Group](#) (ERG) was established by the NWMO in 2018 to provide independent expert advice and guidance on environmental programs and impact assessment theory and practice, including engagement and aligning with Indigenous Knowledge. The ERG is made up of professionals from a variety of academic and cultural backgrounds. It meets four times a year to discuss strategic issues related to assessing potential impacts of the project on the natural environment.



## **GEOSCIENTIFIC REVIEW GROUP**

The [Geoscientific Review Group](#) is a group of internationally recognized geoscientific experts from Canada, Australia, Sweden and Switzerland. The group reviews and provides advice and guidance on the NWMO's geoscience site assessment approach, methods and findings. It was established by the NWMO to ensure that site evaluations are conducted in a consistent and traceable manner that consistently meets or exceeds best international practices. The six group members combine extensive multidisciplinary experience in areas relevant to the siting of deep geological repositories in both crystalline and sedimentary rock formations.

## **SITE SELECTION REVIEW GROUP**

The [Site Selection Review Group](#) is made up of two internationally respected members from varied professional backgrounds. The group provides independent advice and guidance on the NWMO's final site selection approach to ensure the decision-making process is reasonable, comprehensive, credible and rigorous.

These review group members have knowledge and experience in nuclear waste-related siting processes and international best practices.

## **COMMUNITY-BASED TRANSPORTATION WORKING GROUP**

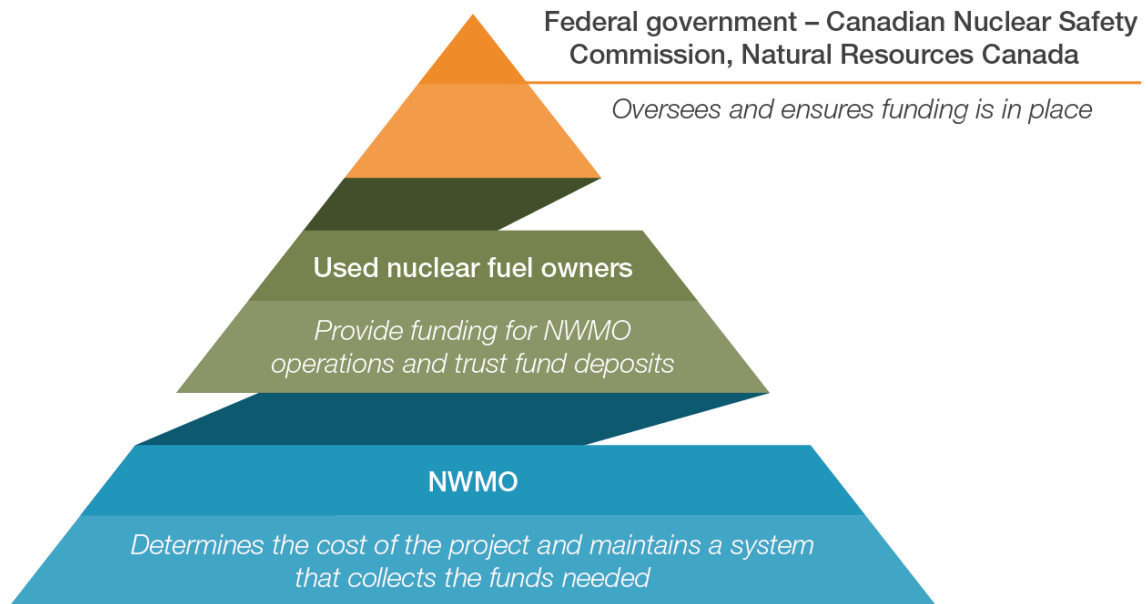
The NWMO established the Community-Based Transportation Working Group to seek feedback from a broad range of individuals across Ontario, Québec and New Brunswick about how to implement the organization's transportation planning framework, including collaborative transportation planning and engagement and dialogue for the transportation program. The members of the working group are individuals acting as independent advisors.

## **PEER REVIEWS**

In order to ensure our work is based on the best science, the NWMO works with leading scientists and experts from universities, in the industry and as part of international research groups. We continue to seek independent external experts to review and comment on our technical work through [peer reviews](#) when publishing research results in scientific journals and at conferences. These external reviews help ensure high technical standards are met, as well as consistency with international best practice.

## Ensuring funding is in place

A key aspect of our commitment to accountability is ensuring that the funding necessary to pay for the long-term management of Canada's used nuclear fuel will be available when needed. The roles and responsibilities of financial surety are summarized in the diagram below.



## TOTAL COST ESTIMATE

One of the NWMO's important responsibilities is determining the lifecycle cost of the project so we can ensure the funds will be available when needed. Updated every five years based on the latest information, the lifecycle **cost estimate** explains what we anticipate the project will cost from beginning to end and why. It helps ensure accountability and transparency as we implement Canada's plan for the safe, long-term management of used nuclear fuel.

The NWMO completed a full update of the cost estimate for the Adaptive Phased Management project in 2021, with the next update planned for 2026.

The estimate includes costs to develop, construct, operate, monitor and decommission a long-term facility, including the deep geological repository and Centre of Expertise, and to transport the used nuclear fuel to the repository. As this is a 175-year estimate, many assumptions have been taken for planning purposes to ensure sufficient funds are available, and where possible, have been and will continue to be revised and made more specific as the plan advances.

Many factors impact the eventual cost of the project. They include the type and volume of used nuclear fuel to be managed, the facility's location, the surrounding infrastructure, rock type and characteristics, the design of the repository, and the length of time allocated to monitoring the site following fuel placement.

The total amount of used nuclear fuel in Canada, which is currently about 3.3 million fuel bundles, could be impacted by factors such as the longevity and productivity of nuclear reactors, and decisions on refurbishments or new nuclear reactors. Every year, we update fuel bundle volume estimates and trust fund balances that impact the project's cost estimates and funding requirements, based on fuel bundle estimates provided by the nuclear energy producers. We then determine the trust fund contribution requirements for the following year to ensure sufficient resources for future use.

Our 2021 cost estimate was based on an expected volume of 5.5 million fuel bundles, the anticipated volume at the end of the planned operation of Canada's existing nuclear reactors.

Based on this expected volume, the cost for construction of the facility is approximately \$4.5 billion (in 2020 dollars). The total lifecycle cost of the project — from the beginning of the site selection process in 2010 to regulatory approval, construction, operation, long-term monitoring and closure — is approximately \$26 billion (in 2020 dollars). This amount covers many decades of lifecycle activity.

It is important to determine the amount that is required, in today's dollars, in order to have the necessary funds in place when needed in the future. The funds in place today will grow to cover the full cost of the project over the long term, based on continued additional payments from the funders of the project and through expected investment income that will also grow over time. The funding required to manage approximately 5.5 million fuel bundles from 2024 onwards is \$11 billion (using Jan. 1, 2024, present value).

## PRE- AND POST-CONSTRUCTION COSTS

The \$11 billion funding requirement (using Jan. 1, 2024, present value) includes \$3 billion to select a site for the repository, complete a detailed design, develop the Centre of Expertise, acquire the site, evaluate environmental impacts, and obtain the site preparation licence and the construction licence under the *Nuclear Safety and Control Act (NSCA)*. These pre-construction nuclear facility costs are paid for by the waste owners based on the annual NWMO budget, as approved by the Board of Directors.

The remaining \$8 billion funding requirement is to construct the facility, transport existing and future fuel bundles to the repository, and operate, close and monitor the repository. The *Nuclear Fuel Waste Act (NFWA)* requires that costs after the Licence to Construct is granted must be funded through contributions to the *NFWA* trust funds established by Ontario Power Generation (OPG), Hydro-Québec (HQ), New Brunswick Power (NBP) and Atomic Energy of Canada Limited (AECL). As of December 2023, the total value of the *NFWA* trust funds was approximately \$5.3 billion.

Waste owners continue to contribute annually as the used fuel inventory increases, to ensure that the full \$11 billion funding requirement for existing and future inventory of used fuel bundles is fulfilled. The costs of interim storage at the reactor sites and retrieval of the used fuel from storage are not funded through the NWMO because they are the responsibility of the waste owners.

## FINANCIAL REPORTING REQUIREMENTS

The *NFWA* specifically addresses the future financial obligations expected for managing used nuclear fuel over the long term, as described in the box below. All the requirements defined in Subsection 16(2) of the *NFWA* are addressed in this section *Ensuring funding is in place*.

### Requirements of the *NFWA* (2002)

The NWMO is required to provide a range of financial information in each of our annual reports following the government's decision, as defined in Subsection 16(2) of the *NFWA*.

16(2) Each annual report after the date of the decision of the Governor in Council under Section 15 must include:

- (a) the form and amount of any financial guarantees that have been provided during that fiscal year by the nuclear energy corporations and Atomic Energy of Canada Limited under the *Nuclear Safety and Control Act* and relate to implementing the approach that the Governor in Council selects under Section 15 or approves under Subsection 20(5);
- (b) the updated estimated total cost of the management of nuclear fuel waste;
- (c) the budget forecast for the next fiscal year;
- (d) the proposed formula for the next fiscal year to calculate the amount required to finance the management of nuclear fuel waste and an explanation of the assumptions behind each term of the formula; and
- (e) the amount of the deposit required to be paid during the next fiscal year by each of the nuclear energy corporations and Atomic Energy of Canada Limited, and the rationale by which those respective amounts were arrived at.

Based on the *NFWA*'s requirements, trust funds were established in 2002, and each waste owner has made annual contributions since. The total value of these funds, including investment income, was approximately \$5.3 billion as of the end of 2023. Additionally, the companies have set aside other segregated funds and financial guarantees for nuclear waste management and decommissioning. The *NFWA* built in explicit provisions to ensure the trust funds are maintained securely and used only for their intended purpose. The NWMO may have access to these funds only for the purpose of implementing the management approach selected by the government once a construction or operating licence has been issued under the *NCSA*.

Owner	Trust fund balance (\$ million)
	December 2023
OPG	4,867
NBP	207
HQ	183
AECL	76*
<b>Total</b>	<b>5,333</b>

*All figures in the table above are approximate.*

\* *NOTE: AECL is not a member of the NWMO and is required to contribute to a trust fund for used nuclear fuel under the NFWA. See next section for more detail.*

As required by the *NFWA*, the NWMO makes public the audited financial statements of the [trust funds](#) when they are provided by the financial institutions annually.

## CANADIAN NUCLEAR SAFETY COMMISSION (CNSC) FINANCIAL GUARANTEES REPORTING

As mandated under the *NSCA*, the CNSC requires waste producers to provide financial guarantees to cover the cost (in present value terms) associated with decommissioning, interim storage and the long-term management of radioactive waste (including used nuclear fuel) produced to date. The guarantees available for 2024 total \$23 billion. They are reviewed independently by the CNSC as part of the waste owner licence requirements and are satisfied by segregated funds (totalling approximately \$27 billion as of year-end 2023) and in the form of Provincial Guarantees, as needed.

The status of these guarantees is presented as follows:

### ***Ontario Power Generation (OPG)***

In accordance with the *NSCA*, the CNSC requires OPG to have sufficient funds available to discharge its existing nuclear waste management and nuclear-decommissioning obligations. The CNSC process requires the CNSC Financial Guarantee requirement to be updated once every five years, and OPG to provide an annual report to the CNSC on the assumptions, asset values, and resulting financial guarantee requirements. The CNSC Financial Guarantee requirement calculation takes into account nuclear waste expected to be generated to the end of each year.

The CNSC Financial Guarantee requirement continued to be satisfied, in part, by the forecast fair market value of the federally mandated Ontario *NFWA* Trust, and the remainder by the two segregated funds governed by the *Ontario Nuclear Funds Agreement (ONFA)* between OPG and the Province of Ontario (collectively, the “Nuclear Funds”) without the requirement of a Provincial Guarantee for 2024. As per the terms of the *ONFA*, the province is committed to providing a Provincial Guarantee to the CNSC as required, on behalf of OPG, should there be a shortfall between the CNSC Financial Guarantee requirement and the fair market value of the Nuclear Funds during 2024.

The CNSC Financial Guarantee requirement for 2024 is \$21,149 million (Jan. 1, 2024, present value). This will be satisfied by the 2023 year-end fair market value of the Nuclear Funds of \$25,794 million without the requirement of a Provincial Guarantee. The Nuclear Funds of \$25,794 million include \$4,867 million in the Ontario *NFWA* Trust.

***NB Power (NBP)***

NBP has provided the CNSC with a Decommissioning Financial Guarantee that covers the costs associated with the long-term management of used fuel projected to be produced from the Point Lepreau Generating Station and the cost of station decommissioning, including the long-term management of low- and intermediate-level radioactive waste.

- The Financial Guarantee requirement is based on the present value of future costs to manage used fuel produced to the end of 2023 and the present value of future estimated costs for station decommissioning.
- The Financial Guarantee requirement is satisfied by three separate funds: a Used Fuel Fund, a Station Decommissioning Fund, and the *NFWA* Trust Fund.
- The total market value of the funds at Dec. 31, 2023, was approximately \$929 million and was comprised of the following:
  - Used Fuel Fund – \$245 million;
  - Station Decommissioning Fund – \$477 million; and
  - *NFWA* Trust Fund – \$207 million.

***Hydro-Québec (HQ)***

The fair value of the *NFWA* Trust Fund as of Dec. 31, 2023, was estimated at \$183 million. HQ has also provided the CNSC with a Decommissioning Financial Guarantee of \$685 million that includes a guarantee associated with used fuel arising from the operation of Gentilly-2 and the cost of station decommissioning, including the long-term management of low- and intermediate-level radioactive waste. The guarantee is in the form of an expressed commitment of the Province of Quebec to HQ that provides a guarantee of payment.

The *NFWA* Trust Fund and the Financial Guarantee provided by the Province of Quebec covered the future financial obligations as follows:

- \$493 million for decommissioning and long-term management of low- and intermediate-level radioactive waste; and
- \$300 million for used fuel.

***Atomic Energy of Canada Limited (AECL)***

AECL is not a member of the NWMO and is required to contribute to a trust fund for used nuclear fuel under the *NFWA*. Its Financial Guarantee is in the form of an expressed commitment by the Government of Canada to the CNSC, combined with supporting estimates of the financial liability and the basis for same. The AECL *NFWA* Trust Fund contained approximately \$76 million as of Dec. 31, 2023.

The guarantees and current and future contributions to the Nuclear Funds provided by OPG, NBP, HQ and AECL are sufficient to cover the lifecycle costs estimated for the nuclear waste management and nuclear decommissioning obligations.

### **BUDGET FORECAST FOR 2024**

For 2024, the NWMO Board of Directors approved a budget envelope of \$187 million to continue implementing Adaptive Phased Management. Annual costs beyond 2024 are subject to further review. Sharing of these costs will be in accordance with the percentages defined in the Membership Agreement, as amended from time to time. The 2024 cost-sharing percentages among the waste owners are OPG: 93.68%, NBP: 3.66%, HQ: 2.07%, and AECL: 0.59%.

### **FUNDING FORMULA**

The NWMO funding formula has been in place since its approval by the Minister of Natural Resources (now the Minister of Energy and Natural Resources) in April 2009. The formula allocates liabilities and trust fund contribution requirements to each waste owner. Costs common to all waste owners are shared based on a cost-sharing percentage agreed to by the members. The nuclear fuel waste owner is responsible for expenses that are owner-specific.

### **POSSIBLE FUTURE REACTORS**

The NWMO has begun initial reviews of the technical and funding requirements related to the potential for used fuel from new reactors, including small modular reactor (SMR) projects. Preliminary analysis of some of the proposed reactor technologies and fuel types has been completed. Some of these technologies use existing fuel types that are also used by other countries planning for a deep geological repository.

The proponents that are developing these new reactors fund this work directly, and most of them are not waste owners at this time.

As potential SMR projects are still in the early stages of development and regulatory decision-making, it is too early to include their potential used nuclear fuel in our forecasting. As these projects advance to later stages of development, including construction and operations, this will be addressed in the NWMO's planning and projections.



## TRUST FUND DEPOSITS FOR 2024

The 2024 NFWA trust fund deposit requirements have been developed based on the NWMO's project cost estimate completed in 2021. Under the approved funding formula, the funding for post-construction licence costs is divided into two parts:

1. Funding for historical used fuel bundles (committed liability); and
2. Funding for used fuel to be produced each year (future liability).

Committed liability represents all costs that will be incurred regardless of whether any further used fuel bundles are generated in the future. This liability includes all fixed costs for the facility and variable costs attributed to the historical used fuel bundles. Considering the deep geological repository would be available between 2040 and 2045, contributions for the committed liability are to be amortized to the midpoint year 2043 in equal present value payments. This funding method has the advantage of distributing the funding obligations evenly to each year, while considering the time value of money. Future liability represents the incremental cost of transferring used fuel bundles to the repository, facility expansion, and additional operating and monitoring costs associated with used fuel bundles to be produced each year. Each future used fuel bundle would incur the same cost in present value terms, taking into account the time value of money.

The 2024 trust fund deposit requirements are shown in the table below.

<b>Total trust fund deposits: Year 2024</b>		
<b>Owner</b>	<b>Trust fund balance (\$ million)</b>	<b>Deposit to trust funds (committed and future bundles) (\$ million)*</b>
	<b>December 2023</b>	<b>2024</b>
OPG	4,867	86
NBP	207	6
HQ	183	0
AECL	76	0.4
<b>Total</b>	<b>5,333</b>	<b>93</b>

\* Annual trust fund deposits are required to be made within 30 days of the submission of the annual report. A deposit date of April 25 is assumed for illustrative purposes.

## Auditor's report and financial statements

### MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

The accompanying consolidated financial statements of the Nuclear Waste Management Organization (NWMO) and all the information in this annual report are the responsibility of management and have been approved by the Board of Directors.

The consolidated financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations set out in Part III of the Chartered Professional Accountants Canada Handbook. When alternative accounting methods exist, management has chosen those it deems most appropriate in the circumstances. Financial statements are not precise since they include certain amounts based on estimates and judgments, particularly when transactions affecting the current accounting period cannot be finalized until future periods.

Management has determined such amounts on a reasonable basis in order to ensure that the consolidated financial statements are presented fairly, in all material respects, and in light of information available up to February 13, 2024.

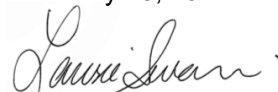
Management has a system of internal controls designed to provide reasonable assurance that the consolidated financial statements are accurate and complete in all material respects. The internal control system includes an established business conduct policy that applies to all employees. Management believes that the system provides reasonable assurance that transactions are properly authorized and recorded, financial information is relevant, reliable and accurate, and the Organization's assets are appropriately accounted for and adequately safeguarded.

The Board of Directors is responsible for ensuring management fulfils our responsibilities for financial reporting, and is ultimately responsible for reviewing and approving the consolidated financial statements. The Board carries out this responsibility through its Audit, Finance and Risk Committee (the Committee).

The Committee is appointed by the Board and meets periodically with management, as well as the external auditor, to discuss internal controls over the financial reporting process, auditing matters and financial reporting issues; to satisfy itself that each party is properly discharging its responsibilities; and to review the consolidated financial statements and the external auditor's report. The Committee reports its findings to the Board for consideration when approving the consolidated financial statements for issuance to the members. The Committee also considers, for review by the Board and approval by the members, the engagement or reappointment of the external auditor.

The consolidated financial statements have been audited by Deloitte LLP, the independent external auditor, in accordance with Canadian generally accepted auditing standards on behalf of the members.

February 13, 2024



Laurie Swami  
President and CEO



Jeff Quick  
Chief Financial and Risk Officer

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Consolidated financial statements of  
**Nuclear Waste Management  
Organization**

December 31, 2023

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Independent Auditor's Report	67-68
Consolidated statement of financial position	69
Consolidated statement of operations	70
Consolidated statement of changes in net assets	71
Consolidated statement of cash flows	72
Notes to the consolidated financial statements	73-84

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## Independent Auditor's Report

To the Members of  
Nuclear Waste Management Organization

### Opinion

We have audited the consolidated financial statements of Nuclear Waste Management Organization (the "Organization"), which comprise the consolidated statement of financial position as at December 31, 2023, and the consolidated statements of operations, changes in net assets, and cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies (collectively referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Organization as at December 31, 2023, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

### Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards ("Canadian GAAS"). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Organization in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Organization's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Organization or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Organization's financial reporting process.

## Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian GAAS will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian GAAS, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Organization's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Organization's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Organization to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Organization to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

*Deloitte LLP*

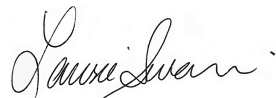
Chartered Professional Accountants  
Licensed Public Accountants  
February 13, 2024

**Nuclear Waste Management Organization**  
**Consolidated statement of financial position**  
As at December 31, 2023  
(in thousands of Canadian dollars)

	Notes	2023 \$	2022 \$
<b>Assets</b>			
Current assets			
Cash		4,817	4,658
Member contributions receivable	5a	14,721	14,754
Other receivable from members and AECL		1,996	1,668
Accounts receivable		5	135
Prepaid expenses and deposits		3,015	2,756
		<b>24,554</b>	23,971
Capital assets	3	36,841	37,999
Accrued pension asset	7	38,244	40,902
		<b>99,639</b>	102,872
<b>Liabilities</b>			
Current liabilities			
Accounts payable and accrued liabilities	7 and 12	24,146	24,096
Deferred lease inducements	8	293	377
Deferred/payable contributions from members and AECL	5b	765	148
		<b>25,204</b>	24,621
Deferred capital contributions	6	36,841	37,999
Deferred contributions from members and AECL	5c	4,723	9,737
Other post-employment and pension benefits liability	7	30,037	23,117
		<b>96,805</b>	95,474
<b>Net assets</b>		<b>2,834</b>	7,398
		<b>99,639</b>	102,872
Commitments	10		

The accompanying notes are an integral part of the consolidated financial statements.

Approved by the Board of Directors on February 13, 2024



\_\_\_\_\_, Laurie Swami, President and CEO



\_\_\_\_\_, Beth Summers, Chair – Audit, Finance and Risk Committee

## Nuclear Waste Management Organization

### Consolidated statement of operations

Year ended December 31, 2023

(in thousands of Canadian dollars)

	Notes	2023 \$	2022 \$
<b>Revenue</b>			
Contributions from members	4	139,420	131,081
Contributions from AECL		1,359	250
		<b>140,779</b>	<b>131,331</b>
Change in deferred capital contributions	6	1,158	(164)
Change in long-term deferred contributions from members and AECL	5c	5,014	2,777
Change in member contributions receivable	5a	(33)	1,437
Change in deferred/payable contributions from members and AECL	5b	(617)	1,221
Total contribution revenue	11	<b>146,301</b>	<b>136,602</b>
Interest and other revenue	11	459	156
<b>Total revenue</b>		<b>146,760</b>	<b>136,758</b>
<b>Expenses</b>			
Adaptive Phased Management			
Staffing and administration		60,977	55,911
Engagement		39,534	29,552
Engineering		14,665	10,054
Regulatory decision-making		9,303	10,980
Site assessment		8,115	17,576
Communications		5,722	5,538
Safety		4,665	3,677
Transportation		757	347
		<b>143,738</b>	<b>133,635</b>
Integrated Strategy for Radioactive Waste			
Communications and engagement		437	1,074
Technical and project management		224	368
		<b>661</b>	<b>1,442</b>
Amortization of capital assets		1,773	1,681
Loss on disposal of capital assets	3	588	—
<b>Total expenses</b>	11	<b>146,760</b>	<b>136,758</b>
<b>Excess of revenue over expenses for the year</b>		<b>—</b>	<b>—</b>

The accompanying notes are an integral part of the consolidated financial statements.



**Nuclear Waste Management Organization**  
**Consolidated statement of changes in net assets**  
Year ended December 31, 2023  
(in thousands of Canadian dollars)

	Notes	2023 \$	2022 \$
<b>Net assets, beginning of year</b>		<b>7,398</b>	27,775
Excess of revenue over expenses for the year		—	—
Remeasurements during the year:			
Accrued pension asset	7	(85)	(28,776)
Other post-employment and pension benefits liability	7	(4,479)	8,399
<b>Net assets, end of year</b>		<b>2,834</b>	7,398

The accompanying notes are an integral part of the consolidated financial statements.

**Nuclear Waste Management Organization****Consolidated statement of cash flows**

Year ended December 31, 2023

(in thousands of Canadian dollars)

	Notes	2023 \$	2022 \$
<b>Operating activities</b>			
Cash received from contributions		139,343	129,628
Interest and other revenue received		459	156
		<b>139,802</b>	<b>129,784</b>
Cash paid for salaries and benefits, materials and services		<b>(139,778)</b>	<b>(132,587)</b>
		<b>24</b>	<b>(2,803)</b>
<b>Investing activity</b>			
Purchase of capital assets	3	<b>(1,436)</b>	<b>(1,702)</b>
Proceeds on disposal of capital assets	3	<b>135</b>	<b>—</b>
		<b>(1,301)</b>	<b>(1,702)</b>
<b>Financing activity</b>			
Cash received from contributions used for purchase of capital assets		<b>1,436</b>	<b>1,702</b>
Net increase (decrease) in cash		<b>159</b>	<b>(2,803)</b>
Cash, beginning of year		<b>4,658</b>	<b>7,461</b>
<b>Cash, end of year</b>		<b>4,817</b>	<b>4,658</b>

The accompanying notes are an integral part of the consolidated financial statements.

# Nuclear Waste Management Organization

## Notes to the consolidated financial statements

December 31, 2023

(in thousands of Canadian dollars)

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### 1. Description of organization

The Nuclear Waste Management Organization (“NWMO”) is a not-for-profit corporation without share capital, established under the *Canada Corporations Act*, as required by the *Nuclear Fuel Waste Act* (“NFWA”), which came into force on November 15, 2002. The NWMO transitioned to the *Canada Not-for-profit Corporations Act* and obtained a Certificate of Continuance on December 20, 2012.

The NFWA requires electricity-generating companies which produce used nuclear fuel to establish a waste management organization. In accordance with the NFWA, the NWMO established an Advisory Council, conducted a study and provided recommendations on the long-term management of used nuclear fuel to the Government of Canada. The results of the study and the recommendations were submitted in November 2005. As part of the long-term mandate, the NWMO is now responsible for implementing Adaptive Phased Management (“APM”), an approach selected by the Government of Canada to address the management of used nuclear fuel.

The NWMO formally began operations on October 1, 2002. Its founding members are Hydro-Québec, New Brunswick Power Corporation, and Ontario Power Generation Inc. (“OPG”) (“members”). The NFWA requires that the NWMO offer nuclear fuel waste management services at a fee to all owners of nuclear fuel waste produced in Canada, including non-members and Atomic Energy of Canada Limited (“AECL”).

Pursuant to a Membership Agreement, cost sharing of APM costs in 2023 is based on the principle of “producer pays,” based on the projected total number of fuel bundles and the assumed timing of access to the long-term used fuel management facility. This cost-sharing formula has been in effect since January 1, 2018.

In November 2020, as part of the Government of Canada’s review of the Policy for Radioactive Waste Management and Decommissioning, the NWMO was tasked with developing an integrated strategy for all Canada’s radioactive waste with no long-term disposal plans. The Integrated Strategy for Radioactive Waste (“ISRW”) was provided to the Minister of Energy and Natural Resources Canada on June 30, 2023, for consideration and review. On October 5, 2023, the strategy was accepted by the Minister. Based on this acceptance, the NWMO now has the added responsibility for implementing the long-term management of intermediate-level waste and non-fuel high-level waste in a deep geological repository.

In accordance with the NFWA, the NWMO is responsible for the management of all nuclear fuel waste, including from small modular reactors (“SMR”) that are in development. The NWMO will support technical assessment of long-term storage options for SMR fuels and related analysis with cost-recovery-based contracts, as the need arises. The NWMO entered into one such agreement in 2022.

## Nuclear Waste Management Organization Notes to the consolidated financial statements

December 31, 2023

(in thousands of Canadian dollars)

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### 2. Significant accounting policies

#### *Basis of presentation*

The NWMO has elected to present consolidated financial statements that included its accounts and those of its wholly owned subsidiaries (collectively, the “NWMO”).

The consolidated financial statements of the NWMO are the representations of management prepared in accordance with Canadian accounting standards for not-for-profit organizations set out in Part III of the Chartered Professional Accountants Canada (“CPA Canada”) Handbook using the deferral method of reporting restricted contributions. The significant accounting policies adopted by the NWMO are as follows:

#### *Principles of consolidation*

The NWMO’s wholly owned subsidiaries are those entities over which the NWMO has control and has the right and ability to obtain future economic benefits, and is exposed to the related risks. Control is the continuing power to determine the strategic operating, investing and financing policies of the other entity without the co-operation of others.

On January 2, 2020, the NWMO incorporated its three wholly owned subsidiaries under the *Canada Business Corporations Act* to support site assessment activities.

Consolidated wholly owned subsidiaries include:

- NWMO Property Management 1 Inc.;
- NWMO Property Management 2 Inc.; and
- NWMO Property Management 3 Inc.

#### *Capital assets*

Capital assets are recorded at cost. Amortization is provided for on the straight-line basis over their estimated useful lives as follows:

Office building	15 years
Furniture and office equipment	7 years
Transport and work equipment	7 years
Vehicles	5 years
Computer equipment and software	3 years
Leasehold improvements	Initial lease term plus one renewal period

#### *Income tax*

The NWMO and its wholly owned subsidiaries are not-for-profit organizations, and pursuant to section 149(1)(1) of the *Income Tax Act* (“ITA”), are not subject to income tax.

## **Nuclear Waste Management Organization**

### **Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

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## **2. Significant accounting policies (continued)**

### *Revenue recognition*

Contributions received from members and AECL are treated as restricted contributions, and as such, they are recognized as revenue when qualifying expenses are incurred. Any excess or shortfall of member contributions is recorded as deferred/payable contributions or member contributions receivable, respectively.

Contributions used for the purchase of capital assets owned by the NWMO are initially recognized as deferred capital contributions and amortized into revenue at the rate corresponding with the amortization rate of the related capital assets.

### *Pension and other post-employment benefits*

The NWMO's post-employment benefit programs include a contributory defined benefit registered pension plan, a defined benefit supplementary pension plan, and other post-employment benefits, including group life insurance and health-care benefits. The NWMO has adopted the following policies with respect to accounting for these post-employment benefits:

- (i) The NWMO accrues its obligations under pension, supplementary pension plan, and other post-employment benefit ("OPEB") plans. The defined benefit obligation for pension is determined using the projected benefit method pro-rated on service and is measured based on the actuarial valuation prepared for funding purposes (but not one prepared using a solvency, wind up, or similar valuation basis). Under this method, the benefit costs are amortized over the average remaining service period of active employees as indicated in Note 7. For other unfunded plans such as supplementary pension plan and OPEB, a similar accrual method is used and the benefit obligations are measured based on the actuarial valuation for accounting purposes. Remeasurements for the period are recorded through the consolidated statement of changes in net assets.
- (ii) The obligations are affected by actuarial assumptions, including salary escalation, inflation, and cost escalation of specific items (e.g., cost of living, health-care cost trend). Pension and OPEB costs and obligations are determined annually by independent actuaries using management's best estimate assumptions. The discount rate used by the NWMO in determining projected benefit obligations and the costs for the NWMO's pension plan is based on the funding valuation on a going concern basis, while other employee benefit plans' discount rates are based on representative AA corporate bond yields in effect at the end of the year.
- (iii) Pension fund assets are valued using market-related values for the purposes of determining actuarial gains or losses and the actual return on plan assets. The plan's assets consist of pooled funds, fixed income securities and limited partnership units in a real estate fund. Market and credit risk on these securities are managed by the plan by placing plan assets in trust and through the plan's investment policy.

### *Research and development*

Research and development costs are charged to operations as expenses in the year incurred.

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

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**2. Significant accounting policies (continued)**

*Foreign currency translation*

Monetary assets and liabilities denominated in foreign currencies are translated into Canadian currency at the year-end exchange rate. Any resulting gain or loss is reflected in staffing and administration expenses. Transactions in foreign currencies throughout the year have been converted at the exchange rate prevailing at the date of the transaction.

*Financial instruments*

Financial instruments include cash, member contributions receivable, other receivable from members and AECL, accounts receivable, and accounts payable and accrued liabilities.

Financial assets and financial liabilities are initially recognized at fair value when the NWMO becomes a party to the contractual provisions of the financial instrument. Subsequently, all financial instruments are measured at amortized cost. Financial assets measured at amortized cost are assessed at each reporting date for indications of impairment. If such impairment exists, the asset is written down and the resulting impairment loss is recognized in the consolidated statement of operations.

*Related party transactions*

Related party transactions are recorded at the exchange amount.

*Use of estimates*

The preparation of consolidated financial statements in conformity with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of revenues and expenses during the reporting period. Due to the inherent uncertainty in making estimates, actual results could differ from those estimates. Accounts requiring significant estimates include accrued pension asset, other post-employment and pension benefits liability, certain accrued liabilities and amortization which is based on the estimated useful life of the capital assets.

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

**3. Capital assets**

	Cost \$	Accumulated amortization \$	2023 Net book value \$	2022 Net book value \$
Land	31,839	—	31,839	31,839
Computer equipment and software	6,542	4,922	1,620	1,672
Transport and work equipment	4,725	2,631	2,094	3,038
Furniture and office equipment	1,984	1,595	389	424
Leasehold improvements	2,469	2,170	299	345
Office building	1,183	590	593	671
Vehicles	381	374	7	10
	<b>49,123</b>	<b>12,282</b>	<b>36,841</b>	<b>37,999</b>

During the year, capital assets with a cost of \$2,006 (2022 – nil) and accumulated amortization of \$1,283 (2022 – nil) were disposed as the Used Fuel Container research, development, prototyping and testing were successfully completed as an essential step in building the safety case for Canada's long-term management of used nuclear fuel. Proceeds on disposition of capital assets were \$135 (2022 – nil). The resulting loss on disposal of \$588 (2022 – nil) is included in the consolidated statement of operations.

Capital asset additions totalling \$149 (\$247 in 2022) have been excluded from the consolidated statement of cash flows as they remain unpaid at year-end. During 2023, capital asset additions totalling \$247 (\$104 in 2022) have been included in the consolidated statement of cash flows as they were accrued at December 31, 2022, and paid in 2023 (accrued at December 31, 2021, and paid in 2022).

**4. Related party transactions and balances**

Transactions and balances not otherwise disclosed separately in these consolidated financial statements are as follows:

	APM \$	ISRW \$	2023 Total \$	2022 Total \$
Transactions during the year				
Member contributions				
Ontario Power Generation Inc.	130,313	602	130,915	124,711
New Brunswick Power Corporation	5,680	23	5,703	4,482
Hydro-Québec	2,783	19	2,802	1,888
	<b>138,776</b>	<b>644</b>	<b>139,420</b>	<b>131,081</b>

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

**5. Member and AECL contributions**

The NWMO is solely funded through contributions it receives from its members and AECL. The contributions are restricted in nature, and thus revenue is recognized when qualifying expenses are incurred. Amounts received in advance of qualifying expenses are recorded as deferred contributions. Commitments for contributions that have not been received by the NWMO are recorded as member contributions receivable when the amount is determinable and the ultimate collection is likely.

*(a) Contributions receivable from members*

Contributions receivable from members are comprised of the following:

	2023	2022
	\$	\$
Ontario Power Generation Inc.	14,425	14,063
Hydro-Québec	296	197
New Brunswick Power Corporation	—	494
	<b>14,721</b>	<b>14,754</b>

*(b) Deferred/payable contributions from members and AECL – current*

Deferred/payable contributions from members and AECL are comprised of the following:

	2023	2022
	\$	\$
Atomic Energy of Canada Limited	684	148
New Brunswick Power Corporation	81	—
	<b>765</b>	<b>148</b>

*(c) Long-term deferred contributions from members and AECL*

Long-term deferred contributions from members and AECL represent amounts received or receivable to fund various employee future benefits as follows:

	2023	2022
	\$	\$
Accrued pension asset	38,244	40,902
Other post-employment and pension benefits liability	(30,037)	(23,117)
Other post-employment and pension benefit liabilities – short term (Note 7)	(650)	(650)
Remeasurements in net assets	(2,834)	(7,398)
	<b>4,723</b>	<b>9,737</b>



**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

**5. Member and AECL contributions (continued)**

*(d) Continuity of deferred contributions from members and AECL*

The continuity of deferred contributions from members and AECL is as follows:

	<b>2023</b>	2022
	<b>\$</b>	<b>\$</b>
Balance, beginning of year		
Deferred/payable contributions from members and AECL – current	<b>148</b>	1,369
Deferred contributions from members and AECL – long term	<b>9,737</b>	12,514
	<b>9,885</b>	13,883
Contributions received	<b>140,779</b>	131,331
Contributions receivable	<b>14,721</b>	14,754
Contribution revenue recognized	<b>(146,301)</b>	(136,602)
Amounts received previously recognized	<b>(14,754)</b>	(13,317)
Change related to deferred capital contributions	<b>1,158</b>	(164)
	<b>5,488</b>	9,885
Balance, end of year		
Deferred/payable contributions from members and AECL – current	<b>(765)</b>	(148)
Deferred contributions from members and AECL – long term	<b>4,723</b>	9,737

**6. Deferred capital contributions**

	<b>2023</b>	2022
	<b>\$</b>	<b>\$</b>
Balance, beginning of year	<b>37,999</b>	37,835
Contributions for the purchase of capital assets	<b>1,338</b>	1,845
Less amortization into revenue	<b>(1,773)</b>	(1,681)
Less proceeds on disposition of capital assets	<b>(135)</b>	—
Less loss on disposal of capital assets	<b>(588)</b>	—
Balance, end of year	<b>36,841</b>	37,999

## 7. Pension and other post-employment benefit plans

Effective January 1, 2009, the NWMO offers benefits to certain employees and retirees. A brief overview of these benefit plans is set out below:

*(a) Registered pension plan*

The federally registered pension plan is a contributory defined benefit plan covering eligible employees and retirees. The registered pension plan is funded, and plan assets are managed by third parties and include pooled funds, fixed income securities, and limited partnership units in a real estate fund. The benefit costs and assets related to this plan are recorded in the NWMO's consolidated financial statements.

*(b) Supplementary pension plan*

The supplementary pension plan is a defined benefit plan covering certain employees and retirees. This plan is unfunded.

*(c) Other post-employment benefit plans*

The other post-employment benefit plans provide medical, dental and group life insurance coverage for certain groups of full-time employees when they retire from the NWMO. These plans are unfunded.

A funding valuation, which was completed for the registered pension plan as of January 1, 2023, reported an actuarial surplus of \$37.3 million and a funding ratio of 138% on a going concern basis; and an actuarial surplus of \$28.1 million and a solvency ratio of 126% on a solvency basis.

In the case of a federally registered pension plan surplus, the *ITA* prohibits the making of contributions while the plan assets exceed 125% of the current value of the plan's liabilities on a going concern basis if the pension plan is also fully funded on a solvency basis (solvency ratio in excess of 105%).

As a result, the *ITA* prohibits the plan sponsor from contributing to the pension plan after the actuarial valuation report is filed with regulators. Consequently, the NWMO has made nil contribution for 2023 and 2022 as supported by the actuarial funding valuation report.

The most recent actuarial valuations were performed for the registered pension plan as at January 1, 2023, for the supplementary pension plan as at December 31, 2022, and for the other post-employment benefit plans as at December 31, 2020. The liability as at December 31, 2023, is based on an extrapolation of the previous valuations.

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**  
December 31, 2023  
(in thousands of Canadian dollars)

**7. Pension and other post-employment benefit plans (continued)**

Information for the NWMO's pension plans and other post-employment benefit plans is as follows:

	Registered pension plan		Supplementary pension plan		Other post-employment benefit plans	
	2023	2022	2023	2022	2023	2022
	\$	\$	\$	\$	\$	\$
<b>Changes in accrued benefit obligation</b>						
Accrued benefit obligation, January 1	(94,915)	(86,312)	(7,117)	(8,864)	(16,650)	(20,892)
Current service cost	(4,425)	(3,801)	(543)	(629)	(1,245)	(1,388)
Interest cost	(5,189)	(4,695)	(406)	(303)	(901)	(708)
Past service cost	—	2	—	—	—	(1,709)
Employee contributions	—	—	—	—	—	—
Benefits paid	3,707	3,046	352	374	302	244
Net actuarial (loss) gain	(5,273)	(3,155)	(2,805)	2,305	(1,674)	7,803
Accrued benefit obligation, December 31	(106,095)	(94,915)	(10,519)	(7,117)	(20,168)	(16,650)
<b>Changes in plan assets</b>						
Fair value of plan assets, January 1	135,817	156,357	—	—	—	—
Expected return on plan assets	7,041	8,129	—	—	—	—
Benefits paid	(3,707)	(3,046)	(352)	(374)	(302)	(244)
Net actuarial gain (loss)	5,188	(25,621)	—	—	—	—
Employer contributions	—	—	352	374	302	244
Past service cost	—	(2)	—	—	—	—
Employee contributions	—	—	—	—	—	—
Fair value of plan assets, December 31	144,339	135,817	—	—	—	—
<b>Funded status</b>						
Fair value of plan assets	144,339	135,817	—	—	—	—
Accrued benefit obligation	(106,095)	(94,915)	(10,519)	(7,117)	(20,168)	(16,650)
Accrued benefit asset (liability)	38,244	40,902	(10,519)	(7,117)	(20,168)	(16,650)
Short-term portion	—	—	(350)	(350)	(300)	(300)
Long-term portion	38,224	40,902	(10,169)	(6,767)	(19,868)	(16,350)
	38,224	40,902	(10,519)	(7,117)	(20,168)	(16,650)
<b>Components of cost recognized</b>						
Current service cost	4,425	3,801	543	629	1,245	1,388
Interest cost on accrued benefit obligation	5,189	4,695	406	303	901	708
Expected return on plan assets	(7,041)	(8,129)	—	—	—	—
Cost recognized	2,573	367	949	932	2,146	2,096

The short-term portion of the accrued benefits liability of \$650 (\$650 in 2022) that is included in accounts payable and accrued liabilities is part of the total \$30,687 (\$23,767 in 2022) accrued benefits liability at the end of the year for the supplementary pension and other post-employment benefit plans.

The pension and other post-employment benefit costs recognized are included in the respective expense categories in the consolidated statement of operations.

Remeasurements as reported on the consolidated statement of changes in net assets include remeasurements arising from the registered pension plan totalling \$85 (2022 – \$28,776), and remeasurements arising from the supplementary pension plan and other post-employment benefit plans totalling \$4,479 (2022 – \$8,399), and are derived from the table above. Actuarial gains and losses are a function of the changes to demographic or financial assumptions, or experience adjustments, as applicable, to the assumptions used in the actuarial valuation.

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

**7. Pension and other post-employment benefit plans (continued)**

The significant actuarial assumptions for benefit obligations and costs adopted in estimating the NWMO's accrued benefit obligations are as follows:

	Registered pension plan		Supplementary pension plan		Other post-employment benefit plans	
	2023 %	2022 %	2023 %	2022 %	2023 %	2022 %
Discount rate at the beginning of the period	<b>5.25</b>	5.25	<b>5.10</b>	3.10	<b>5.10</b>	3.10
Salary escalation rate	<b>3.00</b>	3.00	<b>3.00</b>	3.00	—	—
Rate of cost of living increase	<b>2.00</b>	2.00	<b>2.00</b>	2.00	—	—
Rate of increase in health-care cost trend	—	—	—	—	<b>5.12</b>	5.16
Discount rate at the end of the period	<b>5.25</b>	5.25	<b>4.60</b>	5.10	<b>4.60</b>	5.10
Average remaining service life for employees	<b>15 years</b>	15 years	<b>15 years</b>	15 years	<b>16 years</b>	15 years

Sensitivity information related to the other post-employment benefit plans is as follows:

	2023 \$	2022 \$
Effect of 1% increase in health-care cost trends on		
Accrued benefit obligation	<b>4,574</b>	3,437
Current service cost and interest cost	<b>859</b>	585
Effect of 1% decrease in health-care cost trends on		
Accrued benefit obligation	<b>(3,367)</b>	(2,566)
Current service cost and interest cost	<b>(597)</b>	(414)

The supplementary pension plan is unfunded and is secured by a Standby Letter of Credit of \$10,224 (\$8,754 in 2022) obtained on the NWMO's behalf by OPG, as approved by the members.

**8. Deferred lease inducements**

	2023 \$	2022 \$
Tenant inducements	<b>836</b>	836
Less accumulated amortization	<b>(543)</b>	(459)
	<b>293</b>	377

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

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**9. Guarantees and contingencies**

In the normal course of business, the NWMO enters into agreements that meet the definition of a guarantee.

- (a) The NWMO has provided indemnities for various agreements. Under the terms of these agreements, the NWMO agrees to indemnify the counterparty for various items, including, but not limited to, all liabilities, loss, suits, and damages arising during, on or after the term of the agreement.
- (b) The NWMO indemnifies all directors, officers and employees acting on behalf of the NWMO for various items, including, but not limited to, all costs to settle suits or actions due to services provided to the NWMO, subject to certain restrictions.

The nature of these indemnification agreements prevents the NWMO from making a reasonable estimate of the maximum exposure due to the difficulties in assessing the amount of liability which stems from the unpredictability of future events and the unlimited coverage offered to counterparties. Historically, the NWMO has not made any payments under such or similar indemnification agreements, and therefore, no amount has been accrued with respect to these agreements.

The NWMO has entered into an agreement and is committed to provide funding to a counterparty, payable on July 2, 2024, if certain conditions are met. No liability has been recognized in these financial statements as the occurrence of the confirming future event has not yet occurred.

The NWMO also arranged a Standby Letter of Credit issued by OPG to secure its supplementary pension plan (Note 7).

**10. Commitments**

The NWMO has entered into a number of operating leases for office premises and a vehicle which expire at various dates up to June 30, 2027.

The estimated annual minimum payments over the initial term of these leases up to their expiration are as follows:

	<u>\$</u>
2024	1,739
2025	1,362
2026	1,047
2027	<u>524</u>
	<u>4,672</u>

**Nuclear Waste Management Organization**  
**Notes to the consolidated financial statements**

December 31, 2023

(in thousands of Canadian dollars)

**11. Segment reporting**

Segment information for the NWMO's two reportable segments is as follows:

	APM		ISRW		Total
	2023	2022	2023	2022	2022
	\$	\$	\$	\$	\$
Contribution revenue	<b>145,641</b>	135,161	<b>660</b>	1,441	136,602
Interest and other income	<b>458</b>	155	<b>1</b>	1	156
Total revenue	<b>146,099</b>	135,316	<b>661</b>	1,442	136,758
Amortization of capital assets	<b>1,773</b>	1,681	—	—	1,681
Loss on disposal of capital assets	<b>588</b>	—	—	—	—
Operating expenses	<b>143,738</b>	133,635	<b>661</b>	1,442	135,077
Total expenses	<b>146,099</b>	135,316	<b>661</b>	1,442	136,758
Capital asset additions	<b>1,338</b>	1,845	—	—	1,845

The allocation of the common service expenses to each reportable segment above is based on direct staff hours in each segment.

**12. Government remittances**

Government remittances is comprised of the following:

	2023	2022
	\$	\$
Goods and Services Tax/Harmonized Sales Tax ("GST/HST") payable	<b>(2,164)</b>	(1,668)
GST/HST receivable	<b>737</b>	823
GST/HST payable, net	<b>(1,427)</b>	(844)

The net government remittances payable balance of \$1,427 (2022 – \$844) is included in accounts payable and accrued liabilities.





EXCELLENCE

COMMUNITY

RECONCILIATION

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