

# SAFELY MANAGING CANADA'S USED NUCLEAR FUEL

## THE NUCLEAR WASTE MANAGEMENT ORGANIZATION

We are a not-for-profit organization tasked with the safe, long-term management of Canada's intermediate- and high-level radioactive waste, in a manner that protects people and the environment for generations to come.

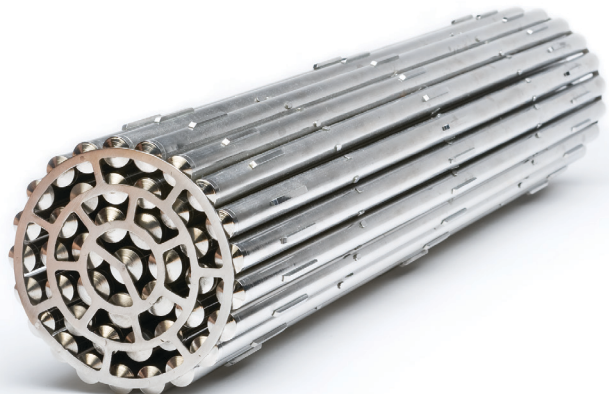
Our work is guided by a commitment to Reconciliation, based on co-creating a shared future built on rights, equity and well-being for Indigenous peoples. We continuously seek to align with the Indigenous Knowledge shared with us by Knowledge Holders working with the Nuclear Waste Management Organization (NWMO) and by the communities with which we work.

In 2024, we announced that the Wabigoon Lake Ojibway Nation (WLON)-Ignace area was selected as the site for a deep geological repository for used nuclear fuel.

## WHAT IS USED NUCLEAR FUEL?

Canadians and Indigenous peoples have relied on clean nuclear energy to power their homes, businesses and cities for over 60 years. A necessary byproduct of generating nuclear energy is used nuclear fuel, which must be contained and isolated to protect people and the environment.

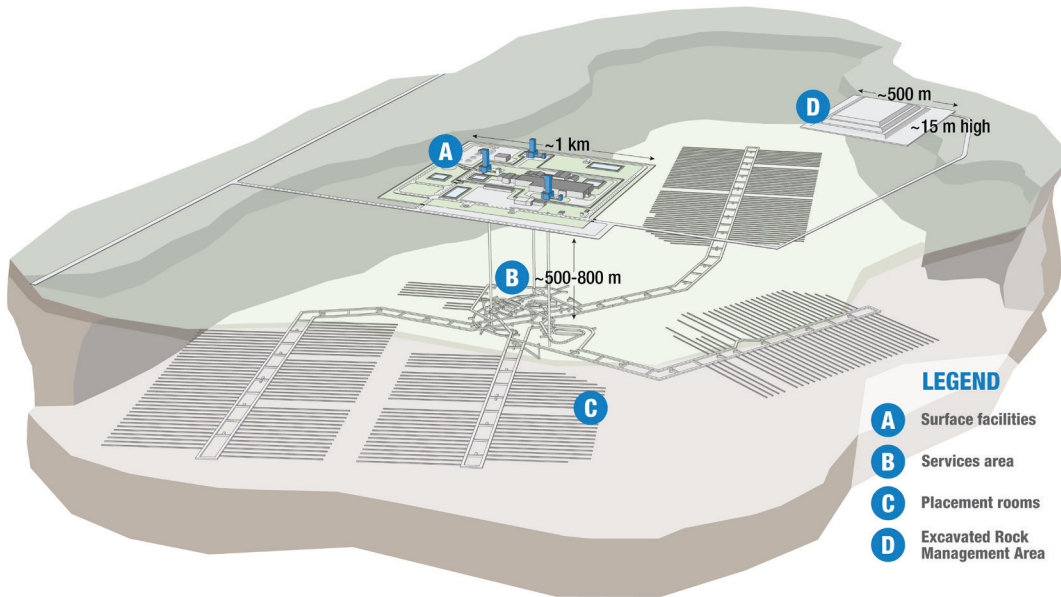
Most used nuclear fuel in Canada comes from CANDU reactors and is a stable solid, sealed into a specially designed container and bound into a bundle. Each bundle weighs about 53 pounds (24 kilograms) and is roughly the size of a fireplace log. It takes hundreds of thousands of years for the radioactivity of the used nuclear fuel to return to the level of natural uranium, which is why we need a safe, long-term approach for storage.



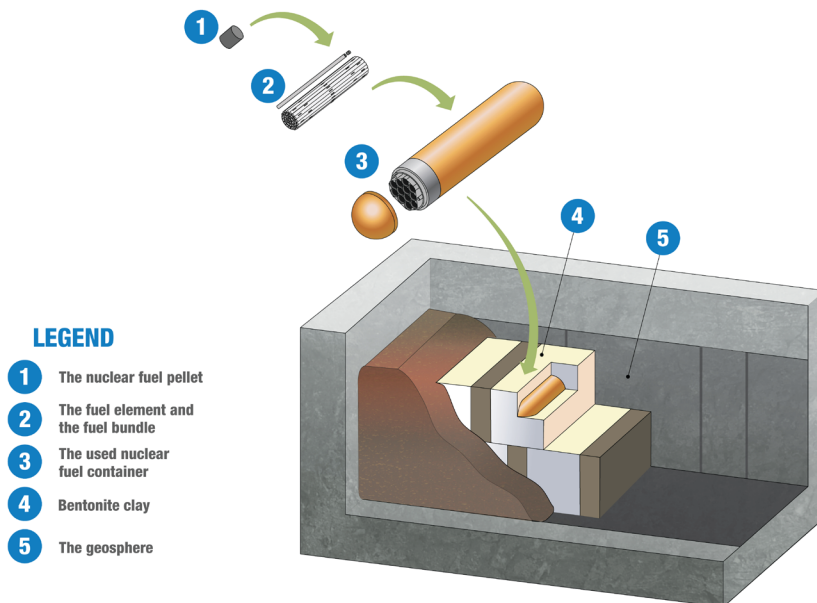
## WHAT IS CANADA'S PLAN FOR USED NUCLEAR FUEL?

Canada's plan calls for used nuclear fuel to be stored in a deep geological repository: a network of underground tunnels and placement rooms built in a safe, suitable location with informed and willing hosts — including the local municipality and Indigenous community.

Built to a depth of 650-800 metres, the repository will be much deeper than the CN Tower is tall.



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 also serving as a backstop for the previous barrier. If any of these barriers were to fail, another would be there to ensure any dangerous materials remained contained and isolated.



### WHY A DEEP GEOLOGICAL REPOSITORY?

This responsive and prudent approach is consistent with what Canadians and Indigenous peoples have said is required to ensure the safe management of used nuclear fuel for tens of thousands of years. We owe it to future generations to find a permanent home for used nuclear fuel that does not leave it as a burden for them to manage.

There is also international scientific consensus that used nuclear fuel should be disposed of in a deep geological repository. The Canadian Nuclear Safety Commission has conducted independent research and assessment on the long-term management of used nuclear fuel in geological repositories for more than 45 years. A repository is the only recommended approach accepted by the United Nations International Atomic Energy Agency.

### HOW WAS THE SITE SELECTED?

After extensive technical study and community engagement, we selected a site that achieves the priorities Canadians and Indigenous peoples helped us identify at the outset of this process:

- » The site can safely contain and isolate Canada's used nuclear fuel;
- » We can safely transport the used nuclear fuel to the site; and
- » There are informed and willing hosts, with both Wabigoon Lake Ojibway Nation and the Township of Ignace having confirmed they support moving ahead with the project.

The process began in 2010, and by 2012, 22 communities had proactively expressed interest in learning about the project and exploring their potential to host it. We gradually narrowed down the potential sites through increasingly intensive technical studies and engagement with those communities, their neighbours and the First Nations in whose traditional territories the sites were located.

In Wabigoon Lake Ojibway Nation and the Township of Ignace, as this highly scientific and technical major infrastructure project proceeds, people will see new jobs and investments in community well-being driven by the priorities they defined. This means generations of local residents will get to see their aspirations for their community realized over the project's lifespan.

Through the site selection process, we have learned that beyond listening to people, we need to find ways of listening to the land. We are grateful for the many contributions of Indigenous voices, knowledge, lived experience and expertise the NWMO has received. This includes contributions from the Council of Elders and Youth, Indigenous employees, Indigenous members of the Board of Directors and Advisory Council, and the Indigenous communities we are privileged to be in relationship with and learn from, and who continue to push us to become a better organization.



## WHAT'S NEXT?

We are closing one chapter and beginning another — the regulatory decision-making process. Though the construction of the deep geological repository and transportation of used nuclear fuel are not due to begin until the 2030s and 2040s, respectively, we are committed to using the intervening years to continue to engage with Canadians and Indigenous peoples interested in learning about the project.

|   |                 |   |
|---|-----------------|---|
| 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.<br>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.<br>A single, preferred site is identified.  |
| Towards construction                        | 2025            | Additional site characterization activities are initiated at selected site.<br>The NWMO begins the federal impact assessment process and the Canadian Nuclear Safety Commission's (CNSC) regulatory decision-making process.<br>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.  |
|   | 2030            | The grand opening of the Centre of Expertise is held.<br>The impact assessment is approved (estimate).  |
|   | 2031            | The Licence to Prepare Site is granted (estimate).  |
|   | 2033            | The Licence to Construct application is submitted to the CNSC.<br>The Licence to Construct is granted (estimate).<br>Construction begins.   |
| Beginning operations                        | 2040-45         | Operations of the deep geological repository begin.<br>Transportation of used nuclear fuel to the repository begins.  |
| Extended monitoring                         | Post-operations | Decades of monitoring are initiated.  |