# The **ONA** Playbook

## A Toolkit for the Nuclear Industry

**Tell** the Story. **Show** the facts. **Share** the Message

ONTARIO'S NUCLEAR ADVANTAGE

> To me this is no longer about ‘nuclear energy’s reputation’ … it is about the facts of fighting the climate crisis. Nuclear is a very effective and reliable tool in our energy toolbox, and it is *our duty to communicate the scientific facts*.
>
> – **Bharath Nangia**, Chief Innovation Catalyst, Nuclear Promise X

---

> Our industry must actively collaborate and be the voice that fosters Canada’s growth and innovation in nuclear as a *solution to combat climate change* while safely managing nuclear materials.
>
> – **Mario Pieries**, Director, Business Development and Strategy

# Table of Contents



# Introduction

## Strengthening Support for Nuclear

For decades, nuclear energy has been safely and reliably powering Ontario with clean, low-cost electricity. This vital energy source powers communities and saves lives around the world through nuclear medicine. The Canadian nuclear industry continues to innovate with new technologies to support existing operations and to power even greater possibilities in the decades to come, such as achieving net-zero emissions by 2050. Major investments and decisions are on the horizon for the nuclear industry with life-extension projects, medical isotopes and SMRs.

As an industry, we have worked hard to promote the role of nuclear and the benefits it provides. However, these benefits are often overshadowed by misconceptions around nuclear energy and, in particular, by-products (nuclear waste) and their management.

Significantly, the increased effort now underway to permanently store Canada's used fuel is drawing the attention of long-time critics and local activists. Groups are distorting facts, using the long-standing "stigma" of nuclear and nuclear waste to disseminate misinformation and play on people's fears. This often outweighs the positive benefits of nuclear and erodes our industry standing. As an industry, we need to band together in an aligned effort to preserve our industry's reputation and to allow the Nuclear Waste Management Organization (NWMO) to deliver its responsible plan for the long-term storage of used nuclear fuel.

## Taking Action Together

The Ontario Nuclear Advantage (ONA) is calling upon the 70,000-plus Canadian nuclear workers and industry leaders to take action to create a more balanced conversation to defend our industry's proud history and promising future.

ONA is launching a program to help align the industry with key messages and facts so that, together, we can elevate the important role nuclear plays in Ontario and better respond to the vocal minority.

The program has two key components:

1. A paid social media and digital campaign focused on nuclear energy's vital role in ensuring a clean future, and the long-term solution for storing used fuel

2. An informational playbook with tools to align and support industry partners in telling our story, showing the facts and sharing the message

The information and guidance in this playbook will help us to better participate in the social discussion, dispelling myths and calming fears with knowledge-based facts. We hope these tools will give you the confidence to not only proactively spread the word, but also empower you to challenge misinformation when you see it.

When nuclear projects succeed, we succeed as an industry. We all have a stake in the game. We need to communicate our message so we can continue to grow and take full advantage of all of our future possibilities

**Respectfully, ONA CO-chairs**

**John Gorman**
President & CEO of the Canadian Nuclear Association

**James Scongack**
Chief Development Officer & Executive Vice President, Operational Services at Bruce Power

**Dr. Ron Oberth**
President and CEO of Organization of Canadian Nuclear Industries

**Bob Walker**
National Director of the Canadian Nuclear Workers' Council

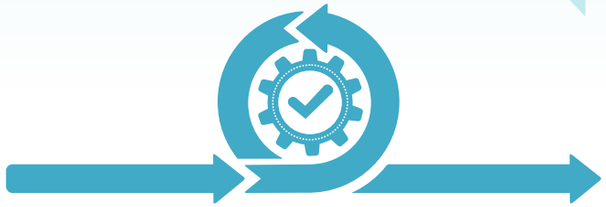
# Key Messages: Sharing Our Story

## Nuclear By-Products

One of the concerns frequently raised about nuclear energy is the management of its by-products. People need to understand more about what they are, how they compare to other energy sources and why we are developing a plan for safe, long-term storage.

**All energy sources create by-products.**

Only the nuclear industry captures the entire life cycle of its materials and by-products, including accounting, funding and management through to final disposal.



**Nuclear by-products are safely stored, managed and monitored in a highly regulated environment.**

Fossil fuels go into the atmosphere and other industrial waste goes to landfill.

**Canada is a global leader in nuclear materials and by-products management.**

Scientists and experts from around the world visit Canada to learn from our processes, based on decades of experience.

Nuclear is energy-dense, creating immense amounts of electricity and minimal waste

**Gram-for-gram** nuclear fuel contains

**1,000,000x**

**more energy** than fossil fuels

## A Long-Term Solution

The Nuclear Waste Management Organization (NWMO) has developed a responsible plan for the long-term storage of used nuclear fuel. Communicating the stability and safety of a deep geological repository can dispel unfounded fears and misinformation, bringing peace of mind to Ontarians as they learn more about its proven success, economic value and cost-effectiveness.

**The multi-generational project supports the host communities and province.**

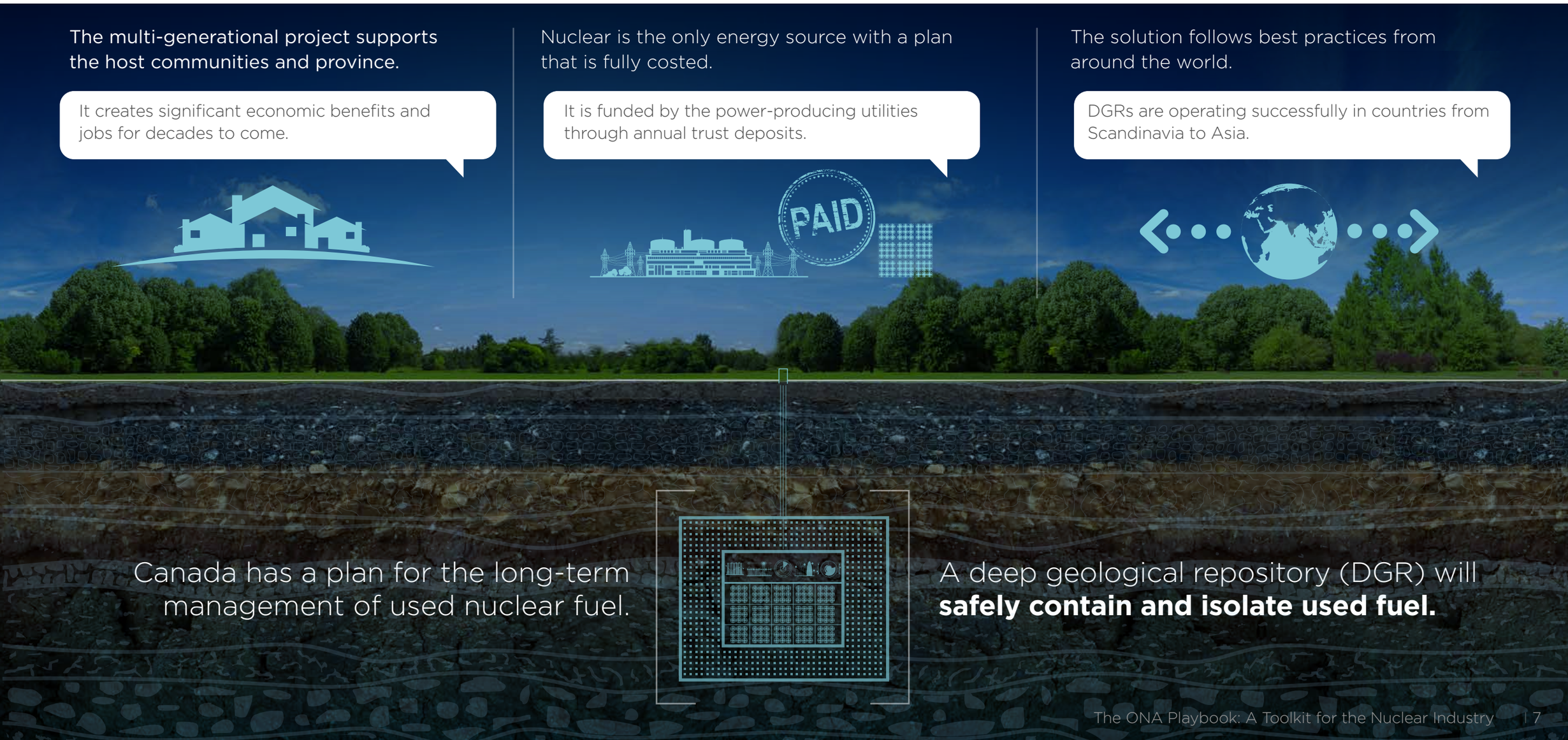
It creates significant economic benefits and jobs for decades to come.

Nuclear is the only energy source with a plan that is fully costed.

It is funded by the power-producing utilities through annual trust deposits.

The solution follows best practices from around the world.

DGRs are operating successfully in countries from Scandinavia to Asia.




Canada has a plan for the long-term management of used nuclear fuel.

A deep geological repository (DGR) will **safely contain and isolate used fuel.**

## Why Nuclear Matters

Providing a reminder of the importance of nuclear in ensuring stable electricity, fighting climate change, making medical breakthroughs and stimulating the economy strengthens the case for developing a long-term solution for storage of its by-products.

**Nuclear power is safe, affordable and reliable.**

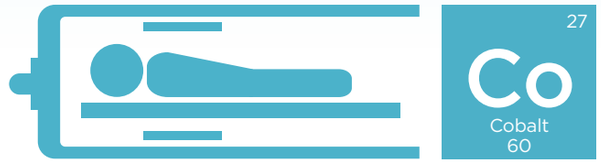
It is the primary source of electricity for over 40% of Canadians and 60% of Ontarians.


**Nuclear is a key player in the fight against climate change.**

Without clean nuclear power, Canada cannot reach its target of net-zero emissions by 2050.


**Nuclear saves lives every day.**

Medical isotopes sterilize equipment and diagnose and treat deadly diseases.

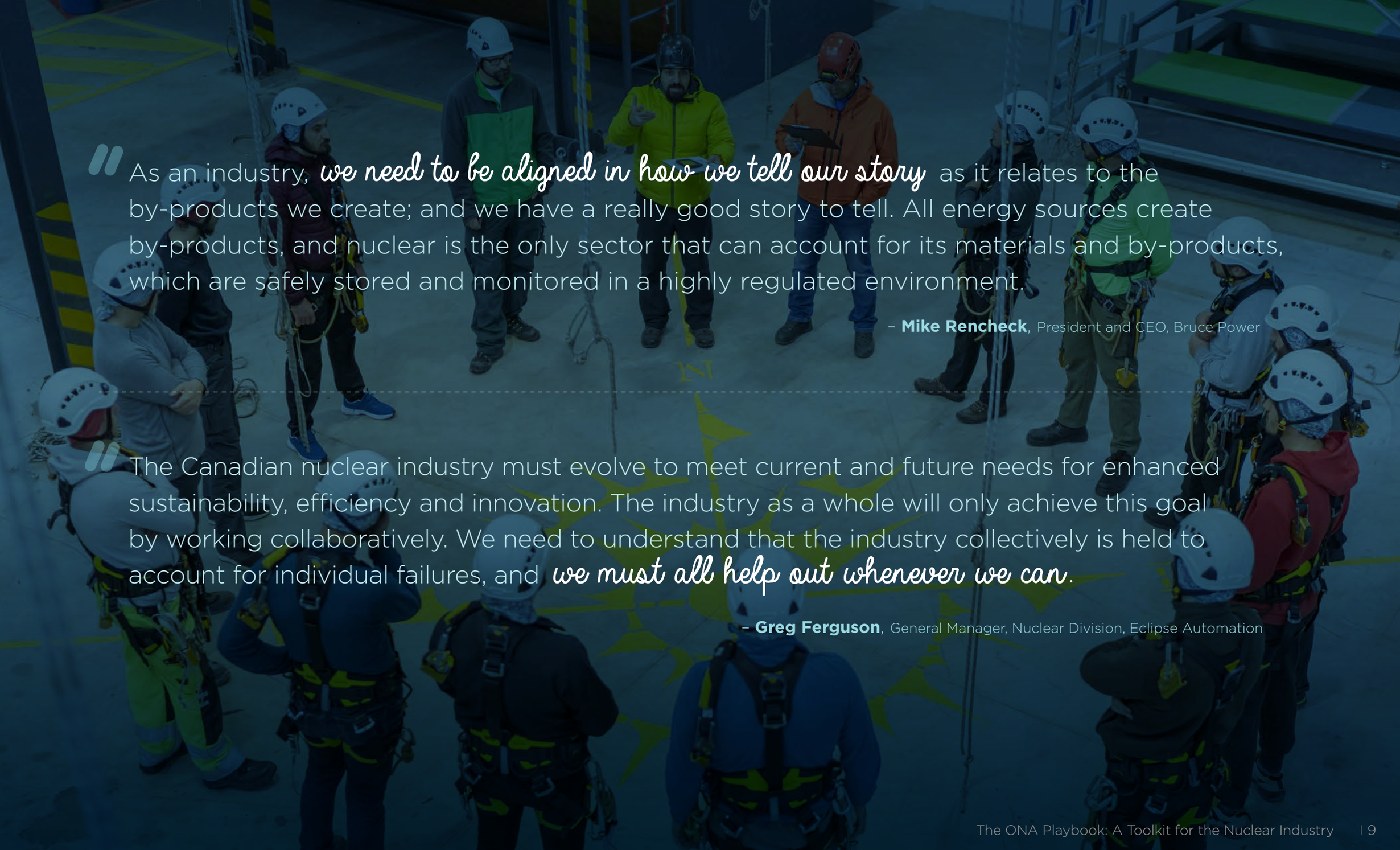



Nuclear is an economic powerhouse

Ontario's nuclear industry **contributes**

# $17,000,000,000

per year to the **Canadian economy**



> As an industry, *we need to be aligned in how we tell our story* as it relates to the by-products we create; and we have a really good story to tell. All energy sources create by-products, and nuclear is the only sector that can account for its materials and by-products, which are safely stored and monitored in a highly regulated environment.
>
> – **Mike Rencheck**, President and CEO, Bruce Power

> The Canadian nuclear industry must evolve to meet current and future needs for enhanced sustainability, efficiency and innovation. The industry as a whole will only achieve this goal by working collaboratively. We need to understand that the industry collectively is held to account for individual failures, and *we must all help out whenever we can*.
>
> – **Greg Ferguson**, General Manager, Nuclear Division, Eclipse Automation

# Stats & Facts: Making the Case

## Our Nuclear Advantage

Canada's nuclear industry provides clean, low-cost and reliable electricity; stimulates the economy, creates high-quality jobs; and advances medical innovations that diagnose diseases, treat illnesses and sterilize medical equipment.

## Economy & Jobs

Ontario's nuclear industry contributes $17 billion per year to the Canadian economy. The refurbishment of its nuclear fleet (Canada's largest infrastructure project) and the long-term waste strategy is increasing the economic benefit and adding thousands of high-quality jobs to skilled individuals in science, engineering, technology, construction, administration and communications for years to come. In addition to new opportunities arising from the site construction and operations, the project will create wealth in terms of business profits throughout the area amounting to hundreds of millions of dollars.

**60,000** nuclear industry jobs in Canada

**$25B** investment for Ontario's Nuclear Refurbishment

**$6B** revenue in Canada every year

## Energy density

Energy density is the secret to nuclear energy's environmental benefits. The electricity from a typical 1,000-megawatt nuclear power station, which would supply the needs of over a million people, produces only three cubic metres of used fuel per year. In contrast, a 1,000-megawatt coal-fired power station produces approximately 300,000 tonnes of ash and more than six million tonnes of carbon dioxide every year. In fact, all the used nuclear fuel produced in Canada since the 1960s would fit into one hockey rink stacked up to 30 feet. Nuclear also requires just a tiny fraction of the infrastructure and land for mining and processing which is used by every other source of energy, including renewables.

1,000-megawatt yearly energy comparison: Nuclear vs Coal

**$3m^3$ of used fuel = 300,000 tonnes of ash + 600,000 million tonnes of carbon dioxide**

Nuclear → | Coal →

## Reliable Electricity

Nuclear energy works day and night, at all times of the year. Fifteen times more efficient than renewable sources, it is the primary source of electricity for 40% of Canadians and 60% of Ontarians. Canada has an abundance of uranium resources, providing exceptional energy security. It holds the #2 place as the world's largest uranium producer, generating $1.2B in annual exports.

**60% of**  **Ontario's electricity**  **is from nuclear**

**5M** residents served by Bruce Power

**2.7M** residents served by Darlington Station

**2.2M** residents served by Pickering Station

## Clean Air

With nuclear and renewables providing 92% of Ontario's total non-emitting energy, the province is a low-carbon leader, producing only 6.4% of Canada's total greenhouse gas emissions from electricity generation.

**As one of the world's most successful climate-change reduction initiatives over the last decade, our phase-out of coal-fired electricity in Ontario minimized pollution and reduced smog days to next to zero. With clean nuclear energy, Ontarians can breathe easy.**

The coal phase-out resulted in significant health benefits to Ontario

**400** fewer premature deaths

**25,000** fewer emergency-room visits

**8.1M** fewer minor illnesses

**$2.6B** annual financial benefit

## Net Zero

To combat global warming, the world has set a target of 2050 for reaching net zero, when the amount of greenhouse gas we produce does not exceed the amount removed from the atmosphere. Ontario's coal phase-out substantially reduced Canada's emissions, bringing it closer to its net-zero goals. Without nuclear, a clean source of electricity that supports decarbonization, Canada has no credible plan to reach its climate-change targets.

## Isotopes

Nuclear medicine advances human health and saves lives. Canada is a global leader in medical isotope production, used to sterilize medical devices and diagnose and treat deadly diseases such as cancer. The nuclear medicine industry supports 8,500 jobs in Canada.

27
Co
Cobalt
60

Cobalt-60 is an essential isotope used in the treatment of cancer

**15,000**
therapeutic doses administered each year in Canada

**70%**
of the world's supply produced by Canada

**40M**
nuclear medicine procedures every year

## Innovation

Innovation is at the heart of the nuclear industry. Top researchers collaborate to explore new technologies and solutions, harnessing the enormous potential of nuclear to improve human health, protect the environment, promote economic growth, accelerate industrial applications and ensure clean and reliable energy. Among the many new developments are small modular reactors to power remote communities, and nuclear propulsion for space exploration.

> One of the goals of the CNWC is to enhance public knowledge about Canada's nuclear industry. We often hear how nuclear generation is reliable, affordable, emission-free, and how it contributes to human health; but we don't hear enough about the benefits of high-quality, local employment and well-managed waste. What industry can say they manage their waste as well as Canada's nuclear industry? *Science matters, and facts matter.* We need nuclear power for our clean energy future and as an industry we need to speak as one voice.
>
> – **Bob Walker**, National Director, Canadian Nuclear Workers' Council

> The Nuclear Waste Management Organization (NWMO) is proud of our progress in implementing Canada's plan, which will provide the necessary facilities to safely manage our country's used nuclear fuel for the very long term. We know it's easy to create fear around big infrastructure projects and even easier to do with anything with the word "nuclear" attached. That's why it's so essential that we work together to address misconceptions and misinformation. We can all become advocates for Canada's plan for the safe, long-term management of used nuclear fuel. *It's on all of us to do our part.*
>
> – **Laurie Swami**, President and CEO, Nuclear Waste Management Organization

# A Plan to Last: Safely Storing Nuclear Materials

## Five Principles for Safe Waste Management

The nuclear industry in Canada safely manages its waste, based on five principles:

1

### Minimize & Reduce

the production of waste through innovation, management and new practices.

2

### Safely Store It Today

in existing facilities licensed by the Canadian Nuclear Safety Commission.

3

### Fully Funded

for the life-time costs when it is generated, rather than leaving it as a burden for future generations

4

### Long-term Disposal

through potential host community engagement, environmental studies, and an open, transparent process to determine final disposal through a deep repository: based on proven international best practice and regulated by the Canadian Nuclear Safety Commission

5

### Communicate & Listen

by engaging the public and stakeholders to share the facts: nuclear power has tremendous economic, social, health and environmental advantages, and our waste by-products are managed safely with a clear, long-term plan for permanent disposal

## Understanding Nuclear By-Products

Generating electricity from uranium creates three types of nuclear by-products that are all handled with care.

| Type | % of waste | Description | Disposal |
|---|---|---|---|
| Low-level Materials | **90%** | Minimally radioactive materials used in routine operations, such as tools, clothing and cleaning supplies | Compacted or incinerated to reduce their volume |
| Intermediate-level Materials | **7%** | Used reactor components, as well as resins and filters that keep reactor water systems clean | Stored in steel-lined concrete containers and set in the ground |
| High-level Materials | **3%** | Used fuel removed from reactors | Cooled in water, then transferred to interim dry storage |

## A Responsible Plan

Canada is a world leader in storing nuclear by-products. We have extensive experience in safely transporting nuclear materials, including uranium ore, fuel bundles, tritiated water and used fuel by road, rail and ships. Now we are moving forward with a plan to responsibly store and contain the used nuclear fuel deep underground. The project is based on sound science, environmental and technical reviews, and community engagement to protect people and the environment.

## A Deep Geological Repository

A deep geological repository is a safe, technically sound solution to contain and isolate the used fuel. It follows international scientific consensus to ensure people and the environment are protected. The NWMO is committed to implementing the plan in an area with suitable geology and an informed and willing host community.

## Funding the Costs

The producers of used nuclear fuel are responsible for fully funding the implementation of Canada's permanent storage plan. Every year, they contribute to trust funds to ensure that all costs for the long-term solution are covered.

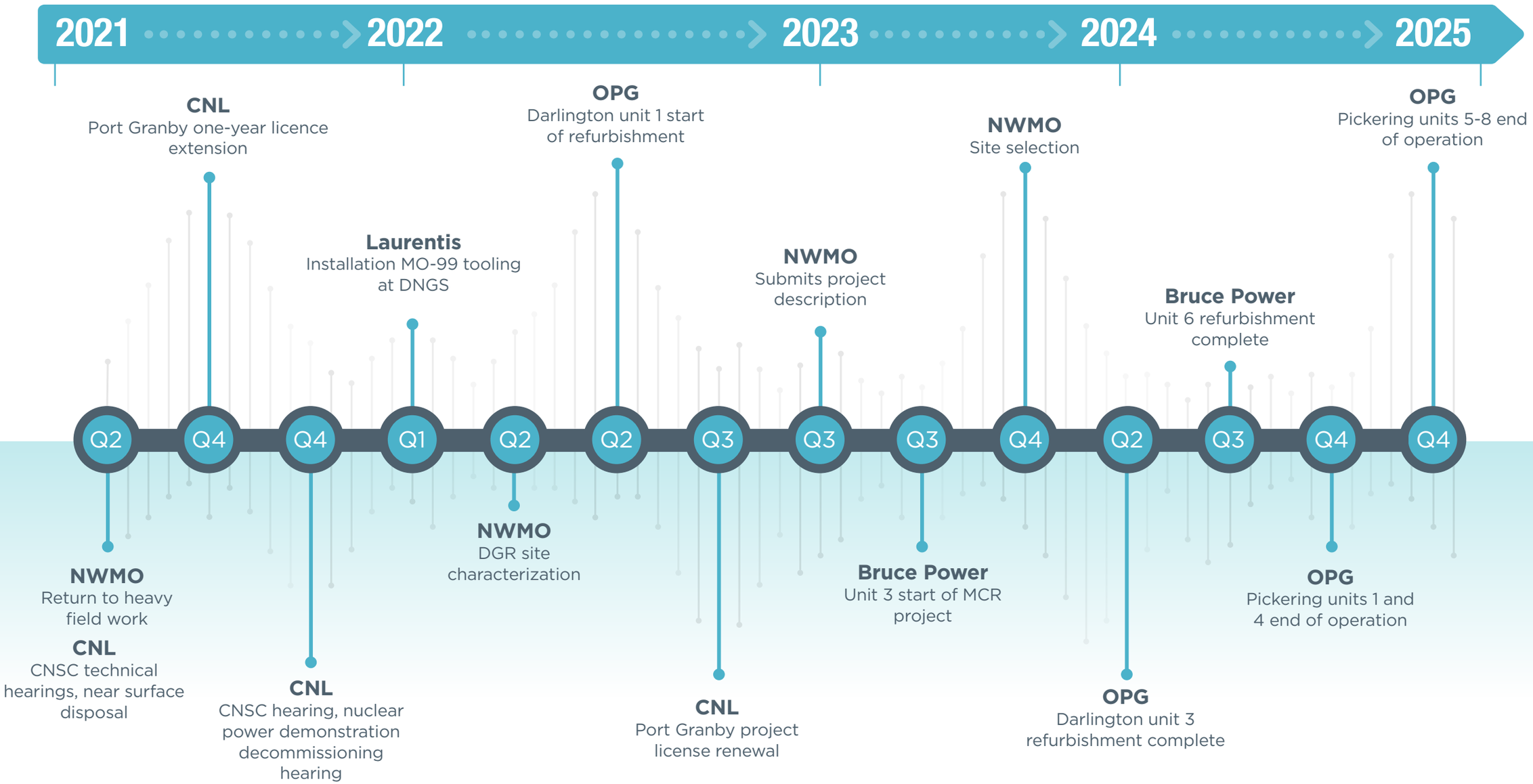
"Westinghouse is pleased to support these ongoing conversations and initiatives. We are committed to playing a role in ensuring a *successful future for Canada* and the nuclear industry through effective nuclear waste management.

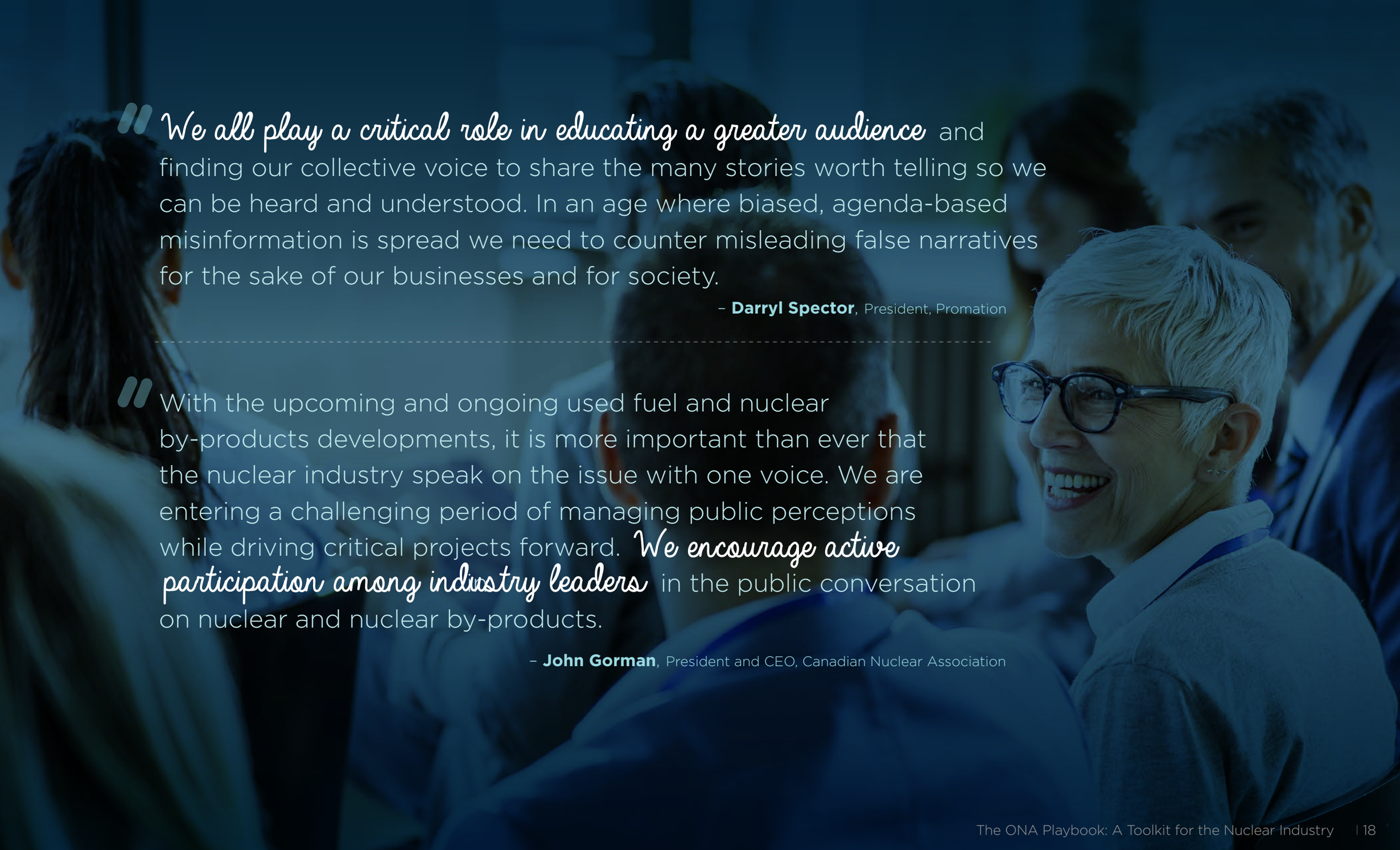
– **Eddie Saab**, President, Canada Westinghouse Electric Company

"BWXT is proud to be part of Canada's nuclear energy industry, an industry that produces power reliably without significant carbon emissions while only creating relatively small amounts of waste materials; and we are fully accountable for all of the financial and custodial costs associated with these materials. They are *safely stored in an environmentally responsible manner*. We are aligned with our industry partners to actively correct misinformation about our waste and address any public concerns.

– **John MacQuarrie**, Nuclear Power Group BWXT

# Powering the Future: Milestones





"We all play a critical role in educating a greater audience and finding our collective voice to share the many stories worth telling so we can be heard and understood. In an age where biased, agenda-based misinformation is spread we need to counter misleading false narratives for the sake of our businesses and for society.

– **Darryl Spector**, President, Promation

"With the upcoming and ongoing used fuel and nuclear by-products developments, it is more important than ever that the nuclear industry speak on the issue with one voice. We are entering a challenging period of managing public perceptions while driving critical projects forward. We encourage active participation among industry leaders in the public conversation on nuclear and nuclear by-products.

– **John Gorman**, President and CEO, Canadian Nuclear Association

# Engagement Strategies: Lead the Conversation

Engaging with stakeholders and influencers to deliver a clear and consistent message will proactively share the right message and encourage positive action. We can tell the story of our economic influence, with over 70,000 Canadians working and innovating in our industry. We can correct misconceptions and challenge public perceptions about nuclear energy and nuclear by-products. Each of us can help to strengthen our industry reputation and heighten public support for our operations, projects and plans for the future. Here are suggestions for strategies to expand the story of nuclear and the responsible management of its by-products. And, if you need help, ONA is just a call away.

## Stakeholder Briefings

When you meet with local stakeholders or officials to discuss your business and its positive effect on your region, include some key facts on nuclear in the conversation or add a slide or two to your presentation. Be prepared to respond to questions about the safety and costs of nuclear waste management.

## Newsletters

If you send out stakeholder newsletters, include some content on the benefits of nuclear and the process now underway to store used fuel safely and permanently. ONA can provide articles for you to include.

## Local Associations

Regional associations, such as local Boards of Trade and service clubs, always seek out topics of interest to share with their members. Offer to host a meeting on the benefits of nuclear and the long-term solution for the safe management of its by-products. ONA can elevate the discussion with guest speakers and presentation materials for virtual meetings.

## Government Outreach

All levels of government need to fully appreciate the overall social and economic benefits of nuclear, and your business's positive impact on your region. Set up an annual briefing or make the opportunity to meet with your constituent members and their staff to reinforce the message. ONA can provide materials or a representative to join in the conversation.

## Social Media

Social media is a powerful tool for sharing news and information with industry peers and community residents. ONA is producing a series of social media posts that you can share through your own channels to help amplify the messages. Be sure to follow industry groups, suppliers and leaders; and, when you see positive content, take the time to comment, like or share. If you see negative comments about the industry, provide facts that set the record straight.

## News Media

Build contacts with the media, and submit industry news stories, op-eds, letters to the editor and media releases. If you see a story online or in print that denigrates the industry or is unbalanced in addressing public concerns, let ONA know so that we can correct the record; or, if it is appropriate, take the time to respond yourself. Most online stories offer the option to leave comments or messages.

## Assets for Engagement

ONA is supporting all of our industry partners by providing facts and tools to help communicate a consistent and clear message to influencers, government officials, associations and community residents. Our website has a number of downloadable assets, including graphics and videos, which you can share on social media, insert into presentations, add to newsletters or emails, upload to your website or distribute at meetings. You can also download public-facing versions of the Stats & Facts and the Summary Sheet ("Learn the Facts About Nuclear") that are contained in this playbook. And remember that ONA is always on hand to help with advice, industry representatives, and articles and newsletters to share. Access our downloadable assets at **ontariosnuclearadvantage.com**.

## Stay Informed

Here are links to resources with great content to keep you up to date on our industry's initiatives and information. Subscribe to groups like ONA, CNA, OCNI, NWMO and industry union newsletters and blogs to stay current; and consider adding links on your own website or through social media to direct traffic to the information provided through these sites.

- Ontario's Nuclear Advantage — Subscribe Now
- Canadian Nuclear Association — Subscribe Now
- Bruce Power — Subscribe Now
- Ontario Power Generation — Learn More
- OCNI — Learn More
- Canadian Nuclear Workers' Council — Learn More
- NWMO — Learn More

"Securing a site for the permanent storage of used fuel is key to maintaining Canada's vibrant nuclear generation program. With plans to operate the Bruce and Darlington reactors to 2060 and beyond, and to construct SMRs in four provinces, our sustained and expanded nuclear program *creates thousands of quality jobs* across the supplier network. I call upon nuclear suppliers, large and small, to engage in informed discussions to select a single preferred site for the permanent storage of Canada's used nuclear fuel.

– **Ron Oberth**, CEO, OCNI

# Frequently Asked Questions

These FAQs may help you to respond to questions you receive, or to correct any misinformation that you may hear or see.

**Q: What is net zero 2050?**

**A:** Scientific consensus shows that global human-caused emissions of carbon dioxide (CO2) need to fall by about 45 percent from 2010 levels by 2030, while reaching net zero around 2050. Net zero refers to a state at which global warming stops, when the greenhouse gases going into the atmosphere are balanced by their removal from it. The Paris Agreement requires countries to achieve a balance between emissions by sources and removals of greenhouse gases in the second half of this century. Nuclear offers a proven, reliable clean source of electricity to support decarbonization.

**Q: Is nuclear power expensive?**

**A:** Nuclear power in Ontario helps keep down the price of electricity and will continue to do so for years to come. Considered a baseload generation that runs 24/7 and is less costly than solar, wind and gas, nuclear is the least expensive form of generation next to hydroelectric.

**Q: What are by-products?**

**A:** By-products are more commonly referred to by the public, and to a large extent by the industry, as 'waste.' It is helpful to replace the term 'waste' with 'materials' and 'by-products'. By-products are grouped into three categories, classified by their level of radioactivity. Low-level materials include tools, clothing and cleaning supplies; intermediate-level materials are used reactor components and resins and filters that purify reactor waste systems; and high-level materials are used fuel bundles.

**Q: How radioactive are they?**

**A:** Low-level materials contain mostly short-lived radioactivity and can be handled with simple precautions. Intermediate-level materials are more radioactive. High-level materials are highly radioactive, requiring careful containment and management. While the radioactivity initially decreases very rapidly, the residual radioactivity persists for a very long time.

**Q: Can used fuel burn or explode?**

**A:** Used CANDU nuclear fuel is not a liquid or a gas – it is a stable solid. Under Canadian and international regulations, it is not classified as flammable, explosive or fissile material.

**Q: Are Canada's nuclear by-products safely managed?**

**A:** All energy sources create by-products. Fossil-fuel emissions go into the atmosphere, and other industrial waste goes to landfill. The nuclear industry is the only energy industry that can account for all of its nuclear by-products, which are safely stored and managed above ground or in near-surface containment. Canada is recognized around the world as a leader in nuclear materials and by-products management.

**Q: Where is the used fuel currently stored?**

**A:** Used fuel is safely stored on an interim basis above ground in licensed facilities located at the nuclear reactor sites in Ontario, Quebec and New Brunswick, as well as at Chalk River Laboratories in Ontario and Atomic Energy of Canada Limited in Manitoba. However, it is widely recognized that the current method of storage is not appropriate for the hundreds of thousands of years it must be safely isolated from people and the environment.

**Q: What is Canada's plan for the long-term management of used nuclear fuel?**

**A:** Called Adaptive Phased Management (APM), the approach is both technical (a deep geological repository, or DGR, to contain and isolate the used nuclear fuel) and strategic (marked by realistic, manageable phases to foster sustaining engagement of people and communities). It also involves the development of a transportation system to move the used fuel from the facilities where it is currently stored to the new site.

**Q: Who is responsible for the plan?**

**A:** The Nuclear Waste Management Organization (NWMO), a not-for-profit organization established in 2002 by Canada's nuclear electricity producers (Ontario Power Generation, New Brunswick Power and Hydro-Québec), was directed by the Nuclear Fuel Waste Act (NFWA) to develop an approach for the long-term care of Canada's used nuclear fuel and to implement it after federal government approval.

**Q: Why a deep geological repository?**

**A:** Deep geological repositories are considered best practice for permanent disposal of intermediate- and high-level materials, such as used fuel. It has been adopted by other countries with nuclear power programs, such as Finland, France, Sweden, Switzerland and the United Kingdom. Suitable geology at great depths can contain the materials, using the geosphere to protect the biosphere. The materials are stored in deep rock with no valuable minerals that might interest future generations, and where no seismic activity has occurred for millions of years.

**Q: How secure is the deep geological repository?**

**A:** Deep geologic storage of nuclear waste involves multiple layers of barriers. Solid ceramic used fuel pellets are housed inside a zircaloy fuel bundle in a steel container, surrounded by a corrosion-resistant copper coating. This is protected by a box made of bentonite clay, which is a natural material proven to be a powerful barrier to water flow, and then encased in rock half a kilometer deep. The rock formation will have little groundwater movement, and the traces of water that exist at depth can take 1,000 years to move one metre through the rock, and well over 100,000 years to reach the surface.

**Q: How will people and the environment be protected?**

**A:** Nuclear facilities consider environmental monitoring a primary focus, ensuring that the health of the environment and people are fully protected. Through measurement, sampling and analysis, our industry verifies that emissions result in low to negligible environment risk. The project will be subject to a thorough regulatory review process, including an environmental assessment and a licensing review to ensure its safety. Once placed in the repository, the used nuclear fuel will be monitored for an extended period of time, ensuring the safety of people and the environment.

**Q: Is there any impact on farming?**

**A:** Canadian farmers have worked safely near nuclear facilities for decades, and regular testing proves that there is no impact on the food safety or quality of their crops, water and livestock.

**Q: Where will it be built?**

**A:** The repository must be located in an area with informed and willing hosts at a site that meets rigorous technical and safety criteria. Initially, twenty-two communities expressed interest in exploring their potential to host. Following a gradual narrowing-down process, the NWMO is currently engaging with two potential siting areas, including First Nation and Métis communities. The Township of Ignace in northwestern Ontario and the Municipality of South Bruce in southern Ontario are considered potential host areas for the project.

**Q: How long will it take to build?**

**A:** The NWMO expects to select a site by 2023, and for planning purposes is assuming the required regulatory approvals can be completed by 2032, followed by construction. Operations are expected to begin in the early 2040s.

**Q: Will nuclear materials from other countries be stored in the repository?**

**A:** No. The Adaptive Phased Management Project was developed collaboratively with Canadians to manage only Canada's used nuclear fuel and materials.

**Q: How much will it cost?**

**A:** The estimated cost of the Adaptive Phased Management Project from the beginning of site selection to the completion of the project (in approximately 100 years) is about $23 billion (in 2015 dollars). The final cost will depend on the number of used fuel bundles, the timing of construction and the selected site's geology.

**Q: Will taxpayers fund the costs?**

**A:** No. The project is fully funded by the major owners of used nuclear fuel in Canada. The Nuclear Fuel Waste Act requires each of these companies to establish independently managed trust funds and to make annual deposits to ensure the money will be available when needed. About $68 million is put into the fund each year. As of the end of 2020, the cumulative balance of the trust funds was $5.4 billion.

# Summary Sheet

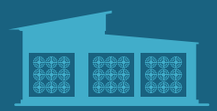
## Learn the Facts about Nuclear

> We have not seen a model where we can get to net-zero emissions by 2050 without nuclear. The fact of the matter is that it produces zero emissions.
>
> – **Seamus O'Regan**, Minister of Natural Resources of Canada


Net zero is the state when greenhouse gases going into the atmosphere are balanced by their removal from it, halting global warming. Canada needs low-carbon nuclear to meet its net-zero target of 2050 and provide a clean environment for the generations to come. The industry ensures safe and reliable power, for today and into the future, with a responsible, science-based plan for the long-term storage of its by-products.

### What are by-products?

Every energy source emits by-products: fossil fuels enter the atmosphere and industrial waste goes to landfill. Nuclear is the only source that safely manages its by-products throughout the entire lifecycle.



### How are they stored?

Currently, materials and used fuel are safely contained above ground in licensed facilities. However, a long-term plan is needed to isolate radioactive material, to continue to protect people and the environment.

### What is the long-term plan?

Deep geological repositories are being successfully used around the world to store used nuclear fuel. Consistent with international best practice, the materials are safely shielded by deep rock in a site that contains no groundwater or valuable minerals.

**Who is responsible for the plan?**
The Nuclear Waste Management Organization (NWMO) was directed by the Nuclear Fuel Waste Act (NFWA) to develop a responsible solution and implement it following federal government approval. The repository will be located in an area with informed and willing hosts, subject to rigorous technical and safety criteria.

**Who will pay for it?**
The producers of nuclear fuel are fully funding the project, making annual contributions to trust funds to ensure that all costs are covered.

## The Nuclear Advantage

- Nuclear is **energy-dense**, producing immense amounts of electricity with minimal waste.
- Nuclear **contributes billions of dollars to the economy** and creates thousands of jobs.
- Nuclear **power is safe, reliable and affordable**, the least expensive next to hydroelectric.
- Nuclear **produces life-saving medical isotopes**, treating deadly diseases like cancer.
- Nuclear innovation is the key to **new technologies and medical breakthroughs**.

ONTARIO'S NUCLEAR ADVANTAGE