

Canadian Nuclear
Safety Commission

Commission canadienne de
sûreté nucléaire

Public meeting

Réunion publique

January 27th, 2022

Le 27 janvier 2022

Public Hearing Room
14th floor
280 Slater Street
Ottawa, Ontario

Salle des audiences publiques
14^e étage
280, rue Slater
Ottawa (Ontario)

via videoconference

par vidéoconférence

Commission Members present

Commissaires présents

Ms. Rumina Velshi
Dr. Sandor Demeter
Dr. Marcel Lacroix
Dr. Timothy Berube
Ms. Indra Maharaj
Mr. Randall Kahgee

M^{me} Rumina Velshi
D^r Sandor Demeter
M. Marcel Lacroix
M. Timothy Berube
M^{me} Indra Maharaj
M. Randall Kahgee

Registrar:

Greffier:

Mr. Denis Saumure

M^e Denis Saumure

Senior General Counsel:

Avocate-générale principale :

Ms. Lisa Thiele

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via videoconference / par vidéoconférence

--- Upon resuming on Thursday, January 27, 2022
at 10:00 a.m. / La réunion reprend le jeudi
27 janvier 2022 à 10 h 00

Opening Remarks

THE PRESIDENT: Good morning and welcome to the continuation of the virtual meeting of the Canadian Nuclear Safety Commission.

Mon nom est Rumina Velshi. Je suis la présidente de la Commission canadienne de sûreté nucléaire.

I would like to begin by recognizing that our participants today are located in many different parts of the country. I will pause for a few seconds in silence so that each of us can acknowledge the Treaty and/or traditional territory for our locations. Please take this time to provide your gratitude and acknowledgment for the land.

--- Pause

LA PRÉSIDENTE : Je vous souhaite la bienvenue, and welcome to all those joining us via Zoom or webcast.

I would like to introduce the Members of the Commission that are with us today, remotely: Dr.

Sandor Demeter; Dr. Marcel Lacroix; Dr. Timothy Berube; Ms. Indra Maharaj; and Mr. Randall Kahgee.

Ms. Lisa Thiele, Senior General Counsel to the Commission, and Mr. Denis Saumure, Commission Registrar, are also joining us remotely.

Denis, over to you for a few opening remarks, please.

MR. SAUMURE: Thank you, President Velshi.

Bonjour, Mesdames et Messieurs.

J'aimerais aborder certains aspects touchant le déroulement de la réunion.

For this Commission meeting, we have simultaneous interpretation. Please keep the pace of your speech relatively slow so that the interpreters are able to keep up.

To make the transcripts as complete and clear as possible, please identify yourself each time before you speak.

The transcripts should be available on the CNSC website within one to two weeks.

I would also like to note that this proceeding is being video webcast live and that archives of these proceedings will be available on our website for a three-month period after the closure of the proceedings.

As a courtesy to others, please mute

yourself if you are not presenting or answering a question.

As usual, the President will be coordinating the questions. During the question period if you wish to provide an answer or add a comment, please use the "Raise Hand" function.

The *Nuclear Safety and Control Act* authorizes the Commission to hold meetings for the conduct of its business.

Please refer to the agenda published on January 12 for the list of items to be presented today.

All the Commission Member Documents listed on the agenda are available on the CNSC website.

In addition to the written documents reviewed by the Commission for this meeting, CNSC staff and other registered participants will have an opportunity to make verbal comments, and Commission Members will have the opportunity to ask questions on the items before us.

Madame Velshi, présidente et première dirigeante de la CCSN, va présider la réunion publique d'aujourd'hui.

President Velshi.

THE PRESIDENT: Thank you.

The first item on the agenda today is a presentation by the Canadian Nuclear Laboratories and Atomic Energy of Canada Limited on their longer-term future

plans respecting the Chalk River Laboratories, as outlined in Commission Member Document 22-M7.

I wish to note for the record and for the benefit of meeting participants that this information item provides an opportunity to CNL and AECL to inform the Commission about their future plans for the Chalk River site in a general manner. The Commission is not considering any regulatory submissions at this time and today's presentation is not to be specific to any application that may come before the Commission in due course.

During the November 2020 hearing of CNL's application to amend the Waste Facility Decommissioning Licence for Douglas Point waste, many references were made to the Chalk River Laboratories site as part of the Douglas Point discussions on decommissioning and waste strategy. As a follow-up to what we heard, the Commission asked CNL and AECL to provide general information on the future plans for the Chalk River site.

I note also that representatives from Natural Resources Canada are joining us and will be available for questions. While the focus of this item is on CNL's and AECL's future plans, CNSC staff are also available should there be any general regulatory questions.

I will turn the floor to Mr. McBrearty

from CNL to begin this presentation.

Mr. McBrearty, over to you, please.

CMD 22-M7

**Oral presentation by the
Canadian Nuclear Laboratories and
Atomic Energy of Canada Limited**

MR. MCBREARTY: Good morning, President Velshi and Members of the Commission.

For the record, my name is Joe McBrearty and I am the President and CEO of Canadian Nuclear Laboratories.

Joining me today is Mr. Fred Dermarkar, President and CEO of Atomic Energy of Canada Limited.

From CNL, I am also joined by Dr. Jeff Griffin, Vice-President of Science and Technology; Ms. Meggan Vickerd, General Manager for our Waste Services; and Mr. Phil Boyle, Chief Nuclear Officer and Central Technical Authority for Canadian Nuclear Laboratories.

We would like to thank you for the opportunity to discuss the future of the Chalk River Laboratories today and the nuclear science and technology work being carried out at our site.

Before we begin, I would like to take a

moment to acknowledge that our operations in Chalk River occur on the unceded traditional territories of the Algonquin People. I also want to voice our strong commitment to being an active participant in Canada's journey on the road towards healing and the road towards reconciliation.

AECL and CNL, represented by Fred and I, are the principal organizations that collectively work to formulate, develop and implement the program of work that is carried out at the Chalk River campus, which includes the planning and execution of a long-term vision for the site. While some of the plans that we present today may be new to the Commission, we have been exploring many of these ideas for quite some time and have even started discussions on them with local Indigenous communities, members of the public and elected officials. In fact, earlier this week, both AECL and CNL hosted a public webinar on this very topic where we talked about our planning to grow and expand our science and technology programs. This is part of an ongoing dialogue that we maintain, which is a responsibility that we take very seriously, and which ensures that those who live and work closest to us can contribute to shaping the future of the Chalk River campus and the work that goes on here.

Turning to today's agenda, Mr. Dermarkar

will begin by discussing AECL's vision for the future of the campus as the federal Crown corporation that is responsible for the oversight of the laboratories and the important role that Chalk River will continue to play to address national priorities in clean energy, public health and environmental stewardship. Then we would like to share a short video with you that we believe captures the ambition and excitement that we feel as we plan the future of the Chalk River campus. Following the video, I will then conclude our presentation by discussing the work that CNL is doing to meet AECL's objectives through our program of work today and into the future.

One final point. You will find a presentation deck included with the materials that we submitted for this meeting. These slides are simply intended to be used as reference material during the Q&A section of today's engagement, so there is no need to worry about those materials until our formal presentation is complete.

I will now turn the microphone over to Mr. Dermarkar. Fred.

MR. DERMARKAR: Thank you, Joe.

Good morning, President Velshi and Members of the Commission.

Mon nom est Fred Dermarkar et je vous

remercie de m'accueillir ici aujourd'hui au nom d'EACL pour discuter de l'avenir des Laboratoires de Chalk River.

Je suis entouré d'autres membres de l'équipe d'EACL, notamment :

- Alastair MacDonald, vice-président, déclassement et gestion des déchets;

- Stephen Bushby, vice-président par intérim en science, technologie et surveillance commerciale;

- Jason Cameron, vice-président, communications et affaires publiques; et

- Maude-Émilie Pagé, directrice, communications et rapports gouvernementaux.

Like Joe, I want to acknowledge our commitment to healing and reconciliation, which is a responsibility that I personally and all my staff at AECL take very seriously and which is a major part of our planning as we look to the future of the Chalk River campus. For me personally and for many others in Canada, the history of Indigenous peoples is one that invokes anger, shame, frustration and sorrow. As we think about the land that we stand on today, wherever we may be across Canada, I would like to encourage us all to take the opportunity to reflect on this dark part of Canada's history, to recognize its impacts on the lives of

Indigenous peoples today and to work together to build a better future.

In Chalk River where I am located, I acknowledge the land I stand on is the unceded territory of the Algonquin/Anishinaabe people. They are the traditional guardians of this land and I acknowledge their longstanding relationship with this territory.

I would like to begin my remarks by providing some context and recalling key Government priorities outlined notably in the November 2021 Speech from the Throne.

The Government has made clear commitments to taking action on reconciliation, action on our collective health and well-being, and action on climate change.

As AECL is a federal Crown corporation, we are very much committed to and aligned with these priorities, and so is CNL.

Through our discussion this morning, I hope you will see how AECL and CNL are positioning Canada's national nuclear labs at Chalk River to align to these important national objectives.

First, let me start with some background. Over the past 70 years, AECL's work has had a profound impact on the lives of Canadians, whether it is the way we

power our homes or the way we fight cancer.

The first self-sustained nuclear reaction outside of the United States was achieved right here in 1946 at the Chalk River campus.

At our peak, AECL produced about 60 percent of the world's supply of Molybdenum-99, the principal isotope used in medical diagnosis, and we pioneered the use of Cobalt-60 for cancer treatment.

We developed the CANDU reactor technology, which has supplied low-carbon energy safely and reliably here in Canada and in countries around the world for more than 50 years.

As we tackle the largest challenge our society is facing, climate change, this expertise and clean energy technology is more critical than ever.

So let me talk about the AECL of today.

AECL is first and foremost a science organization. The Chalk River Laboratories are Canada's largest science campus. Our focus is to drive nuclear innovation, create a state-of-the-art nuclear campus and clean up our legacy wastes.

The way we deliver this mandate is a bit unique, through a government-owned, contractor-operated, or GoCo model. Simply put, Canadian Nuclear Laboratories manages and operates our sites across Canada on our behalf.

AECL continues to own the sites, the assets and the liabilities.

This is a model that has been used elsewhere in the world and we have drawn from international best practices and lessons learned in putting it together. The objective is to bring the expertise and capabilities of those in the private sector together with the expertise and capabilities already at CNL to pursue and bring best value to Canada.

AECL's role is to protect Canada's interests. We set priorities and direction and we monitor the results. We do this by having in place a small, expert-based organization.

As a federal Crown corporation, we receive funding from the Government of Canada. Since the restructuring of AECL in 2015, we have been consistently receiving around \$1 billion per year in parliamentary appropriations, with funding this fiscal year totalling more than \$1.2 billion. This demonstrates a clear commitment to AECL by the Government and the importance of our science and technology and of our environmental remediation mandates.

Of particular note and relevant to today's discussion is the large infrastructure investment, \$1.2 billion over 10 years for new and renewed science

facilities and support infrastructure at Chalk River, starting in 2016. The Government of Canada has shown a clear commitment to a strong and vibrant lab that will continue to drive innovation into the future.

Before I get into more of the specifics around what brings us here today, the future of the Chalk River site, I would like to spend a bit of time on what we are doing to engage with Indigenous communities and advance reconciliation.

We have a duty as individual Canadians to recognize past wrongs and move forward with Indigenous communities in a meaningful manner that promotes healing. As an organization, we are working hard to achieve this, which includes building relationships with First Nation and Métis communities around our sites across the country, and we are doing this in close collaboration with CNL.

We recognize that this takes time and we are committed to doing this the right way. I would like to stress that these growing and evolving relationships are important as we talk about the future of the site. Our plans are meant to be informed by input from partners; they are not set in stone. The objective is to build this future together.

So what can I tell you about the future of the Chalk River site?

First, that the Chalk River Labs as a thriving nuclear science and technology campus is here to stay.

And second, that we are committed to addressing our environmental remediation responsibilities now and not leave it to future generations.

So let me unpack this a little bit.

I would like to stress that there is tremendous value in having thriving and modern national labs like those at Chalk River. The capabilities at Chalk River are very important to support the needs of the federal government and those of industry.

AECL manages the Federal Nuclear Science and Technology Work Plan. We work with 14 federal departments and agencies to identify work and projects that support the federal government's needs and responsibilities, and to oversee the delivery of the work, ensuring that it brings value to Canadians.

This is important work that is more than just about energy.

For example, CNL works with partner agencies to develop novel ways of detecting illicit materials at the border, supporting non-proliferation, counterterrorism and threat detection.

Important work continues in collaboration

with Health Canada to refine our understanding of the health effects of radiation. This is used, for example, to understand the impacts of radiation on the health of nuclear medicine workers.

As we look to the future of the site beyond maintaining these capabilities to meet the needs of government and industry, we are looking at work that supports government priorities in the areas of climate change and health. Joe will speak to it in more detail, but this work includes enabling the demonstration of small modular reactors to replace coal, to green mining operations and to improve energy security for remote communities.

Research on clean energy at CNL is also about hydrogen to clean up the transportation sector, which represents an important contributor to our greenhouse gas emissions.

In the area of health, CNL is working to advance research on the next generation of medical isotopes and a promising new area of research for cancer treatment.

I mentioned large investments to renew the science and site supporting infrastructure at the Chalk River Laboratories, \$1.2 billion over 10 years. Since 2016, many new buildings have come online and we have worked to renew the site's support infrastructure. Joe

will speak in more detail about the new capital and science infrastructure that has gone in, and exciting plans for the future.

All of these capital projects are being carried out with sustainability in mind and a clear commitment to environmental stewardship in the design and construction of new buildings and facilities.

The other important part of our mandate relates to environmental stewardship.

The Chalk River Labs are over 70 years old. While the majority of the Chalk River campus remains undisturbed, certain areas have been contaminated to varying degrees. Like other legacy nuclear research facilities around the world, we have contaminated buildings and areas where soil and groundwater have been impacted by historical operations and by past waste storage practices.

Our waste facilities are complex and our waste streams are varied. Unlike a nuclear power plant which creates the same type of waste year over year, at AECL and CNL, our activities have been research-based and have changed from year to year. We have built different research reactors, we have tested different fuels, and as a result we have generated complex and unique waste streams.

It is important to recognize that all these areas and facilities are currently being safely

managed and monitored, but in some cases, remedial actions are required to enhance the protection of the environment. We need to clean up this contaminated land and decommission outdated buildings. However, this requires somewhere to put the contaminated material.

So looking at the future of the site, what we see is large-scale remediation of contaminated land. The low-level waste will be placed in the proposed near surface disposal facility. Intermediate-level waste will continue to be safely stored until a disposal solution is identified.

As a responsible waste owner, AECL and CNL have been looking at options for the future disposal of this type of waste. We are also working with the Nuclear Waste Management Organization on the development of an Integrated Radioactive Waste Strategy for Canada that is looking at potential options for our intermediate-level waste.

We do expect that some of AECL's waste from our other sites will be brought to Chalk River for either sorting or storage, prior to disposal. Low-level waste will go into the proposed near surface disposal facility, or NSDF; intermediate-level waste will be safely stored until a disposal option is identified; and high-level waste will eventually go into the national

repository that is being pursued by the Nuclear Waste Management Organization as part of its legislated mandate.

I will wrap up here and let Joe provide some more detail on the vision for the site.

And I will conclude the way I started. AECL's objective is to drive nuclear opportunities for Canada and we do this by bringing value to Canada. Continuing to bring innovation and building a modern campus where Canada's leading nuclear experts have the facilities and resources they need to address the nation's most challenging issues is very much part of the plan.

La protection de l'environnement et la prise en charge de nos responsabilités environnementales font également partie du plan, et nous nous engageons pleinement à collaborer avec le public canadien et les peuples autochtones de manière ouverte et coopérative afin de parvenir à une compréhension mutuelle et d'identifier les possibilités de bénéfices mutuels.

Je vous remercie encore une fois de m'avoir donné l'occasion d'être ici aujourd'hui et de participer à cette importante conversation. Miigwetch.

Joe, back to you.

MR. McBREARTY: Fred, thank you very much for those remarks. And for the record, once again, my name is Joe McBrearty and I'm the president and CEO of Canadian

Nuclear Laboratories.

President Velshi and Commission Members, we would now like to pause to share with you a brief video that we believe will help illustrate our future for the Chalk River campus. So if we could go ahead and roll that video, please, I would appreciate it. Thank you.

--- Video presentation / Présentation vidéo

"Imagine a world without cancer, a world without climate change. Imagine a world of infinite possibilities, where we've learned how to harness the power of the sun and eliminate global energy poverty by electrifying the planet with clean and abundant power. Imagine a state-of-the-art research campus where the world's top scientists collaborate with academia and industry, fostering innovation and competition to drive the economy of tomorrow. And imagine industry partners bringing their toughest challenges to CNL.

At Canadian Nuclear Laboratories, this is our vision.

And we get up every day to do what it takes to make this vision a reality.

Imagine the cleanup of legacy facilities and contaminated soils safely remediated and contained using the latest techniques and a sustainable plan to deal with future waste.

In 2015, Canadian Nuclear Laboratories began executing on a waste management plan that is connected to our infrastructure renewal and a renewal plan that will enable us to carry out our mission over the next 50 years.

Building on the legacy of those who came before us, we're writing the story of the future, one of renewed optimism, true partnerships with Indigenous communities, and a vision of hope, science, and prosperity that benefits all. Welcome to the new CNL.

CNL is the manager and operator of the Chalk River laboratories owned

by Atomic Energy of Canada Limited. Situated in the Ottawa Valley on the unceded territories of the Algonquin peoples, the site is home to some of the world's most talented nuclear scientists and researchers.

Early on, we initiated an environmental remediation program to accelerate the clean-up of historic waste at the Chalk River campus. We've already accomplished so much, including decommissioning old and outdated buildings, research facilities, and infrastructure. We've also safely demolished over 100 structures at the campus, remediated contaminated soils, and made great strides in retrieving and recovering legacy waste.

Looking ahead, CNL will modernize how we safely store waste until final disposal. High-level waste, which is currently in safe storage at multiple AECL sites, will be retrieved and eventually moved off

site to a disposal location selected by the Nuclear Waste Management Organization. And the proposed Near Surface Disposal Facility, an engineered containment mound designed to safely hold one million cubic metres of AECL's low-level waste, will round out our integrated waste strategy. Through this work, we are reducing risk to people and the environment, while setting the stage for the promising future that lies ahead.

Now, imagine a new, modern 21-century campus. The Advanced Nuclear Materials Research Centre -- the ANMRC -- will revolutionize the way we conduct nuclear science. A science collaboration centre constructed of Canadian-sourced laminated wood timber, a new logistics building, and a new support facility -- and that's not all: the hydrogen laboratory, the tritium research facility, and the new

materials research laboratory -- the Harriet Brooks building -- have all recently come online. This transformation of the Chalk River site is made possible by a \$1.2 billion infrastructure investment by AECL.

This process of renewal is driven by sustainable solutions -- water and energy efficiency, advanced materials, Canadian-sourced mass timber construction -- all combining to significantly reduce CNL's carbon footprint and contribute to a greener world.

Now, imagine the entire Chalk River campus powered by an SMR, a small modular reactor, demonstrating the many benefits of this versatile, clean technology. Imagine a modern and sustainable campus with the best and the brightest minds from Canada and around the world, fostering a highly collaborative and exciting scientific environment.

CNL will lead Canada's efforts towards a net zero carbon future, supporting the CANDU fleet now and into the future. Next-generation nuclear reactors and fuels and advanced fuel fabrication will be enabled by the Advanced Nuclear Materials Research Centre. And we will remain a government partner to ensure a safe and secure world, leveraging science to improve border security, counter-terrorism, and non-proliferation.

Now, imagine by 2030 SMRs producing clean and reliable power for remote and Northern communities because a prototype was demonstrated at a CNL-managed site. Imagine hydrogen science leading clean transport fuels, and tritium science enabling humanity to harness fusion, the power of the sun. And imagine a clean energy demonstration park to show the world how all of these forms of energy -- wind, solar, nuclear,

and hydrogen -- can work together to achieve a net-zero world.

And now, imagine a world a without cancer. Targeted alpha therapy and actinium-225 research is well underway. Our work in this area enables CNL and others around the world to carry out the critical trials and research needed to move this promising medicine into a real possibility. New investments into production capabilities will bring hope to patients around the globe. We have the ingenuity, and with the right partners, we will execute on our mission.

Restoring our environment by safely addressing the Government of Canada's legacy waste, discovering new, clean energy, and joining the fight against cancer: this is our purpose. This is Vision 2030. And the new revitalized Chalk River Laboratories is where it starts and where science will help us solve some

*of the most pressing issues of today
and tomorrow.*

*Canada is in great hands with
AECL and CNL at Chalk River. The
future begins today."*

MR. McBREARTY: President Velshi and Commissioners, I hope that you enjoyed that video and found it to be informative and exciting.

Once again, my name is Mr. McBrearty. I am the president and CEO of Canadian Nuclear Laboratories.

Today, we have been invited here to discuss the future of the Chalk River site and our vision from today to perhaps about 50 years into the future.

Our primary mission at CNL is to restore and to protect the environment and to deal with the legacy lifecycle impacts of 70 years of operations that have brought immense success to Canada, which include changing the way we power our lives, reducing greenhouse gases, and saving countless lives through our medical diagnostic and therapeutic production missions. And today -- today and in the future -- I can assure that these impacts are being addressed.

Our past and our future are inextricably linked not only through our missions, but by the scientific talent that has and will continue to solve grand

challenges. The Nobel laureates of the past, Art McDonald and Bertram Brockhouse, have provided a legacy that serves as an inspiration to CNL researchers, engineers, and professional staff. And I cannot think of three greater technical challenges facing the Canadian people today than our present mission areas: to restore and protect the environment, to provide clean energy technologies for today and tomorrow, and to improve the health of all Canadians. And I am sure that both Dr. McDonald and Dr. Brockhouse would be excited to see the Chalk River of the future.

In 2015, when Canadian Nuclear Laboratories commenced the restoration of the 4,000-hectare Chalk River site, approximately 260 hectares of that site had been assessed as impacted and potentially contaminated, including nearly 200 structures, some dating all the way back to the 1940s.

However, today, just five years later, over 100 of those structures -- actually, 105 as of today -- have been safely remediated, and by the year 2070, all of these structures will have been safely removed, and we will have removed the source term from the legacy waste emplacements on our site. This alone will result in the safe disposition of almost 800,000 cubic metres of low-level waste into an engineered disposal facility.

The foundation of AECL and CNL is to plan

for the entire lifecycle of any new project, and we must be able to ensure that possible environmental impacts are treated in an appropriate manner, which is the core ideal of our environmental remediation and our science and technology programs. We will eliminate possible waste in our planning and design process, and if that is not feasible, then we will minimize, remediate, recycle, or reuse the remaining by-products. The last choice, while necessary on occasion, is disposal.

Today we are significantly reducing the past and future lifecycle impacts of the federal nuclear mission through the methods that I just mentioned. And some examples of our projects and programs include the repatriation of 35 tons of high- and low-enriched uranium assets back to their origin in the United States, the reuse of legacy material for utilization in exciting and state-of-the-art applications for the future, and the drastic reduction of radiological and hazardous material source terms and their associated risk to the environment. And we do this by rigorous project planning, by design, by material characterization and size reduction, material separation and segregation, and extensive surveys to reduce the material sent to disposal to an absolute minimum. And as you may recall, the video clip illustrated some of those techniques.

I am sure that the Commission is familiar with the many source terms that exist on our site. There are risks associated with all of this material, much of which is still directly exposed to the elements. Any delay to this work, we believe, is not a viable option. It must be addressed as soon as possible.

The goals of our ERM program are simple, but they're incredibly important. We are reducing risk. Every day we reduce this risk, less risk to our workforce, less risk to the environment, less risk to the public, and less risk to local communities and Indigenous peoples.

The clean-up and subsequent reduction of this risk and source term also provides CNL with the opportunity to position our campus for the future, to restore the land to its proper state, to improve accessibility to the site, and to ensure the safety of all.

But we also must ensure that we have the proposed solutions and pathways to effectively store and dispose of this waste. And this is why we have invested heavily in the engineering, facilities, and processes that we believe will stand the test of time. For low-level waste, which encompasses the vast majority of our legacy material, we strongly believe that solution is the Near Surface Disposal Facility or NSDF which, if approved, will commence operation in the mid 2020s and will continue to

receive low-level waste through the year 2070.

For high-level waste, including expended nuclear fuel, we intend to transport nearly all of this material following consolidation at the Chalk River site to the NWMO's future Deep Geological Repository for final disposition. By the year 2070, we expect that all of the AECL high-level waste inventory not required for research will have been removed from the Chalk River site.

Our intermediate-level waste will also undergo similar rigorous sorting and segregation processes to reduce volumes, transferring low-level waste to the NSDF, while storing the remaining waste until a future national option is determined.

Overall, by the year 2070, CNL expects to have safely dispositioned all of our legacy waste sources currently stored above or below grade.

These waste management strategies are not solely focused on dealing with the past. They also look to the future. As I stated earlier, while we will eliminate or minimize potential waste streams for ongoing critical research and production activities, very small amounts of waste will still be produced. Building a clean, a safe, and a sustainable campus is at the very centre of our vision for the future of this site, and responsible decommissioning and waste management practices serve as the

foundation of that work.

We recognize that at every stage of this process, we need to engage the public and Indigenous communities to ensure that they have a voice in the restoration of these lands.

And as we continue to look into the future, I would ask you to picture, as a result of the remediated lands and the demolition of old and outdated infrastructure, how we will revitalize the Chalk River site. New research laboratories, new collaboration centres with an open campus to the visitors and to the public. Of course, we will still have nuclear islands around our key R&D and waste management facilities, with all the safety and security protocols necessary. But our vision is a modern and open campus with improved accessibility.

Our staff is already hard at work to make this happen. New material sciences, hydrogen and tritium laboratories, as you saw in the video clip, have already been constructed and are in operation today, providing Canada with cutting-edge technological capabilities to explore clean energy opportunities, including hydrogen for transport and even critical technical support for future fusion energy reactors.

Our expertise in tritium science, a key component of many prototype fusion reactors, could provide

Canada and Canadian companies with the necessary knowledge to successfully use controlled fusion energy as the ultimate clean energy source.

Our new capital projects program is closely aligned with our need to reduce legacy wastes, and in one case, tritiated heavy water. Our scientists and engineers have proposed a concept that will provide for the elimination of this waste product. But the remediation of this heavy water is only part of that equation. As I noted before, we have been searching for ways to turn these waste products into something useful for society. And it turns out that this heavy water is becoming an important commodity in industry -- and not just any industry, but in the electronics, the semiconductor, and the pharmaceutical industries. The unique properties of D₂O over its lighter counterpart have significant advantages in new state-of-the-art products. Some of the specific areas include optical LED devices and as part of a medical eyedrop solution used to treat childhood eye disease. This detritiation plant, if approved, will be in operation by 2026.

And this year, we will break ground on the proposed Advanced Nuclear Materials Research Centre, or the ANMRC for short, providing Canada with advanced nuclear facilities to fully support unique reactor materials

testing, ensuring present and future nuclear reactors are operating as designed.

The ANMRC will also be a key enabler to commence the decommissioning and demolition of two of our highest-risk, highest-source-term antiquated laboratory buildings on our campus. And this facility, which is expected to be commissioned in the year 2027, will enable enduring nuclear research in Canada well into the late 2000s. It is this integration of our environmental remediation and our research programs which has allowed previously remediated areas to be reused for the construction of new facilities.

And this brings me to our enduring mission: nuclear science and technology. Today, CNL, in concert with a company known as Global First Power, is embarking on an exciting opportunity to change the way Canada can power the country, not only in developed areas, but equally as important in remote industrial or Northern communities. This is our small modular reactor program. Our efforts to demonstrate the viability and the benefits of micro reactors has the potential to reduce our nation's reliance on fossil fuels, especially in remote and Northern communities, mine sites, and even in the oil and gas industry. And again, pending approval, we expect this SMR, to be constructed by Global First Power, to be operational

by the late 2020s.

While we at CNL are not the SMR builder or operator, we will provide the necessary R&D capabilities needed to demonstrate the safety and viability of this technology and also to uncover the tremendous potential that these reactors offer to Canadians and other nations around the world. It's abundant, clean, and carbon-free energy.

Combined with the concept of the clean energy demonstration, innovation, and research park, or CEDIR for short, we will show how SMRs can be integrated into a holistic energy grid that works in harmony with wind power, solar power, and even hydrogen. With CEDIR, I see great potential to offer our neighbours the opportunity to partner with CNL and Global First Power in testing this prototype reactor plant and demonstrating the full potential that nuclear power in combination with other clean energy sources can bring to a community through electricity production, the use of district heat for home or businesses, or even process heat for mining or hydrogen production. And hydrogen itself offers one of the most viable long-term energy and energy storage mechanisms available for future generations.

But perhaps most importantly, I imagine building on the work of those that came before us in the

NRU and the molybdenum-99 program to advance our work in radiobiology and in nuclear medicine, to once again conduct cutting-edge research and produce life-saving isotopes such as actinium-225, which is one of the rarest isotopes on earth and has the potential to enable a ground-breaking new form of cancer treatment known as targeted alpha therapy.

With actinium-225, CNL could once again serve as a world leader in the production and distribution of medical isotopes and build on the legacy that has touched so many lives around the world. In this particular mission, we cannot fail. We must not fail. This unique isotope produced from the decay of thorium, but also through the irradiation of radium, could represent a leap forward in cancer treatment technology. With successful international trials already underway, we are proposing to utilize our campus at Chalk River to site the cyclotron and facilities necessary that would produce this isotope. Pending government approval, we believe this life-saving facility and process could be in business by the late 2020s.

It is entirely feasible that waste that exists in our waste management areas today could provide the necessary feedstock for this actinium production process, again, providing a huge opportunity to help others while reducing our legacy waste.

While these two new concepts, SMRs and Actinium, will both produce waste themselves, the amount of expected by-products will be absolutely minimized, will be planned for prior to project approval and will be handled appropriately.

Today, the future of our laboratory is very bright and is full of opportunity. We envision and are actively working toward a modern, open and sustainable campus, cutting-edge research facilities and laboratories, innovative programs to restore and protect the environment, clean energy technology development for today and tomorrow, improving the health of all Canadians, research that supports not only Canada's nuclear industry but also organizations, sectors and countries around the world led by the very best and brightest nuclear scientists, engineers and technicians, all of which is strengthened through meaningful engagement activities with the public and indigenous communities and delivered in an open and co-operative manner to pursue a mutual understanding of shared interests and opportunities in our program of work.

In closing, I hope this gives you some insight into our future, into the future we are trying to cultivate at the Chalk River site.

I realize I have spoken in very broad terms about our vision, but I fully expect that we will dig

into many of these details during the Q & A portion of today's discussion, so please do not hesitate to ask any questions. Both Fred and I, as well as our teams from from AECL and CNL, would now be happy to answer your questions.

Thank you very much.

THE PRESIDENT: Thank you both, Mr. McBrearty and Mr. Dermarkar, for those very informative presentations and giving us a better appreciation of what's planned for the campus.

Let me open the floor for questions from Commission members, and we'll start with Ms. Maharaj, please.

MEMBER MAHARAJ: Thank you, Madam Velshi.

Thank you, Mr. Dermarkar and Mr. McBrearty, for a very, very intriguing presentation. I have many notes, so I'm just trying to sort through them to find some coherence between my questions.

I am particularly interested in the remediation work that you're doing with the legacy contamination and the buildings that were on your campus. Can you tell me a little bit more about the kinds of contamination that you are remediating with respect to those buildings? Is it purely focused on nuclear or is that sort of a general remediation project that you're working on?

MR. McBREARTY: Commissioner, thank you very much for that question.

Before I turn that over to Kristan Schruder, who will give a far more detailed answer from our facility's decommissioning program, let me just touch base in general.

It is focused on both general remediation and nuclear or radiological remediation. Many of our facilities have been in commission for 50, 60, 70 years and there is a buildup of contamination inside of those facilities. The vast majority is low-level waste.

I should put it in perspective. Up to this point we have remediated about almost 250,000 square feet of structures so far. The vast majority of the material that has come out of that is what we call "clearable waste". It's waste that can be returned for use. It has no radiological or other hazardous material components, such as asbestos. We separate out asbestos waste. We separate out low-level waste. Just in the order of magnitude we have about -- I think I saw about 14,000 tons so far of what we would call "clearable waste" as compared to about 2,000 tons of low-level waste and only about -- I believe the latest number is about 44 tons of what we call "intermediate-level waste", which would go into future storage as well.

Let me turn that over to Mr. Schruder, who can give you a far better and more detailed answer.

Mr. Schruder, over to you, please.

MR. SCHRUDER: Thank you, Mr. McBrearty.

For the record, my name is Kristan Schruder. I'm the general manager and deputy vice-president for environmental remediation management.

If I can ask to have slide 29 pulled up or how about you look at slide 29 in your package?

In response to your question, as we get prepared for any building that gets turned over from operations to our decommissioning team we follow a very thorough process in order to assess the building and get ready for the ultimate decommissioning, so as part of our planning and preparation phase, we start looking at the history of the building, what the building was used for, so that we can identify the hazards that we need to consider as part of our characterization activities and the future removal of these wastes.

Specifically to your question, we do not simply look at the radiological hazards, we are looking at all of the hazards associated with that work, whether that be industrial hazards, any sort of fall, any sort of energy, hazardous energy, such as, you know, steam, electrical, as well as the chemical hazards associated with

that, whether that be asbestos, that be mould, that be lead, PCBs, so as part of that planning phase we would identify all those potential hazards and we put mitigating measures in place in order to protect our staff. Then we get into the characterization where we start to confirm what are the various contaminants that we need to deal with. Our process looks at all these various hazards, not just the radiological.

Once we've done that characterization, we then get into our planning to start the removal. Through that removal phase, we are looking at our integrated waste strategy and identifying how can we divert some of this waste from the more radiological and we can sift this through either recycling, can we minimize this so that it would potentially require to go into disposal of a nuclear facility.

I think maybe I'll stop there.

Mr. McBrearty provided a lot of information, but I just wanted to sort of point out the general process that we follow in order to characterize what hazards we need to deal with and then we follow through our decommissioning process in order to safely manage those hazards.

MR. DERMARKAR: Thank you, Mr. Schruder and Mr. McBrearty.

For the record, Commissioner, there's one

item that I would add. Mr. Schruder touched on the planning, the preparation and the characterization work that goes on in each and every facility that we will remediate. This is really painstaking work where, you know, there's intensive surveys to understand the material composition of anything that we're going to go and work on from the hazardous material, radiological, or as Mr. Schruder mentioned, electrical or other hazardous energy, and that there is just an incredible amount of effort that goes into that.

One other item I would point out is the actual demolition of these buildings with radiological hazards is very complex, is very painstaking to ensure the safety of our own personnel and to ensure the safety of the environment. Those principles are front and foremost for us as we conduct all these operations.

Thank you.

MEMBER MAHARAJ: Thank you.

I do have two follow-up questions on this topic, if I may.

The first question, then, is perhaps for clarification. The waste from these buildings that are being demolished on the campus that is radiological in nature is the waste that you are contemplating storing onsite. Is it fair to say that the rest of the waste that

is classified non-radiological is being moved offsite to ordinary disposal facilities?

MR. McBREARTY: Commissioner, thank you very much for that question.

Mr. Schruder, I'd ask you to comment more specifically on the Commissioner's question.

MR. SCHRUDER: Yes. For the record, my name is Kristan Schruder.

That is correct. Through our waste practices we are minimizing any sort of waste that we need to maintain onsite for future disposal on our radiological. There may be also some chemical mixed waste where we have -- where there is some sort of chemical as well as radiological that we need to maintain onsite and deal with appropriately, but otherwise we are looking to see what can we send offsite, whether that be for recycling, whether that be for ordinary waste disposal practices.

MEMBER MAHARAJ: So the impact, then, is localized as well as offsite insofar as you will be impacting landfills and other disposal sites that are more available in a general context, is that right, because you're going to be delivering to those other sites?

MR. McBREARTY: Commissioner, this is Mr. McBrearty, for the record. That's correct.

MEMBER MAHARAJ: Okay.

One more question related to this topic and then I'll let my colleagues have their turn.

In your presentations you spoke a lot about the classification of waste and the different kinds and levels of radiological waste, and we've now talked about non-radiological waste. What if any plans do you have to look at technologies that could potentially reduce the classification of radiological waste from say an intermediate to a lower level? Is that part of your plan?

MR. McBREARTY: Commissioner, thank you very much for that question. I think it's actually very good and hits the point of some of our science and technology programs, but I would like to turn it over to Ms. Meggan Vickerd, who is our general manager for waste services. Ms. Vickerd is an expert in this area, so over to you, Ms. Vickerd.

MS. VICKERD: Good morning. Thank you for the question, Commissioner.

My name is Meggan Vickerd, for the record.

As I indicated, yes, we do look at ways we can optimize the type of waste categories that we might be producing and try to minimize the volume of higher-risk categories, and that is more -- there's more options and it's more cost-efficient or a more effective management of resources by evaluating how we can process a certain waste

form to lower its waste classification, for example, if we have an intermediate-waste category which might have some Carbon-14, can we remove that particular radionuclide in order to reclassify that volume of waste as low level.

We also, according to Canadian nuclear standards, look at the length of time that -- even some of our intermediate-level waste -- when it was originally generated, say decades ago, recharacterizing it now to see if sufficient decay has happened and that can be recategorized as low-level waste, so we can look at technologies where we can reduce or remove radionuclides in order to reclassify, but we do also take credit through our characterization process of the obvious in physics, the natural decay that happens, and make sure that we reclassify waste as appropriate.

Thank you.

MEMBER MARAHAJ: Thank you very much.

THE PRESIDENT: Thank you.

Dr. Berube, please.

MEMBER BERUBE: Thank you for your presentation. I really appreciated the actual video. I'm pretty sure it's probably going to be an effective recruiting tool for you. I was compelled, so we'll leave that there.

Let's ask a question. I'm actually

interested -- you mentioned that you're looking at fusion research onsite at some point in the future, so are you looking at fusion research in terms of power generation or what is the primary application?

MR. McBREARTY: Commissioner, once again this is Mr. McBrearty, for the record.

We have a long history of expertise in tritium science. Tritium science is a key component of potential fusion energy reactor systems. We are not looking at this point of actual construction of a fusion energy reactor at one of our sites; we at this point are looking, I think from a very promising aspect, at how do we interface and enable the proposed prototype reactors, prototype fusion reactors, in the world to be able to utilize our technology and our expertise.

I would ask my VP for science and technology, Dr. Jeff Griffin, to give a few more details in that area.

Dr. Griffin.

DR. GRIFFIN: Thank you, Mr. McBrearty.

For the record, I'm Jeff Griffin, vice president of science and technology at the Canadian Nuclear Laboratories.

To expand on what Mr. McBrearty mentioned, we are not working directly, as he said, on fusion reactor

projects; we are working with a number of companies. Actually, we have some projects around the world. What we're providing there is our expertise in tritium management, tritium storage materials and that sort of thing, so it's really more about the packaging, transport and management application of the tritium as opposed to the fusion component itself.

Thank you.

MEMBER BERUBE: Does that imply that you're going to get into the tritium production business as well? Obviously, you have plans to do D2O production with tritium removal, so I guess that would somehow fit into a plan at some point. Is that correct?

MR. McBREARTY: Commissioner, thank you for that question.

I will ask Dr. Griffin to once again handle that question.

DR. GRIFFIN: Thank you.

Jeff Griffin, for the record.

Yes, we are contemplating a deuterium, as you said, or I guess what we would call a detritiation facility or a heavy water detritiation facility, and the tritium that comes out of that of course could be used actually for fuel for fusion. You know, there are companies, actually some local companies, that use tritium

in exit signs, we're doing research with it, so there's a number of different applications, but that would be an obvious source of the tritium, yes.

Thank you.

MR. McBREARTY: This is Mr. McBrearty once again, for the record.

I think I would just kind of clarify that we are not looking at large-scale tritium production, this would be -- the production that we are looking at from our detritiation of heavy water would be, you know, stored on the site, but it makes it available, as Dr. Griffin pointed out, for use for potential fusion reactors in a deuterium tritium process or for other commercial aspects that we presently engage in.

MEMBER BERUBE: Thank you.

THE PRESIDENT: Dr. Lacroix.

MEMBER LACROIX: First of all, thank you very much for providing us with an overview of the activities at Chalk River. I really appreciate that. Thank you very much.

On a light note, I was a bit surprised at the rotational speed of the wind turbine in the video, so you could check it. I'm not sure.

Anyhow, aside from the scientific and technical challenges, what are the issues, the main issues,

the main concerns, barriers and threats that could affect or jeopardize CNL's and CRL's future plans? By threats I mean threats that could come from inside the organization, like limited human resources or financial resources, and threats that could come from outside the organization, such as the nuclear industry itself, government policies, regulations or over-regulations, public perception, communication and education? Could you comment on this, please?

Thank you.

MR. McBREARTY: Commissioner, this is Mr. McBrearty, for the record.

I will try to break that down in where we think we are going and what we look at from an opportunity and a threat perspective to our site.

Obviously, just from a financial standpoint of funding, government funding that we receive today, we receive funding to support our federal nuclear science and technology fund, but about half of our revenue to support our science and technology mission is actually commercial revenue that we must generate and so, as a business, and we are actually a little bit different than other GOCO models that exist in the world which are heavily, heavily government funded in S & T, we must, you know, make up a good portion of our own revenue ourselves,

so from a threat standpoint I don't necessarily look at this as a threat, I look at it as an opportunity for the entire nuclear industry to work together to enable not only success for us, success for other companies in the nuclear research arena in Canada and throughout the world, but also success for our utility partners. If we can provide, you know, high-quality, high-tech support for our utility partners in Canada and abroad, that itself is not only a revenue generator, but it also improves our reputation.

I think you brought up a very good point, it's something that hits us even today as we speak, which is the availability of human resources. We are very much in a competition for the "best and brightest" folks from around the world and it is a -- you know, the recruiting abilities that we have, we have to continually hone those. Chalk River is not located in a large metropolitan area, which at times makes that a bit challenging, but also I would say that's actually an advantage to some of our recruiting.

One thing I would say, though, and I'm not sure you could say there's a silver lining to the pandemic, but for us, when the pandemic started, we were actually, you know, forced into a lot of remote work. What we found in reviewing and analyzing that, we were actually able to open the aperture for people who don't necessarily need to

come to our location but who can continue to provide incredible not only scientific, but engineering and financial contributions while staying, you know, 1,000 miles away. Those are a couple of areas.

We are concerned -- I shouldn't say concerned, we want to make sure that our activities here are in concert with all of the regulatory practices across the country and across the world, and that's very important for us to be able to do. For me and for my staff, we have to continue to demonstrate, on a daily basis, and I think this is what's important, the onus is really on us that we, you know, are excellent in all of our operations and we provide the Canadian taxpayer a real return on that investment. You know, when we look at the investment that Mr. Dermarkar and we touched on for infrastructure, but also for our environmental remediation program, it is very important that folks understand what they've paid for and what we've been able to accomplish, so when I look at it I think the future really is bright. In any business there's always going to be opportunities and threats out there.

I'll just stop there. Hopefully, that answers most of the question.

MEMBER LACROIX: Absolutely. Thank you.

THE PRESIDENT: Okay. Thank you.

Dr. Demeter.

MEMBER DEMETER: Thank you very much for the very informative slide deck and presentations. It's exciting to see some of the innovations I have to say.

I may have some medical questions later based on my other background, but the question I had is for the NRX and the MAPLE-I and MAPLE-II reactors. You talked about timelines to the final decommissioning of everything in 2070, I think. I'm trying to choose the most appropriate -- what are your considerations for the final decommissioning of these reactors because they're in safe storage mode right now?

MR. McBREARTY: Commissioner, thank you very much for that question.

Once again, this is Mr. McBrearty, for the record.

I think I will turn this one over to Mr. Kristan Schruder, who will give you a little bit more detail on our eventual plans and the end state for both the NRX and NRU reactors.

Mr. Schruder.

MR. SCHRUDER: Thanks, Mr. McBrearty.

Kristan Schruder, for the record.

It's an excellent question, Commissioner.

In respect to NRX and the MAPLES-I and II, speaking first to the NRX reactor, CNL actually has

approval to begin decommissioning of the NRX reactor and we have started our decommissioning activities. We are in what we call phase one of that project and we're really in that sort of characterization and developing the plans for our future decommissioning activities. We are looking at probably a 10 to 15-year timeframe to complete the decommissioning of the NRX reactor. Some of the considerations that we have in that timeframe and as we're moving forward is really the availability of waste disposal facilities.

We've been focused -- as Mr. McBrearty mentioned and you heard in the video, you know, we've taken down 105 structures at our Chalk River Laboratory site in the last -- since 2015. A lot of this material we were able to divert, you know, away from any sort of radiological storage because they were clean waste or we were able to recycle it, but as we get into some of our more hazardous facilities, such as the NRX reactor, and into the MAPLES-I and II, but maybe not those ones because they never went into full operation, we do have significantly more low-level waste that we need to deal with and intermediate-level waste, so one of the key considerations is do we have sufficient storage or disposal capabilities available for that waste.

And that is one of the reasons why we, you

know, sometimes push off the beginning of our calandria, which is, you more intermediate-level waste, and ensuring that we have the sufficient storage space for that intermediate-level waste.

So the 10 and 15 years takes into consideration, you know, a proposed solution for our low-level waste disposal as well as additional capacity for our intermediate-level waste such that we can dispose of -- store that, sorry, while we look forward to disposal.

With regards to the MAPLES 1 and 2, as you pointed out, those are in safe storage. Those reactors are likely a little bit further out that we would be dealing with those. The hazard associated with those facilities is a lot less than some of our other facilities. So we're focusing on our higher-hazard facilities, ones that have a bigger risk to the public and the environment, and dealing with those first.

So hopefully that answers your question.

MEMBER DEMETER: It does, generally, yeah.
Thank you.

THE PRESIDENT: Mr. Kahgee.

MEMBER KAHGEE: Good morning. Thank you very much for your presentation.

I just want to pick-up on a couple questions, short questions, with respect to the waste. I'm

curious, what role has CNL and AECL played in discussions concerning the development of Canada's integrated waste management strategy?

MR. McBREARTY: Commissioner, thank you very much for that question.

I think what I would like to do at this point, for the larger picture, I will ask my colleague, Mr. Dermarkar, to start, to answer the first part of that question. And then I'll follow-up from there.

So Mr. Dermarkar.

MR. DERMARKAR: Thank you very much for that, Mr. McBrearty. And thank you for the question, Mr. Kahgee.

As you're well aware, NRCan is leading the effort to advance or to refresh the nuclear waste policy, Canada's nuclear radioactive waste policy. And as part of that, they've commissioned a nuclear waste management organization to take the lead on the integrated waste strategy.

AECL is contributing to that directly through the public consultation process that the NWMO has been hosting. And we're just contributing to it as one of the waste owners who has knowledge on this.

From there though, we are keeping an arm's length because the policy is being developed by NRCan.

I'll turn it back to Joe, if he wants to add anymore -- actually, before I do that. The lead for waste and decommissioning is Alistair MacDonald, and I'd like to give him a chance to contribute to this.

MR. MacDONALD: Thanks, Mr. Dermarkar. And, yes, for the record, Alistair MacDonald, Vice-President of Decommissioning and Waste Management within AECL.

I would just endorse the comments that Fred's made, that AECL, they are contributing input to the policy as other organizations across Canada are similarly, and to the waste strategy and refresh that's been made by NWMO.

And I'd probably just take the opportunity to stress that, you know, as responsible owners, you know, we are continuing to do work to make sure that we have good plans in place for all of our waste across all categories right now.

So I'll probably pause there. Mr. Dermarkar.

MR. DERMARKAR: Thank you, Alistair.

THE PRESIDENT: Mr. McBrearty.

MR. McBREARTY: Yes, this is Mr. McBrearty, for the record. I'd like to just kind of round-up the question on the integrated waste strategy.

As Mr. Dermarkar pointed out, it is an NRCan-led effort with the NWMO as a key component.

Our waste experts are working very closely with NRCan and with NWMO to ensure that we have the proper input from our expertise looking for not only what we have present on the site, but what we are looking to be able to generate into the future.

We have a very unique site when you look at the types of radioactive material and waste, especially compared to many of the power plants. We are a research campus with multiple research reactors, and the types of materials that we have dealt with over the last 70 years as we have advanced not only the power industry in Canada, but also the medical isotope industry, are a little bit different than the standard power industry waste stream.

So it's important that we have a voice and are able to describe some of the unique facets and features of our inventory to ensure the future plans and make sure that they cover this unusual type of waste.

Thank you.

THE PRESIDENT: It may be a good time to bring in our representatives from NRCan and see if they wish to add anything to this question from Mr. Kahgee.

And I know both the policy review and this integrative risk strategies work in progress, but even at

this stage do you see any potential implications for the CRL site with this work underway?

So over to NRCan please.

MS. JOHNSON: Good morning. For the record, my name is Mollie Johnson, I'm the Assistant Deputy Minister for Low Carbon Energy at Natural Resources Canada. And I'm speaking to you from the unceded territory of the Algonquin Anishinaabe people.

On the question of sort of the interplay between the review itself as well as the strategic policy, I'd say two things. The first is around certainty. And so this was raised earlier, and sort of what's the process between how these two pieces work together?

The review itself is ongoing, but there are a number of projects we know that are in the cue and those will continue to move forward and the review itself will continue. So we want to make sure that there's certainty for the work that is ongoing.

In relationship to the policy and then the strategic review, Natural Resources Canada itself is responsible for the policy framework. The waste owners then are ultimately responsible, as was just set out, for how that is strategically implemented.

So, you know, there's going to be the policy framework, how do we ensure moving forward we've got

a very strong approach to how radioactive waste is managed in Canada. And, in a sense, is future proof for how we move forward. But then strategically, how is that done? That's where the waste owners will take that responsibility working with the NWMO.

So we'll just add that to the record.

Thank you very much.

THE PRESIDENT: Thank you. Mr. Kahgee, any follow-up questions?

MEMBER KAHGEE: I just had one more question. I think that was really helpful.

I just want to shift gears a little bit and focus on the relationship piece.

I was very appreciative of Mr. Dermarkar's comments with respect to AECL's commitment to reconciliation and say *chi miigwetch* to reminding us all of that dark history that Canada has and the responsibility that everyday Canadians carry to make sure that we do better and certainly the role Indigenous people, my people, have to play in that conversation.

As we know, reconciliation is more than just words, it's reflected in our actions. And, as you say, your historical and ongoing operations are situated in the traditional territory of a number of First Nations.

What efforts are being made to address

potential issues of concern regarding historical and ongoing operations at the Chalk River site with First Nations? And going forward, do you envision future projects being done in partnership with First Nations?

MR. DERMARKAR: Thank you for that question, Mr. Kahgee. For the record, my name is Fred Dermarkar.

Our main focus at this point is to develop long-term relationship agreements. And, by that, I mean we are meeting regularly with First Nations people and we're sharing with them what we're doing at the site. We're hearing their thoughts on how our planned activities should be -- what we need to take into consideration in our planned activities.

And we're doing that above and beyond what's in the impact assessment process which of course is a legislated requirement. We're doing this on an ongoing basis in terms of developing this long-term-relationship.

And what I would like to do is invite Maude-Émilie Pagé, who is leading this effort on behalf of AECL, and then ask her to include CNL, because AECL and CNL work very closely together, to talk firsthand about the relationships that what is actually going on at these regular discussions and how we're inviting the local Indigenous communities to participate.

And perhaps Maude can talk specifically about CNL. And I know this is the future of the Chalk River site, but she can also talk more broadly about what we're also doing at the Whiteshell site.

So, Maude, over to you.

MS. PAGÉ: Thank you, Fred. So, for the record, my name is Maude-Émilie Pagé, I'm the Director of Communications and Government Reporting for AECL.

And so Fred outlined it quite well, in that there's a lot of work going on with Indigenous communities around the Chalk River site, but also, as Fred outlined, all of our sites across Canada.

Some of the initial work started as a result of some of the projects that are underway, but certainly have evolved into discussions around relationship building more broadly.

And, as Fred outlined, in many cases we are currently working on developing long-term relationship agreements with Indigenous communities that focus on some of their specific interests, such as environmental monitoring, opportunities for participation in the future of the site, as you outlined, including job opportunities, opportunities for business engagement.

But also looking at the future and to future work that we may do in science, for example, for

partnership opportunities.

So that's what we're working with people and with communities across all of our sites, looking at specific interests and wanting to rebuild partnerships that are based on specific interests.

Before I just pass it over to my colleagues at CNL to maybe expand a little bit on that, I would point out that it also includes, on our side, providing capacity funding for a lot of the communities to be able to participate, both from a technical perspective.

Some of our work is more technical, so they can bring in resources to be able to help them understand and sometimes translate between the scientists and the Indigenous knowledge. And it also means for us to bring in the Indigenous knowledge into our activities and sites, environmental monitoring and cultural protection being first and foremost and, in some cases, includes the development of guardian programs.

But maybe I'll stop here and pass it over to my colleagues at CNL.

MR. MCBREARTY: Ms. Pagé, thank you very much. This is Mr. McBrearty, for the record.

I don't think we can overstate our commitment and the need to ensure that we have proper communication and the right level of interaction with First

Nations and with Indigenous communities. It is really the future of the site that we are working/looking at here. And we have multiple activities underway at any given time.

The Chalk River site is probably a very good example of the multiple aspects of our Indigenous engagement program. It is a very high-level and very well, I think, thought out program.

But I would like to turn the floor over to Mr. Pat Quinn who has been engaged in these activities for many years.

So, Mr. Quinn, over to you.

MR. QUINN: Thank you very much, Mr. McBrearty. For the record, my name is Pat Quinn, I'm the Director of Corporate Communications for CNL.

As my colleagues have stated, together CNL and AECL have been very active in growing its Indigenous relations activities over the past six years. And I think a key to the Commissioner's question is the actions that have been taken rather than just the talking.

We have embarked on a very important initiative on developing longer-term relationships that are aligned with, you know, the vision of the sites. And through our discussions with a variety of communities we've been able to identify priority areas of joint interest.

As my colleague from AECL had identified,

environmental monitoring is a very example of that or the preservation and protection of cultural heritage. But we also look at, you know, economic development.

So the actions related to that on the environmental monitoring side, for instance, we are looking at the incorporation of Indigenous participation in our monitoring activities at the Chalk River site. But we're also working with communities to build monitor or guardian programs.

And so this is where members of the communities are actually working on the site alongside and making a contribution where we're able to incorporate Indigenous knowledge and understanding into the way we work, and they learn a little bit about how we work and apply the science related to our monitoring activities.

On the partnership side I see great opportunity there in the sense that we've worked on what I would say economic development initiatives with some communities. And we're presently focused on our supply chain and improving the way our supply chain is accessible to Indigenous communities, and we're presently preparing an Indigenous procurement policy.

But like down the road I believe that through the long-term relationship agreements we're going to have those opportunities to talk about, you know, bigger

initiatives and broader initiatives that could see actual partnership opportunities.

But, as Fred said in his opening comments, I believe that this is, you know, an activity and I think many people on the call understand that this is something that, you know, evolves over time. And key though, is building that relationship that provides Indigenous communities that meaningful opportunity to engage with, you know, AECL and CNL.

MR. DERMARKAR: Thank you very much for that, Mr. Quinn. If I could just add to close it out. The idea of relationship also extends all the way up the line.

Joe and I have, together, met with leaders of Indigenous communities and individually. So, for example, late last year, in December of last year, Joe and I had the opportunity to meet with Chief Jocko and her counsel, the Algonquins of Pikwakanagan First Nation, and it was a very engaging discussion because we got to hear firsthand what their perspectives are.

In August, I met with Chief Derrick Henderson of the Sagkeeng near Whiteshell. And Joe and I met with President Chartrand of the Manitoba Métis Federation.

Again, this dialogue I found personally invaluable as well as enriching because, I have to confess,

I came up through the Canadian educational system and, Mr. Kahgee, I'm sure you're well aware, we had a blinkered view of Canada's history, to put it kindly.

And I'm learning as well through these discussions and finding it very enriching as well as very informative in helping me to understand firsthand what the history has been and what we need to do moving forward to build relationships and make them meaningful.

I'd like to give Joe an opportunity to perhaps share his personal views on these one-on-one encounters that we've had with local Indigenous communities.

Joe.

MR. McBREARTY: Thank you, Mr. Dermarkar. Mr. McBrearty, for the record.

I think Fred really summed it up very well. One, I'm an American, so I have even less, you know, background in the history.

But what I have been able to witness and really start to enjoy and embrace is the close cooperation and the need for not only, you know, our businesses and the government, but everyone to understand what true history was. And for us, as we go forward, to be able to mark that and to be able to show respect and acknowledgement and, frankly, learn from our histories.

That's what I've found to be very important. I've actually had the honour to participate in several ceremonies, which I found very touching. And, you know, for a very highly technical engineering guy like me, I found them very emotional and very warm. And I think that's a message and it's an attribute that we must continue to embrace, because that is the way that we will succeed. We will succeed with everyone working together.

And there are things, as Fred mentioned, wrongs that must be righted. And I think it's important that we are able to do this not only on a government or corporate level, but I think what really matters is on the personal level. When you, as a human being, can fully understand the trials of others and be able to spread that word, I think that's really really important.

And I would conclude with that, sir.

MEMBER KAHGEE: I'll extend chi miigwetch for that, and I look forward to hearing how your journey progresses and looking forward to things moving forward in a good way. So chi miigwetch for sharing that and your personal reflections.

And I'm very pleased to hear you had the opportunity to go to a ceremony, because that has a profound impact when you understand what those ceremonies are about, what they're meant for, and being part of that

is certainly a once-in-a-lifetime experience. So I'm glad to hear you were able to experience that.

Chi miigwetch.

THE PRESIDENT: Thank you. Mr. McBrearty, maybe a couple of questions from me. One perhaps a request. As I watched the video, as I read your submission, as I heard yours and Mr. Dermarkar's remarks, the plans for the campus are almost mind-blowing.

And as I tried to focus on -- so what are these licensed activities that we, as Commission Members and members of the public who appear in front of us are concerned about, and even if I -- never mind seven years, but even up until 2030, you know, there's absolutely the environmental remediation, there are SMR prototypes, there's detritiation facility, there's cyclotron, perhaps consolidation of low, intermediate, maybe even high-level waste from other AECL on site, and so on.

Are all these captured in one place so it'd make it easy for us to say, hey, this is what could be on their work play say until the end of 2030, when it comes to activities that are of interest to the CNSC and to the Commission?

MR. MCBREARTY: President Velshi, thank you very much for that question, and it's incredibly pertinent.

And I'll just start by saying many of these projects are recently underway, recently meaning within the last one to two years.

But we follow -- CNL is required to follow, you know, AECL's guidance and within the AECL corporate plan. And I will ask Fred to comment a little bit more in detail. We, you know, many of these items are covered.

I would like, from the licensing perspective, I would like our Chief Nuclear Officer and actual licensee, Mr. Phil Boyle, to give a little bit more detail on how we look at the licence process, especially for some of these because not all of these are created equal based on the level of activity or the level of -- and I guess level of activity. I'll just leave it at that.

It's important that, I think, the Commission understands that not all of these are at the same level of scrutiny.

So, Mr. Boyle, I would just ask you to just comment and give a brief overview of our regulatory internal process and how we engage with CNSC.

MR. BOYLE: Good morning. I'm Phil Boyle, I'm the Chief Nuclear Officer and the licence holder for the Chalk River site.

Joe was describing that these projects are

not necessarily all at the same level, not only of regulatory interest but of development or of even certainty.

So we do, in fact, have a process that looks at the specific activities that we envision for the project, identify how it fits in the environmental assessment requirements that are regulatorily required, legislatively required, and how they fit into the CNSC requirements for regulation.

We have provided CNSC our anticipated sequence of activities that we think the Commission may have to act on. We have, most recently, I think, laid that out for five years. That is not something that is certain, obviously, because as we proceed down these various paths there may be some adjustments as to what we conclude is the best thing to do or how it fits into the regulation.

But I think the key element relative to the question, President Velshi, is that we are not holding these things and then bringing them to CNSC at some point and saying, "We need activities". There is visibility of what we think needs to happen relative to these various projects.

Thank you.

MR. MCBREARTY: Mr. Boyle, thanks so very much for that.

I'd like to ask Mr. Dermarkar just to comment a little bit since we are carrying out AECL's program of work. So Mr. Dermarkar, if you care to comment?

MR. DERMARKAR: Thank you very much, Mr. McBrearty, and thank you for the question, President Velshi.

AECL publishes and posts on its public website a corporate summary report that outlines all its major activities and many of the items, if not all of the items, that are in the video would be captured in that corporate summary report. And that provides a very useful document for the public at large to keep aware of what's going on.

Now, at the CNSC level, there also needs to be an awareness on a more intimate basis as to what's going on. And to that end, Joe McBrearty and I participate in trilateral meetings together with Ramzi Jammal of the CNSC and some of his key DG -- Directors General.

The intent of those is to talk in a little bit more detail about what were doing at the site and discuss potential implications that might have on resourcing at the CNSC level.

And I'll turn it back to you, President Velshi, in case you would like Mr. Jammal to provide his perspective on how -- on the effectiveness of those

discussions and how they help to inform the CNSC of AECL's and CNL's plans.

THE PRESIDENT: Thank you, Mr. Dermarkar. I think where I was really wanting to go with this and it really comes to why we have this agenda item today and kind of the genesis of it was what comes in front of the Commission are individual projects, without this broader context. Today is providing that, and yet, I found it was still a bit fragmented and not all neatly packaged in one piece.

So perhaps, Mr. Dermarkar, I'll have a look at your annual report and see if that meets the needs. And if it doesn't then we'll reach out to you, but thank you for that.

My next question, Mr. McBrearty, is are you part of an international network of science and technology laboratories, and particularly when it comes to nuclear technologies and research, I wondered if you had any international customers and do the different regulatory practices pose a particular challenge for you as you either work in collaboration or in partnership with other laboratories or if you're providing service to others?

MR. MCBREARTY: President Velshi, thank you very much. This is Mr. McBrearty, for the record. It's you know, obviously a very good question as we

continue to grow our businesses or our business. We do have international relations through AECL into the US Department of Energy and some of their laboratory structures. We have memorandums of understanding with several scientific organizations throughout the world, including the UK and the US.

As most folks may know, we conduct business via our CANDU Enterprise in Korea and in China and Romania.

So we do not have I would say -- I don't think we have real issues in managing the regulatory requirements in our international arenas.

It's really important for us to ensure that the agreements that we have are comprehensive and reflect the CNSC's and Canada's regulatory requirements for us.

I would like to just turn it over for just a minute or two to Dr. Jeff Griffin who can probably give a little bit more detail on some of our activities on the international scale.

DR. GRIFFIN: Thank you, Mr. McBrearty. For the record, Jeff Griffin of CNL. I'll just try to expand, just as Joe said, just for a minute or two on that.

So we do have -- through AECL we do have work or collaboration discussions between the UK -- with

the UK, Canada and the UK, Canada and the US. We have strong engagement with IAEA as you might expect, the Nuclear Energy Institute.

We, just yesterday, in fact, participated with other countries in the National Lab Energy Summit that was sponsored out of the UK by the National Nuclear Laboratory. So those are sort of the higher-level type interactions.

In terms of the work or the commercial work, as Mr. McBrearty indicated, that's actually done with partners, such as CANDU Energy and other countries. So it's support for the CANDU industries there. So from a regulatory framework it's really done within that framework and it's part of a team that goes over and does the work, supporting outages and that type.

MR. MCBREARTY: And I think I would just add -- Mr. McBrearty again, for the record, we have a very close working relationship with parts of the US Department of Energy, especially in our environmental remediation program.

I mentioned in my remarks that we have repatriated a significant amount of our highly enriched and low enriched uranium assets back to the United States.

The coordination and ensuring that regulatory requirements were met, not only on our side of

the border but on the US side of the border, are things that are worked out in advance and we work very closely, in particular, with the US National Laboratory system to ensure that material that may be shipped to them meets all of their requirements. This has been a longstanding process.

We actually, about two months ago, we had a team of US National Laboratory experts come up and look at our remediation efforts that we're going to conduct on the NRX. And I think the ability to share those experiences, actually look it up, reactors in decommissioning provided the US team with some valuable experience.

THE PRESIDENT: Thank you very much for that.

Ms. Maharaj, any further questions?

MEMBER MAHARAJ: I do actually have one further question, Madam Velshi. And Mr. McBrearty, you've given me the perfect segue. My question was about the repatriation of materials to the United States.

When I look at the volumes of materials, they're quite impressive that we've been able to repatriate that amount of material back to the US.

My question is really quite -- just a little bit future looking. Is there more that will be

repatriated, and what kind of volume, what kind of, I guess, amount of material for the United States are we holding onto?

MR. McBREARTY: Commissioner, thank you very much for that question. And I think it's a very pertinent question.

The repatriation of the existing material has been HEU and uranyl nitrate so far, but we have several other areas, several other things that we expect to be able to send back to the United States.

So those include booster rods for the Gentilly-1 plant, some HEU scrap metal, it's harder to describe HEU scrap metal but we do have some of that, and then some further low enriched high assay material which will go back to the United States, amongst other things. And I'll just kind of leave it at that from a security perspective.

But I've asked -- I'd like Mr. Schruder to maybe expand on that just a bit to give a little bit more detail on the amount and size of the remaining material. Mr. Schruder?

MR. SCHRUDER: Thanks, Mr. McBrearty.

I believe Meggan Vickerd, our General Manager for Waste Services, is best placed to answer this, but I'll start just by saying that we continue to look for

opportunities for repatriation of our various materials and we work very closely with our counterparts in Atomic Energy of Canada in order to negotiate those contracts.

So perhaps I'll just pass it over to Ms. Vickerd just to add a little bit more detail as she is more knowledgeable in this area than I am.

MS. VICKERD: Meggan Vickerd, for the record.

Quite honestly, I think it's been covered quite well by Mr. McBrearty and Mr. Schruder already. The main key message is we continue to look for opportunities where we can use that agreement and repatriate and respect the non-proliferation agreement and then that way it addresses some of the high-level waste liabilities that we're managing on behalf of Canada.

Mr. McBrearty.

MR. McBREARTY: Thank you, Ms. Vickerd. Commissioner, does that answer your question?

MEMBER MAHARAJ: It does. My only follow-up is, are there any new materials that are being created or brought into Canada that would have to be repatriated or once we do this, are we done?

MR. McBREARTY: For the record, Mr. McBrearty.

Commissioner, no, we are not bringing in new materials. We should be -- I would say we are done, you know, with the amount of material that we have identified. This program has been in place I think since the early 2010 timeframe with the global threat reduction program and it's been a very successful program for us to be able to repatriate and really reduce the risk on our site.

MEMBER MAHARAJ: Perfect. Thank you so much.

MR. McBREARTY: Yes, ma'am. Thank you.

THE PRESIDENT: Okay, Dr. Berube.

MEMBER BERUBE: Yes. I have one question pertaining to actually the hydrogen separation research going on. I take it that that is looking at potential commercialization efforts at some point and I think that AECL spoke to us a little bit about this in the past but we didn't really get into a lot of specifics on the actual separation technique and scalability of that. If someone could speak to me about that, I would appreciate it.

MR. McBREARTY: Commissioner, thanks very much. Mr. McBrearty, for the record.

I think Dr. Jeff Griffin is best positioned to address that question. I think I would point out before Dr. Griffin speaks that our portfolio in

hydrogen has looked at hydrogen production and separation capabilities in the past. Now, we are also looking -- we are experts in hydrogen safety, but also in the potential for hydrogen storage, hydrogen storage in more unique ways than just putting in a tank or a pipe or maybe in a cavern.

So I will turn it over to Dr. Griffin for some more details. Dr. Griffin.

DR. GRIFFIN: Thank you, Mr. McBrearty.
Jeff Griffin, for the record.

Actually I think Joe kind of covered some of the things I was going to say pretty well, but just to maybe expand on it slightly.

Actually our work in hydrogen is kind of connected to all stages. We're doing work on infrastructure design such as techno-economic assessments to kind of understand where hydrogen can be economically deployed. We are doing quite a bit of work on large-scale hydrogen production, including incorporation for clean fuel. We're doing work on the safety solutions that can help inform our regulatory frameworks for hydrogen use and storage.

We are doing, as Joe said, work directly on hydrogen storage, chemical storage, solid state storage as well as other means such as underground storage, things of that sort. It's actually working with different

companies, looking at different partners and proceeding along those lines. And so I'll stop there.

MR. McBREARTY: Dr. Griffin, thanks much. Mr. McBrearty again, for the record.

Commissioner, one area that I would add -- and this is more a futuristic approach from CNL -- is the incorporation of hydrogen production into the ecosphere that a small modular reactor could operate in with other clean energy technologies. You know, the ability to produce not only electricity but also high-temperature heat is key to some of the processes for hydrogen production. Between electrolysis, high-temperature heat and potentially catalysis, those are all areas that we are considering, but those projects are not developed anywhere near as far.

I do see that Ms. Johnson from NRCan has come on screen and I think I'll turn it over to Ms. Johnson for comments. Ms. Johnson.

MS. JOHNSON: Thanks very much.

Mollie Johnson from Natural Resources Canada, for the record.

Just to complement the comments that have been made, I just wanted to flag that December of 2020 was a bit of a busy time for our team and for the Government of Canada. We launched both the Small Modular Reactor Action Plan and the Hydrogen Strategy at the same time, and so the

work that is being done here is very complementary but also sort of part of an economy-wide call to action for the opportunities for hydrogen in our economy. We know that achieving the government's climate goals by 2030, 2035 and 2050 is going to require electrification, it's going to require more clean fuels, and sort of the work that was just described is going to be a big part of both of those.

And so we are really pleased that AECL and CNL are part of the Hydrogen Strategy working tables and so we're bringing folks together so that -- you know, we're sort of pulling the whole Canadian team to look at how these technologies can fit together, our S&T can fit together and we can really sort of meet where Canada's natural advantage in this area as we're moving forward. So I just wanted to add that context to the good work that was described.

MR. McBREARTY: Thank you, Ms. Johnson.

Commissioner, that concludes our answer.

If any further questions --

MEMBER BERUBE: Well, thank you for that.

I just was looking at the interdependence of projects and that basically answers what I need to know there. Thanks.

THE PRESIDENT: Thank you.

Dr. Demeter.

MEMBER DEMETER: Hi. Just noting we're

almost out of time, but I wanted to get a sense of your low-dose radiation research agenda because I think it plays well into the basic science which drives a lot of other regulatory guidelines and requirements. So if your low-dose radiation research a cell biology approach, an animal approach or both? I just want to know the scope of your research and what you're assessing the biological effects on.

MR. McBREARTY: Commissioner, thanks very much. Mr. McBrearty, for the record.

I will ask Dr. Griffin to take that question. Dr. Griffin.

DR. GRIFFIN: Yes, thank you. Jeff Griffin, for the record.

Actually it's I think a little bit of both. Certainly the animal dose, we are doing the low-dose radiation studies, as you just mentioned.

Let me just talk real quickly. In the whole area here, the radiobiology health area, we're actually doing low-dose radiation studies, as you mentioned, we're doing radioisotope production R&D, radiological protection technology studies, and then diagnostic drug evaluations, pretty clinical type work. We actually are working to get GLP certification, which we hopefully will have in the next couple of months.

So we're moving forward pretty strongly in this area. A lot of the work we're doing is actually through AECL with a number of federal agencies and I know we're getting some kind of feedback.

I'm sorry, I can just clarify one more thing, that it is -- to make sure I answered your question -- it is cell and animal.

MEMBER DEMETER: Okay, thank you.

THE PRESIDENT: Mr. McBrearty, may I will ask the last question then.

You mentioned that -- or AECL and you mentioned that early this week you had had a webinar to talk about the plans for the site. I just wondered if you could share with us the level of interest in the webinar, the kind of questions and issues that you got and how well did the webinar go in meeting the needs of the public that we had heard at Douglas Point for instance?

MR. MCBREARTY: Thank you, President Velshi. For the record, it's Mr. McBrearty.

I think the -- I believe the webinar went very well. We had about, I think, 350 attendees via either our website or via Facebook and it was a good representation I think across the community, a lot of industry, local folks in the area and Indigenous participation, which I think was -- which was key and that

was really one of the key components of the webinar, was to reach out to people.

We have talked -- as you said, I think you said it well before, it is a bit fragmented when we go to talk with some folks on all the stuff that we have going on into the future and especially we want to make sure that we put front and foremost, you know, folks' concern about the land and about the future of our site.

The questions centred around -- some centred around waste strategy, they centred around the future of the NSDF, they centred around some small modular reactor and some actinium questions, and then there was a question, once again, resourcing for the site.

And I think it was -- I believe that we were able to reach a good number of interested parties. It is only the first in a series of webinars that we will do.

I will also say that I conducted a briefing with the local Renfrew County Council, our local County Council in the Chalk River area, yesterday and covered many of the same topics.

And so between these, Mr. Dermarkar mentioned earlier that we've had some meetings with senior folks in the Indigenous communities around here, transmitting the same message and allowing folks to understand where we intend to go.

And remember, I would ask folks to remember, this is still a vision, right? Some of these -- I mean all of these are in some different form of maturity and the maturity depends -- is based on project plans, the technical ability of the laboratory to accomplish them, the ability of the federal government or ourselves to finance them, and the ability of us to achieve the proper regulatory approvals. So many of these, as we are starting to do our early planning, are early in the planning cycle.

THE PRESIDENT: Okay. Thank you very much. Thank you to AECL, to CNL, to NRCAN for appearing in front of us today, for answering our questions so fully. We greatly appreciate that and we look forward to hearing more as you appear in front of us with specific applications.

So with that, we will take a break and we will resume with the meeting at 1:00 p.m. Eastern Time.

Again, thank you for your participation this morning.

MR. McBREARTY: Thank you, President Velshi and Commissioners.

--- Upon recessing at 12:00 p.m. /
Suspension à 12 h 00

--- Upon resuming at 1:00 p.m. /

Reprise à 13 h 00

MEMBER DEMETER: I think the President is having some issues with her system, so I will start the meeting and I will proceed as per the agenda.

The next item is a presentation by CNSC staff on the review of the process for Regulatory Oversight Reports, as outlined in Commission Member Document 22-M5.

I will turn the floor to Dr. Ducros to begin this presentation. Please proceed.

CMD 22-M5

Oral presentation by CNSC staff

DR. DUCROS: Good afternoon, Dr. Demeter, and Members of the Commission.

I am Dr. Caroline Ducros and I am the Director General of the Directorate of Advanced Reactor Technologies at the CNSC.

Before we begin, CNSC staff would like to acknowledge an administrative error in Appendix A of CMD 22-M5, page 30 of 74.

The safety performance rating definitions of "Below Expectations" were mistakenly copied for

"Unacceptable". The wording in the document should include both the previous definition of "Unacceptable" and the updated definition as follows.

The previous definition of "Unacceptable" was:

"Safety and control measures implemented by the licensee are significantly ineffective. In addition, compliance with regulatory requirements is unacceptable and is seriously compromised. Compliance within the SCA is significantly below requirements or CNSC expectations, or there is evidence of overall non-compliance. Without corrective action, there is a high probability that the deficiencies will lead to unreasonable risk. Issues are not being addressed effectively, no appropriate corrective measures have been taken and no alternative plan of action has been provided. Immediate action is required."

And the updated definition is:

"One or both of the following

criteria apply:

- Risk associated with a non-compliance or performance issue is unreasonable; and/or
- At least one significant non-compliance or performance issue exists with no associated corrective action."

Staff will confirm with the Registry the appropriate steps to document the corrections and table a new version.

The purpose of our presentation today is to share the results of the CNSC staff review of the ROR process, feedback received, improvements already implemented and to seek the Commission's endorsement of the path forward. It is important to note that the scope of this review was based on internal staff comments as well as feedback received on the Discussion Paper, Public Consultation on the CNSC Regulatory Oversight Report Review, that was published in April 2021.

I will now pass the presentation to Mr. Andrew Mathai.

MR. MATHAI: Thank you, Dr. Ducros.

Good afternoon. My name is Andrew Mathai and I am the Director for the Regulatory Operations

Coordination Division. My division is responsible for the Regulatory Oversight Report Review Team which was assembled to conduct a review of the RORs to the Commission.

I will begin the presentation by describing what the ROR is and the objective for our review.

I would like to start with how we arrived at our current state. The length of the licence period granted by the Commission has varied over the years. Two-year licence periods were common before 2002 and evolved to five-year licence periods in 2002. The first request for a 10-year licence was received by the CNSC in 2005. CNSC staff recommended a longer licence period as the hazards associated with the licensed activity were well characterized, their impacts were well predicted and the risk to the public, workers and environment were low.

In order to maintain transparency and openness over longer licence periods, more reporting tools were established by CNSC staff to present information to the Commission and the public. These included: significant development reports, event initial reports, mid-term reports at various frequencies within the licensing period, and annual RORs.

Prior to 2015, CNSC staff developed a report titled "CNSC Staff Integrated Safety Assessment of

Canadian Nuclear Power Plants” and this was a report on licensee performance.

In 2015, CNSC staff started developing Regulatory Oversight Reports which have since been used as the main reporting tool to present results of CNSC's compliance activities and assessments of licensees' safety performance.

The scope of the ROR has expanded over the years to incorporate feedback from the Commission, the public, Indigenous Nations and communities, and stakeholders. RORs have expanded beyond their original scope and have evolved to be a more complex and comprehensive report.

This was our first review of the Regulatory Oversight Report since its inception. The objective of our review was to examine current practices, review value for effort, identify potential efficiencies for future reporting of RORs to the Commission, and to review and address comments from intervenors and the Commission. We also wanted to ensure that the Regulatory Oversight Report continues to serve its purpose for its target audience.

We want to be clear that the CNSC is committed to meaningful engagement. In this presentation we will propose leveraging other tools or mechanisms at our

disposal, enhancing others and creating new ones as appropriate. The Regulatory Oversight Report is just one of the tools available to help achieve this and not always the best for this purpose.

The remainder of our presentation will go over our review process and results of our review, and we will conclude with asking for the Commission's endorsement of our path forward for 2022 and future RORs.

The next few slides describe where the ROR fits in our overall communications strategies, what the ROR is and how it compares against our international and domestic counterparts.

The CNSC currently has many tools and vehicles to share information. We want to reaffirm that we will continue to provide regulatory oversight and reporting using the most appropriate mechanism, including the ROR, status updates, Event Initial Reports and technical briefings.

The CNSC has many other mechanisms that provide information to members of the public, stakeholders and Indigenous Nations and communities. These mechanisms include but are not limited to the CNSC's reports to Parliament, our public website, social media, public consultation on REGDOCs and Regulations, and other strategies as shown here.

Additionally, "Meet the Nuclear Regulator" sessions are scheduled throughout the year. These dynamic outreach sessions introduce the public to the CNSC and its work to ensure that Canadian nuclear facilities and activities are safe. They are also designed to inform the public how they can participate in the licensing process.

A number of these communication tools did not exist in their current forms when the ROR was first developed in 2015, for example, the Open Government initiative, NGO forums and various engagement mechanisms with some Indigenous nations and communities.

Today, the ROR is just one of many tools available to the CNSC to communicate information. Our new strategy for the ROR, for which we are seeking the Commission's endorsement, aims to better leverage other existing communication tools in order to supplement the information that is provided to the Commission.

Our strategy proposes an increased use of newer communication tools and mechanisms for outreach, which will allow us to refine the format of the ROR to focus on its intended purpose as an information report for the Commission. Overall, we are not reducing the amount of information that we are providing to the public, and in fact, we hope to enhance information sharing.

Transparency and openness are goals for

the CNSC. Our proposed approach will allow us to choose the best tool or mechanism available to share information with the public and Indigenous nations and communities in a timely manner while maintaining the overall objective of the Regulatory Oversight Report.

What is a Regulatory Oversight Report?

The ROR is an information report prepared for the Commission which presents the results of CNSC's compliance activities and assessment of licensees' safety performance. RORs are completed for the entire nuclear fuel cycle and are usually presented annually to the Commission through public Commission proceedings. They assess how well CNSC's licensed facilities and activities are meeting regulatory requirements and program expectations through the comprehensive review of licensing, certification, compliance verification and enforcement activities.

Typically, five RORs are presented at public Commission proceedings throughout the year and include operating nuclear power plants, uranium and nuclear substance processing facilities, uranium mines and mills, the use of nuclear substances and other facilities of public interest.

In addition, recent RORs have also reported on licensees' safety performance of decommissioned

mines, legacy sites, and waste processing and storage facilities, which have been consolidated into existing RORs to provide a more comprehensive and integrated review across all regulatory programs.

The content, structure and frequency of the RORs vary to focus on the issues and topics important to each industry. The approaches selected are commensurate with the risk associated with the licensed activities, the level of interest from the public and Indigenous nations and communities, and other practical considerations. Overall, the ROR has a defined purpose and a target audience.

A benchmarking exercise was completed in 2018 against the United States, France and the United Kingdom as these three regulators oversee similar types of facilities and activities as the CNSC and have mature regulatory oversight programs. The review focused on regulatory oversight and public participation practices carried out by these regulators.

A longer licence period with increased emphasis on licensee performance was consistent in the countries evaluated. These longer licence terms were coupled with various regulatory measures designed to control the long-term operation of the facilities or conduct of licensed activities.

The results of the review confirmed that CNSC's regulatory oversight and its Indigenous nations and communities and public participation practices are by far the most transparent and robust. For example, in 2021, through its Participant Funding Program, the CNSC awarded over \$237,000 to 18 recipients in relation to five different RORs for nuclear facilities and activities regulated by the CNSC.

CNSC's Participant Funding Program has also been recognized on the international stage by former UN special rapporteur Mr. Baskut Tuncak, citing how the Participant Funding Program is a positive example on how to better engage Indigenous nations and communities.

The Participant Funding program is offered for issues or activities under the CNSC's mandate that are of significant interest to the public and/or Indigenous nations and communities and is an example of how Canada is a world leader on transparency and openness. As well, Canada is the only country that provides reports for all facilities and activities across the fuel cycle and makes these reports accessible on its website.

We also conducted a high-level benchmarking exercise against other Canadian regulators, and we found that in general our regulatory oversight report is similar to the annual reports produced by the

other regulators with respect to the frequency and some of the information provided. A more detailed comparison of the content in these reports was not completed due to a difference in mandate.

The next section covers the timelines of our review process, the results of our internal review and our public discussion paper.

This slide depicts the timelines and milestones reached during the review of the ROR process. In 2018, the initial review of the ROR process was undertaken, followed by additional direction from the Commission and CNSC management. In March 2019, CNSC staff developed an initial draft discussion paper to seek feedback on the RORs and the ROR process, and between 2019 to 2021, staff revised the public discussion paper. The project was disrupted during this time by the COVID pandemic, which delayed publication of the discussion paper for public consultation to 2021.

In 2020, CNSC staff also reviewed the individual rating categories and eliminated one of the categories -- "fully satisfactory" -- to simplify the process. This was received positively by the Commission, and the Commission also suggested the possibility of using only two categories, "satisfactory" and "below expectations."

CNSC staff subsequently undertook a review of the rating definitions in parallel with the internal and external reviews related to the discussion paper. Besides considering the number of categories that were needed, staff also revised the definitions with clearer and more consistent language. Further information on safety performance rating categories and amended definitions can be found in the attached appendix.

And in 2021, the public consultation on the CNSC regulatory oversight report review discussion paper was published.

Updates to the RORs have occurred throughout the years in response to feedback from the Commission, the public, and Indigenous nations and communities as well as from lessons learned by staff on how to streamline the documents. Updating the RORs has been done for continuous improvement and reporting. The changes proposed in the following slides for moving forward represent a more significant shift in the approach and is the outcome of internal and external consultation.

An ROR review team with representatives from across the organization was established in January 2018 initially to review current practices for RORs, identify efficiencies for future reporting of RORs to the Commission focused on the themes shown on this slide, and

to propose a new approach going forward.

Initial consultations generated approximately 400 comments from CNSC staff. In general, the internal comments stated most agree RORs are an effective tool for communicating information to the public. Specific suggestions for improvement included streamlining by providing links to detailed technical or standard information, better use of the external website to provide information, and provide a public accessible repository for all non-protected documents, and that although the Commission is the primary audience for the ROR, modifications to the ROR to more effectively communicate with the public made up a significant part of internal comments. And annual frequency for RORs for high-risk or high-interest facilities is appropriate with a reduced frequency for facilities at other risk levels.

After dispositioning the internal comments, four fundamental questions were identified which required further input from staff relating to ensuring that the ROR's audience, purpose, frequency, and approach to public consultation was well defined.

In June 2019, CNSC staff confirmed the following on these four topics pertaining to the RORs:

- Who is the audience of the RORs? where it was decided that they are prepared for the Commission,

with opportunity for Indigenous nations and communities and for the public to participate.

- What is the purpose of the RORs? which is to provide a summary of CNSC staff compliance verification activities and the performance results associated with these activities.

- That the frequency of ROR presentations to the Commission should be annually for high-risk or high-interest activities; for medium risk, every two years; and for low-risk, every three years.

- And confirmation that public consultation is a necessary and critical step, particularly in terms of transparency and trust.

I will now pass the presentation to Mr. Kevin Lee, who will summarize the comments received on the ROR public discussion paper.

MR. LEE: Thank you, Andrew.

Good afternoon, and for the record, my name is Kevin Lee, a senior regulatory policy officer in the Regulatory Policy Division. I have been with the CNSC for over a dozen years and some of my duties include outreach activities such as CNSC discussion papers and Meet the Nuclear Regulator program.

As mentioned earlier, the discussion paper entitled "Public Consultation on the CNSC Regulatory

Oversight Report Review" was published April 8th, 2021. As mentioned, it outlined the current process for presenting RORs to the Commission and sought comments for improvement. The consultation period ran from April 8th, 2021, to June 7th, 2021, and the CNSC received 98 comments from 15 separate reviewers. The comments were posted on the CNSC's website from June 8th, 2021, to June 23rd, 2021, to allow for additional comments on the comments, but no additional comments were received during this period.

Of note is that the Canadian Environmental Law Association, or CELA, provided one comment which was a request that the CNSC staff review its previous submission on RORs to identify and address its suggestions for improvements to the RORs. This review was undertaken by staff and resulted in an additional 32 comments being added to the original 98.

We would like to note that in the update to the Commission in October of 2021, we originally reported that 72 comments were received during the consultation period. This was an error. As previously stated, 98 comments were received during the consultation period, and all comments have been addressed and included in the overall results.

As you can see, industry comprised the bulk of respondents to the discussion paper, followed by

non-governmental organizations as well as one Indigenous nation and a few individuals writing on their own.

It should be noted that Participant Funding Program (PFP) funds for the review of the ROR discussion paper were not made available. This decision was taken as the discussion paper itself was a very short paper/questionnaire, and it is rare that we would offer PFP for discussion papers such as this. However, staff did reach out to all Indigenous nations and communities with an interest in CNSC-regulated facilities and activities and encouraged them to participate and provide comments and/or feedback on the ROR discussion paper. Further, staff provided opportunities to meet to discuss. Comments were received only from the Manitoba Métis Federation.

It is important to add with relation to PFP that it is offered in relation to all RORs and the related Commission meetings. Further, Indigenous nations and communities can intervene both orally and in writing, and many Indigenous nations and communities have applied for the participant funding opportunities in relation to the RORs. As part of their interventions on previous RORs, Indigenous nations and communities provided feedback on the format and content of RORs. This feedback has helped improve the RORs over the years, including the development of the plain language summary that is now included in all

RORs.

A number of Indigenous nations and communities also collaborate with staff to draft the Indigenous engagement section of the RORs, which is part of the CNSC's commitment to long-term engagement, as outlined in the terms of reference for engagement that the CNSC has signed with the Saugeen Ojibway Nation, Historic Saugeen Métis, Métis Nation of Ontario, and Curve Lake First Nation to date.

In terms of positive responses, it was noted by several respondents that, in their opinion, the RORs provide a good overview of the performance of the licensee with enough detail to make the reports useful. Feedback from industry expressed their appreciation with recent efforts of the CNSC staff to streamline the reports, making them more reader friendly and accessible to members of the public.

Generally, feedback from all sources found that the frequency of RORs is appropriate, and it was acknowledged that should a high-interest event or issue emerge that both the CNSC and licensees have other timelier reporting tools that may, depending on the circumstances, be used.

In terms of positive responses, it was noted by several respondents that in their opinion the RORs

provide a good overview of the performance of the licensee with enough details to make the reports useful.

In terms of opportunity for improvement, a few responders commented that on occasion the ROR could be difficult for the public to decipher. Several commenters noted that additional outreach associated with the RORs, such as ROR-specific Meet the Nuclear Regulator sessions, would help with understanding some of the more technical aspects of the RORs.

A small minority of commenters expressed a desire to include more science-based information in the RORs.

Finally, to increase the values of the RORs, it was recommended that the RORs could be improved by having a greater use of links and access to various status reports associated with each ROR.

I will now pass the presentation back to Andrew.

MR. MATHAI: Thank you, Mr. Lee.

CNSC staff have made incremental improvements to the ROR over the years as a result of recommendations from the Commission, feedback from the intervenors, commitments made by staff, as well as continuous improvements from previous regulator oversight reports. These include plain language summaries; greater

use of hyperlinks for readily available online content, for example, the CNSC external website. Where applicable, data provided in the ROR includes error bars on charts and graphs, and an explanation on sampling and analytical techniques and sources of equations used for calculations and analyses.

As mentioned previously, clarification of the rating definitions will be used in RORs going forward, and a tertiary safety performance rating system consisting "satisfactory," "below expectations," and "unacceptable" was implemented to assign licensee performance. Details are provided in the appendix to this CMD.

Acknowledgement of Indigenous nations and communities are now included.

And a pilot version of the Canadian Nuclear Laboratories ROR dashboard containing key and publicly digestible information and data has been developed to complement engagement activities, and this will be discussed over the next few slides.

I will now pass the presentation to Mr. Nhan Tran.

MR. TRAN: Thank you, Andrew. And good afternoon, everyone. For the record, my name is Nhan Tran, and I am the strategic program advisor for the Directorate of Nuclear Cycle and Facilities Regulation. I've been with

the CNSC for nearly a dozen years, and my directorate is the lead for the development and presentation of three of the five RORs and significant contributors to the other two.

The next few slides describe a pilot project undertaken by CNSC staff on the use of dashboards and the primary motivators of CNSC staff exploring their use, efficiency, and effectiveness.

The development, presentation, and publication of RORs draws a significant amount of CNSC staff effort, which is estimated to be between 15 and 16 FTEs -- those are full-time employees -- per year, excluding the publication process.

After the RORs are presented during Commission meetings, the documents are then published to the CNSC public website. The numbers on this slide provide a sample timeline for CNSC staff to publish an ROR, which in most cases undergoes extremely minor changes after the presentation. The length of the ROR document itself is directly co-related to the duration and level of effort for this phase of activities, since the services associated with the publication processes have service standards that are typically cited in words per day. The timeline for the ROR publication results in RORs being published many months after they are presented to the Commission to limited

benefit.

Once published, RORs are available on the CNSC public website as HTML pages, which makes it easy to measure web traffic to the individual RORs. Currently, the CNSC public website has RORs dating back to 2017.

When reading the statistics on this page, it is worthwhile to note that there is only one research reactor's ROR and one Canadian Nuclear Laboratories ROR that have published since 2017. This is due to the three-year period between research reactors' RORs and the fact that the first ROR for Canadian Nuclear Laboratories sites was published in 2021, covering the 2020 year.

Based on the data and statistics gathered by the CNSC web team, RORs will generate between 50 and 750 clicks per year, and once accessed, the average reader will spend between two and three minutes on the page. It is unlikely that readers are able to synthesize dozens of pages of information per minute, so CNSC staff are left with the conclusion that the documents go largely unread after publication, and where they are accessed, the reader is only searching for very specific information.

Overall, it is the view of CNSC staff that the ROR in its current state is not the most efficient method of delivering information to the Commission. A significant amount of effort is spent in preparing and

publishing the RORs, which produces a document that only specific portions of which are read if at all. While resource-intensive, CNSC staff emphasize that CNSC is not reluctant to spend the resources associated with RORs, but are focused improving the efficiency of the processes and the delivery of information to the Commission.

The RORs provide information to the Commission and the public, but the current long, written document format of the report creates limitations on the effectiveness of clear communication and creates a significant resource burden to the CNSC. Information is repeated in the RORs from year to year due to the nature of the document as a stand-alone report, and information is repeated between the ROR documents in any given year for the same reasons.

To improve the RORs, address these limitations, and support leaner documents, CNSC staff are exploring the use of dashboards or infographics that would provide clear, focused, and digestible information to the reader. RORs will become shorter and more focused on their original scope and audience and include references to publicly available information and data including dashboards.

To enhance the timeliness of information provided to the Commission and made available to the

public, the CNSC public website would be updated to provide general information on facilities and activities.

Additionally, specific information, where it is available, will also be provided in the same way that independent environmental monitoring program data is currently made available. This would provide an opportunity to relocate the information currently provided in the RORs onto the public website and support open government initiatives aimed at enhancing transparency and building public trust.

The next slide outlines a pilot that was undertaken by CNSC staff as part of the presentation of the 2020 regulatory oversight reports.

This sample was developed in support of the 2020 Regulatory Oversight Report for the Canadian Nuclear Laboratories sites. This ROR was presented to the Commission in November 2021 and included this dashboard as an appendix to the Commission Member Document. The dashboard was prepared with the intent to provide key information and data about the performance of licensees and information on CNSC regulatory activities in a publicly digestible manner. Additionally, this dashboard was used as a communication tool in outreach activities conducted with Indigenous nations and communities leading up to the presentation of the Canadian Nuclear Laboratories sites' ROR.

The feedback provided on the dashboard by attendees was that the dashboard was helpful in providing an overview of the information in the ROR. However, it was also noted that participants thought further context would be useful in some cases. For example, there were questions about what reportable events are, and specifically what events were reported to the CNSC. There were also suggestions of other types of information that could be added, such as upcoming regulatory events and opportunities to engage with the CNSC.

Overall, the dashboard was positively received and CNSC staff recognize that by further aligning the dashboards to audience needs, usefulness of future dashboards can be optimized and ultimately enhance how information is provided.

CNSC staff recognize that if implemented widely, dashboards would not be used in isolation. They must be supplemented with more information where needed. Dashboards for each ROR should be customized to provide information that is relevant and meaningful to the industries or facilities addressed.

Specific audience needs would need to be considered in the development of the dashboards.

Consideration must be given to how to reflect treaty and Indigenous traditional territories

appropriate as well as potential translation to Indigenous languages and how to continuously seek feedback from Indigenous nations and communities on how to improve them and make the dashboards useful and meaningful to them.

Accessibility considerations must be addressed to align with Government of Canada requirements such as the language rules and web accessibility rules.

And finally, the dashboards must be adaptable, and CNSC staff must continuously seek feedback on what works and what doesn't.

I now pass the presentation back to Mr. Andrew Mathai.

MR. MATHAI: Thank you, Mr. Tran.

We are proposing a new approach with respect to how we deliver and present the RORs. We would adopt the use of dashboards as presented previously for all the RORs and have them be accompanied with a shorter and more focused companion report, and we will increase the use of other tools and mechanisms to complement the ROR. This will allow us to increase our outreach and engagement with Indigenous nations and communities, the public, and stakeholders.

The benefits are as described on this slide. Our path forward proposes a modernized approach to provide timelier, focused, and more relevant information.

Our approach will also ensure that accessibility considerations are addressed.

There are risks that can be mitigated with the proper support that we would like to bring to your attention. Successful implementation of our proposed approach requires the development of supporting tools for the dashboard and other mechanisms to support increased outreach and engagement. Second, the maintenance of the dashboard and data on the external website is unknown. We do not have an estimate on the costs or resources required to implement. However, if we receive the Commission's endorsement, we will seek further information on the implementation of other engagement tools, learn from the public and Indigenous nations and communities on what tools and mechanisms are best, and include it in an update to the Commission at the end of the year.

I would also like to add that we do not have specific details regarding the format for the new ROR. Following your endorsement of our strategy, the team will take steps to review existing tools and begin development on other mechanisms for outreach in order to refine the format.

What is being proposed is to streamline the RORs with a focus on the Commission as its audience. The ROR scope will be on the regulatory oversight and

performance of licensees. The RORs will take a more narrative format and will provide hyperlinks to information. The CNSC will optimize the use of existing tools for more timely access to relevant information, engagement, and in some instances create forums where appropriate. The format of the RORs will not significantly change until necessary mechanisms are in place.

Our proposed approach emphasizes the increased use of other tools and mechanisms to expand CNSC outreach and engagement activities to complement the information provided to the Commission in the ROR. To that end, we have listed here a few strategic priorities to improve the efficiency and effectiveness of some of the tools and mechanisms available to share information.

We want to modernize our outreach approaches, and one tool we hope to leverage further is the use of the Open Government portal. We want to provide more timely access to updated information, data, and reports. Using the public website or other tools will allow us to do this and disseminate the information easier and in a more efficient manner and should make the information easier to understand.

We want to better utilize other in-person forums such as Meet the Nuclear Regulator and open houses.

And we also want to further prioritize

work on long-term engagement with Indigenous nations and communities through creating a CNSC Indigenous advisory committee and exploring other mechanisms to bring Indigenous and stakeholder engagement updates to the Commission such as terms of reference with Indigenous nations and communities and NGO forums and not wait for the annual ROR.

Overall, the RORs are not the most efficient approach to providing information. Part of our proposed approach to move towards a modern ROR requires the increased use and promotion of other mechanisms for outreach and engagement. Our presentation today has covered the process and the results from our internal review, from the public discussion paper and our forward strategy based on these results.

In summary, our review team concluded that, while the annual ROR does present CNSC's compliance activities and assessment of the licensee's safety performance to the Commission, who is the target audience, RORs are not the most appropriate or effective approach to providing information to the public, indigenous nations and communities, and stakeholders.

Since the start of our review, we have made incremental changes to the ROR and aimed for continuous improvement, and now we are seeking to realign

our efforts for more effective RORs and engagement.

Our path forward modernizes our approach to providing more timelier, focused, and relevant information, and aims to better leverage existing communication tools and other mechanisms that are more effective at outreach and engagement.

For your endorsement, here is our proposed path forward for 2022 and future RORs.

RORs will become shorter and more focused on their original scope and audience, and contain hyperlinks and references to publicly available information and data, including but not limited to the use of dashboards.

Staff will leverage other engagement tools and mechanisms to complement the ROR.

The frequency of reporting will remain the same.

Once again, we would like to emphasize that the proposed changes will not take effect until the necessary mechanisms are implemented to ensure that the content is accessible.

In terms of the next steps, we will incorporate the Commission's feedback or requests for future RORs from today into our proposed changes for the ROR.

Following that, *REGDOC-3.6, Glossary of CNSC Terminology*, will be updated in early 2022 to incorporate the new ratings' definitions, and we will publish a "What We Heard Report" for the external comments received on the ROR public discussion paper.

Following your endorsement, the team will take concrete steps toward refining the ROR format, development of the supporting tools required for implementation of the dashboard and development or use of other mechanisms to expand our outreach and engagement. We would like to submit an update to the Commission with the details on the implementation of the proposed changes and its progress by the end of the year.

I will now pass it over to Dr. Caroline Ducros for the conclusion.

Thank you.

DR. DUCROS: In conclusion, the CNSC is committed to meaningful engagement with the public, indigenous nations and communities and stakeholders, and in making continuous improvements to CNSC processes and activities.

The purpose of the ROR is well defined and it cannot meet all expectations. However, ensuring the trust of NGOs, indigenous nations and communities and the public is an important part of the process. The CNSC

recognizes that there is still a great amount of interest around the operations of nuclear facilities that the CNSC regulates and we will be making efforts to enhance existing and to find other fora and mechanisms as appropriate for listening to and addressing concerns and issues being raised.

The overall results of our review from both internal and external stakeholders showed that, one, response for external commenters was positive, and, two, that the content and the current frequency for reporting of RORs is adequate but they are not "lean" documents.

These results informed the upcoming changes that were covered today: one, we are revising our performance ratings that will facilitate a more efficient process to rate licensees' performance and to promote a better understanding of the ratings by all stakeholders; two, we are recommending a modernized approach with respect to how we deliver and present the RORs that will lead to timelier, focused and relevant information; and, three, while the RORs currently are an inefficient approach to providing information, CNSC staff are not focused on reducing the effort associated with the RORs but improving the efficiency and effectiveness of the processes associated with delivery of information to the Commission and to the public.

We will provide an update to the Commission in the fall of 2022 with additional details on the implementation of the proposed changes and its progress.

I would like to thank you for your attention and we are happy to address any questions you have.

THE PRESIDENT: Thank you, CNSC staff, for that excellent presentation.

As special thanks to Dr. Demeter for stepping in so seamlessly. I had a fire emergency and I had to step away from my desk, though I participated on my mobile device, but I just couldn't chair the session. Always good, though.

Let's open the floor for questions and we'll start with Dr. Berube.

MEMBER BERUBE: Thank you for your presentation. I'm just going over some of your recommendations.

One of the things I want to mention upfront is that I find that the rapid scorecard, the dashboard, is actually quite useful. Quickly as a snapshot, I think public response in this particular area is actually legitimate, and that is what do some of these actual caricatures mean, you know, what is the definition,

so another page basically just highlighting what some of the definitions actually mean would be useful to the general public.

From my standpoint, you know, it's one way or the other. I know how to read very, very quickly, so the length of a document is not really an issue for me, the thoroughness and the validity of that document is absolutely imperative to me so that I can actually make a decision at the end of the document as to whether or not we have enough information to ascertain whether or not things are being done safely and securely in Canada, so from that standpoint, that's some feedback.

In terms of questions on this, you were talking about the time to actually implement this kind of a process, and I think you said a year before you have some kind of draft and then maybe -- how much longer after that before you think that this could be fully implemented?

DR. DUCROS: Caroline Ducros, for the record.

Part of understanding how long it will take to fully implement it will be whether we have the proper -- whether we have your support in terms of reallocating some of the effort that would go into putting together a lengthy CMD and redirecting some of that effort into the tools and mechanisms that we need for getting

things online, and for the new web approach and some of the tools and mechanisms that are required.

I wouldn't mind passing it to the communications advisor to speak a little bit about what some of those needs are.

MS. RAMSEY: For the record, I'm Renée Ramsey, senior communications advisor for CNSC.

What Dr. Ducros is referring to is basically the transformation of taking a dashboard, as we presented it in this format, and coming up with new approaches to get it on the website in accessible ways. By "accessible" I mean where can we link it to different portions of the site -- how do we update the other sections of the site, for example, facility information and things like that, to make that more relevant, and also how do we sort of take that dashboard format and chop it up into even more digestible ways so that we could share it more widely on our social media channels, for example, and other digital formats. All of this takes time to discern, and we have a decent sized communications team at CNSC but a very small graphics team, so it requires a lot of their time to sort of develop this and then consult -- sorry, in consultation with the rest of our staff, so that is part of the reason for why it may take longer.

Then the website as well, just ensuring

that it's completely accessible and in line with all government communications standards is also quite important. We just want to make sure we do it properly.

MEMBER BERUBE: Just a follow-up question on that quickly is right now we're looking at about what is 15, 16 FTEs to do the RORs on an annual basis, which is a fair commitment, about three percent I guess of CNSC resources, strictly to deal with RORs if I'm doing the headcount numbers correctly in my head, so that is significant. That being said, how many people, how many man hours is it going to take to actually convert this whole process over? Obviously, there's a transition issue, there's a lot of learning to be done on this, so any understanding of what that looks like?

DR. DUCROS: Caroline Ducros, for the record.

One of the approaches that we do want to advocate is an incremental approach. What we have done for this presentation is give some stats on how many people are accessing the CMDs once they're posted onto the website and, as you mentioned, the 15 or 16 FTEs that it takes into putting into them. We want to do an incremental approach that we can see that the methods that we're adopting are successful, so there's going to be a measure of success by how many hits are we getting, are people looking at that

information, and the feedback that we get using the other tools like the NGO forum, the terms of reference with indigenous nations and communities, and whether we're meeting the mark to make sure that the information is readily available, more digestible and people like the approach that we're taking. That will part of the process.

Some things can be done quicker. I think we can make a leaner document with removing some redundancies and repetitiveness across CMDs.

For the RORs, we have been improving how we do hyperlinks to information. As more information gets put on the web, we can increase the number of hyperlinks that we put in. We don't need to wait to make those changes; those are changes that can happen right away.

MEMBER BERUBE: Thank you.

THE PRESIDENT: Dr. Demeter.

MEMBER DEMETER: Thank you for that comprehensive review.

Two comments. One, I totally agree it's difficult to be all things to all people, so if you produce one product for different audiences and different purposes it makes it less tangible or less palatable for all sometimes, so understanding that upfront is important.

I personally like graphical summaries versus a lot of prose for graphs, charts, pie charts and

infographics. I think that's a way to get a high-level view and to understand, especially from an oversight point of view.

The question I have is other nuclear regulatory systems have much longer licence periods, for example, the U.S. and France. It would be nice to understand or have some tangible examples of how their staff keep their equivalent commission members, adjudicator equivalents informed. What tools and products do they use and how do they present it?

We may be unique in the ROR kind of package, but we're not unique in that we're a regulatory agency that oversees safety. In the U.S., they have licences that go for 40 years, so they must have some way of keeping the commission up to date on the safety of the sector. Is there some kind of comparison that's possible with other jurisdictions of what product they produce and maybe some samples that we could look at?

DR. DUCROS: Caroline Ducros, for the record.

In 2018, we did do a benchmarking exercise to compare how Canada -- sorry, to show how Canada compares to other similar types of regulators to ourselves. As you've said, the ROR itself is not one of those tools that is widely used, but it looked at other things as well in

terms of how do we -- we had the PFP program that was looked at.

I want to pass it to Mr. Kevin Lee, because he was part of that benchmarking exercise and he can talk about the countries.

In terms of the granularity of what you're asking in terms of what do they put on their websites exactly and how they get responses from meetings, et cetera, I'm not sure if we can get to that granular level, but it could be something that we would follow up on, but Kevin can speak to the benchmarking in general.

MR. LEE: Thank you.

Kevin Lee, for the record.

When we did the benchmarking we were looking to see if anyone else was using something similar to an ROR. Many of them use annual reports as their vehicle for that yearly summation, some of them will do a rollup of the various inspections that have been done, but in terms of having an ROR, which is something that is both given to the Commission and something that's also used by other partners, other stakeholders, we are somewhat unique in that.

In terms of how information is provided to the actual commission members themselves in other countries, I think for that we'd like to turn it over to

Mr. Ramzi Jammal.

MR. JAMMAL: Thank you.

Ramzi Jammal, for the record.

Dr. Demeter used specificity with respect to the role of staff providing feedback to stakeholders and the role of the commissioners. I will start with the U.S. NRC aspect. That's one of the things we were considering when the presentation was made. We're going to "futurize" our capability and reallocate the resources.

At the U.S. NRC level, the site office staff do meet with the communities on a probably quarterly basis if not more frequent, to discuss the findings of the inspections with the communities I won't call it on behalf of the commission but representing the commission, so the U.S. NRC staff conduct those public hearings that they allow interventions from -- information from the public and interventions from interested parties with respect to that process, so those are dedicated, very much focused in the community capabilities that U.S. NRC staff do on behalf of the commission. The U.S. NRC commissioners did not replace it as such, so it is not a licensing decision, it's information and taking the feedback, then they have themes, focus themes, they put it in place and they have those discussions.

From our perspective, from the CNSC, I'm

going to repeat the fact that we'll never be able to replace you the Commission, nor provide any perception that your capability is being diminished. One of the things I'm looking for, and this was discussed with staff, is how do we put in place such pillars so that we are talking to the indigenous nations, we're talking to the stakeholders, and then you as a commission, based on -- and I'm not in any way, shape or form telling the Commission what to do, it's not my job, but part of the proposal for improvements into the future is how do we go out to the community based on a focused issue, let it be dependent on the site itself and we can provide you feedback, and what is the community's interest for them to hear about, let it be emergency preparedness, let it be medical isotope production, but those are the things we're going to explore and move forward on, as mentioned by Dr. Ducros, in an incremental fashion. So at the end we're proposing to you the strategy and then we'll come back to you and elaborate the strategy, because we commit to the fact that the trust, the general trust and external trust of the public by us, the regulator, at the staff level, and as the Commission, is one of our key pillars, but we have to do it better, and we will continue to do it better, but we are looking for your support on the strategy and we will come back to you with the expanding.

I can elaborate on the other regulators, Dr. Demeter, but the fact that -- I mean I'm not going to go and take half an hour to do such things -- they do now have their own way of doing things, but again it's very much focused on the community itself and it becomes community relationship building, and then at the U.S. level there is a -- the commissioners or the commission itself has a different role on an annual basis.

MEMBER DEMETER: Okay. Thank you.

THE PRESIDENT: Maybe I can ask Mr. Jammal, through you, to elaborate. It was fine to talk about what NRC staff does in the community, but I guess the other part of the equation that Dr. Demeter is asking is how do staff report performance of the facilities to the commission itself? What are the mechanisms and tools that they use and is there a report card that one could look at?

MR. JAMMAL: Ramzi Jammal, for the record.

Madam Velshi, I will take this undertaking to give you the exact precision about the high level.

There is a reporting card mechanism that is produced to the U.S. NRC, and the U.S. NRC publicly puts such reporting card based on yellow, green, and so on and so forth, so they have multiple reports to reflect what their performance is, but I will take an undertaking, from

our perspective, and provide you the specific details for the mature regulators, when I say "mature regulars", our counterparts on what is it they're doing with respect to the annual reporting summary, but I can confirm to you the U.S. NRC has a very I won't call it simple, I mean I'm oversimplifying, but it's a visually appealing capability to understand right away is it yellow, green or orange.

THE PRESIDENT: Thank you.

Ms. Maharaj.

MEMBER MAHARAJ: Thank you, Madam Velshi.

In terms of the strategy -- I think that's the primary question we're here to address today, not necessarily, you know, our personal wants and preferences -- in terms of the strategy, I wonder whether trying to make a one size fits all is flawed from the beginning, from the outset, because I think as a Commission we need to have detail, we need to have technical backup. You know, as Dr. Berube has said, it's our job to read the volume basically, and if we have to have the volume we need to have the volume, whereas I can see a place where for various different stakeholders that may neither be relevant to them nor informative because of the bulk of it, so I can see where a dashboard would have a tremendous appeal for certain external stakeholders where I feel as much as I like graphic representations of data I'm always looking

behind it to find out how did you get to that summary, what are the gaps or what are the assumptions, which you've heard me ask a number of times, that go into coming up with this graphic or this high-level small piece of information.

When I was looking at slide 21, with the sample dashboard, you know, one of the issues or one of the data points was whether or not there had been a certain number of inspections by the IAEA. There it is, the CNSC inspections and some notices of non-compliances, and right above it, "65", it's very tiny, "IAEA led safeguard inspections", but what we discovered in the ROR last time is, yes, while there were all of these inspections from the IAEA, there were a couple of concerns about not being able to access particular fuel storage areas, but that kind of detail can't really be represented on a graphic for everybody, so I wonder whether or not a strategy that tries to go into a one size fits all is going to just create different problems.

I guess my question is, with that very long buildup, is there consideration in the strategy for a public-facing piece and an internal-facing piece to the ROR?

DR. DUCROS: Caroline Ducros, for the record.

Absolutely, that is what we are trying to

propose. In 2015, when we started with the RORs, they were really much a document to report on the regulatory oversight and the performance of the licensees, and it was to report to the Commission for that. As the years progressed they evolved and they have grown to be more than that. Now I would argue they're trying to be one document that's good for both the public, for the Commission and for indigenous peoples. It's trying to meet everything and I feel like we're putting a lot of resources into it and it's not really meeting their main purpose.

Your example of the dashboard is a good one. That to us is something that an ROR, which would be for the Commission, where you want the performance, and some factually technically put document in a lean format could point to through a hyperlink, but that dashboard itself is really very much the outward-facing document for us to use as a tool when we go into communities, when we do meet the nuclear regulator people can perhaps click on somewhere and come to a dataset. We haven't fully conceptualized what a dashboard would look like, and it wouldn't be the same for each facility, but the document for the Commission is what we're trying to kind of get right.

The other part of the story is that in 2015 we didn't have a lot of mechanisms that we have at our

disposal today, so the whole concept of open government, open data, open information and open dialogue, that's more recent.

We're able to put more on our websites now than we used to be. We have expanded the use of webinars, particularly after the pandemic, and noticing that more people are able to connect this way, so we want to maximize those mechanisms for outreach and engagement, and the ROR, keep it to a Commission document to report on last year's performance, which doesn't necessarily need to be a really thick document, because some of the document is trying to be narrative and also technical and trying to meet many different audiences, whereas this way we can make it for what the Commission wants it to be and it could be a leaner document in doing so.

MEMBER MAHARAJ: Thank you.

THE PRESIDENT: Mr. Kahgee.

MEMBER KAHGEE: Thank you very much for your presentation. I think it was very helpful.

My question was specific to timing and I think you've kind of addressed that. So I have no additional questions at this time.

Thank you.

THE PRESIDENT: Thank you. Dr. Lacroix.

MEMBER LACROIX: Yes, thank you very much

for the presentation.

Up until now I didn't realize the amount of time and work and effort that is spent preparing and publishing an ROR. So the very next time that I read an ROR I'll be more indulgent.

Thank you very much for reminding me of the statistics.

On Slide 19 I was surprised to find out that, for the website traffic, the average time spent on a page is two to three minutes. And I was wondering, beyond the ROR, what are the ramifications of these statistics? What are the consequences as far as the outreach of the public and the communications strategies are concerned?

So could you elaborate on this?

DR. DUCROS: Caroline Ducros, for the record. I'll start and then I'll pass it to my colleague, Mr. Nhan Tran.

To me, the ramifications is we're putting a lot of effort into these documents and although they're presented publicly and they are posted on the website, after the day of the Commission meeting they're not being used really as an outreach tool.

So Mr. Tran can talk a little bit more about what the implications are and where our thinking went after we did the analysis.

MEMBER LACROIX: Okay.

MR. TRAN: Thank you, Dr. Ducros. Once again, this is Nhan Tran, for the record.

I think, Commissioner Lacroix, that the implication is that when people do access the page they're only looking for something specific. So if you think about the length of the ROR document that Staff typically present to the Commission, we're talking, you know, dozens and dozens of pages.

And with due respect to the previous Commissioner's comments that, you know, some people read quicker than others and absorb information quicker than others, absolutely no contest there.

I think the important part to highlight is with this amount of time that people typically spend on the page, what's likely happening is they're opening a page, they're hitting find, searching out specific words to find specific pieces that they're actually interested in, and then the rest of the document you just glance over or scroll right past.

Because if I'm only hear searching for what happened in inspections, I don't need to read about the preamble of what the site is, where it's located, when the licence was issued and all that type of information. And it's not to say that Staff don't want to provide that

information, it's just that that information typically doesn't change. So it's more suited for something like a public facility website.

You know, the nuclear power stations, the generating stations are typically the higher interest areas, you see that by the number of views per year. Those stations don't physically move.

So the description of where the station is I don't think needs to be repeated year over year. We could put that into a place on the website, if anyone's interested in knowing that type of information they can look in that place. We can set up a link for it, no problem. But within the document itself, that's an opportunity to be leaner and pull out some of the information, put it in a better place than the ROR.

MEMBER LACROIX: Okay. That's interesting, thank you.

THE PRESIDENT: So let me follow-up on this whole efficiency side of things.

One is, and a concern certainly the Commission has and has expressed, is how late in the year we get the RORs. It's almost at the end of the following year. And as I look at the slide -- just around the publishing of RORs, and I look at the French translation and then the French to English comparison, like it's almost

six months just for that.

And I wondered, you know, it's not that we're not going to have translation, of course we are, it's a question of have you found as you've done your comparison with other regulators or whatever how do we make that more efficient? Because I think the bit about the timeliness of the RORs is also a major consideration for the Commission.

And to second part to what we just talked about around the ROR website traffic, just more for interest, what's the traffic like on our French versions of these? You know, we need the publication of our RORs because we want to get all the translation, which we do need to. It's a question of at what price?

So can you comment on that please?

DR. DUCROS: Caroline Ducros, for the record. Yeah, I think what I would say is if we could move forward with a leaner ROR that's based on the annual report and is more factual and we don't use it as the mechanism for all the other things that it is expanded to, I don't want to make commitments on behalf of all the licensing divisions, but I would hope that that could streamline the process for the Commission getting it when you want it.

That would mean though -- and like, the other part of that is that timely information for the public is not just information that goes into an ROR.

Those are the big discussions that the public want to have about groundwater and about isotopes and SMRs, et cetera. And those are discussions that we could be having at an ongoing basis to prevent us having to go into the narratives and the RORs.

And not to forget that there's event initial reports that would and must be presented to the Commission in a timely way, if those arise.

So I hope that I've answered your question. I'm not sure if I've missed -- oh, the French hits. I would like to pass that to the Communications Division to see if they have any data on that.

THE PRESIDENT: Thank you.

DR. DUCROS: Pardon me, it's Mr. Nhan Tran who might have some data on that.

MR. TRAN: For the record, this is Nhan Tran. I'd like to circle back to that question if you don't mind, President Velshi. It just takes a second to pull up the forms using our internal system, but we will get you those stats before the end of this session.

THE PRESIDENT: That would be very helpful, thank you.

Commission Members, anyone with anymore questions? If you could just maybe put your hand up?

Dr. Demeter.

MEMBER DEMETER: You know, I've noticed you do get feedback from the Commission and it seems, you know, we tend to add things for the next time, add things the next time, and then we say, oh, it's too long.

And so I sort of get a sense that -- I was trying to figure out a way to more efficiently have the Commission give you feedback. And I'll discuss this with the other Commissioners.

But I kind of wonder if we need to have an internal dialogue to settle on what is really the important content, what is the really important structure or format at a higher level that we could all sort of, maybe in an iterative process, agree to so that we give you some -- rather than individual feedback, which then you have to synthesize, some more teamwork feedback, you know, that might make it more efficient for you to look at versus sort of individual preferences.

So I just put that out there and maybe, as Commissioners, we can talk about that more after. But I think that would be helpful. Because we keep giving you feedback, but it's individual ad hoc pieces. And you adapt to them and then, you know, it just becomes an add-on without necessarily the utility that it may have if it was more structurally formatted.

Anyways, just a comment.

THE PRESIDENT: I think that's an excellent suggestion, Dr. Demeter.

And actually something you had mentioned earlier is these RORs, the primary audience for this is the Commission. And, you know, you're providing us an update today on what you've heard from others and what you're proposing.

It's helpful but it's not soliciting our input and confirming what is it that we want in these reports. It's not the strategies, more around the content and the format, et cetera. And so how you have solicited input from the other stakeholders in a very systematic way.

Perhaps you'll want to consider doing that with the Commission Members where we can individually give it, but then also collectively look and see, hey, can we come with a more united front so that, you know, you're not weaning off.

And I wondered if you've given that a thought on how do you actually solicit input from Commission Members or what exactly do you really want in these RORs, and is this adding value?

DR. DUCROS: Caroline Ducros, for the record. I loved hearing the last of your interventions by the Commission. Staff would really like to see exactly how we're meeting the mark and if we're meeting the mark on

what it is that the Commission wants to see.

And I think this exercise was really helpful in terms of gaining a true understanding of who is the target audience, the primary target audience anyway, and what it is that we need to report on.

So I like the idea of having one set that's not continuously evolving, although I think the evolution over the years has been really helpful and continuous improvement.

I think Dr. Jammal would also like to add to your proposal how we may move forward.

MR. JAMMAL: Thanks, Dr. Ducros. Ramzi Jammal, for the record.

Two things. As mentioned by Dr. Ducros, all the improvements or requests came from the Commission always for the purpose of enhancement with respect to both public information and the Commission.

Madam Velshi, you're requesting of what would be the systematic process. As part of the -- this is the first step with respect to the strategy, and we'll come back to you via the Registrar with respect to our strategy towards the future and dedicated sessions with the Commission.

Because we have given a lot of -- not a lot, a lot more to come from external perspectives. We

will take your feedback, restructure it. And it was mentioned in the timeline before, we will go out with an amendment of regulatory documents and consult with respect to the specific elements for the public aspect of the ROR.

You will be part of the process and that will be the first step with respect to how do we obtain the information that is relevant to you, the Commission, and then we'll move forward in that direction.

THE PRESIDENT: Thank you. Dr. Berube, you had your hand up, I think?

MEMBER BERUBE: Yeah, actually I think basically what we just discussed will settle what I had of concern. So that's it for me.

THE PRESIDENT: Okay, thank you. So again, Staff, thanks very much for that. You know, the Commission will go and we'll discuss this and record of the meeting will reflect our thoughts around the strategy that's been proposed and anything additional that we believe needs to happen for you to hear the Commission's needs around the RORs and how do we ascertain that.

So again, thanks very much for the presentation and for the discussion. And I particularly want to compliment you on how systematically and thoughtfully you dispositioned the comments that you heard from the other stakeholders. I found those extremely

helpful and really well done.

So before I conclude, Dr. Ducros, to you.

DR. DUCROS: Thank you. Dr. Ducros, for the record.

Just to get back to a question that we said we would get back to before the end of this meeting, about 10 per cent of the hits on the CMDs are to the French documents, the other 90 per cent are the English documents, as we would expect.

THE PRESIDENT: That's not surprising, right. Okay, thank you very much.

This concludes the public meeting of the Commission. Thank you all for your participation. Stay safe, stay well.

Bon fin de journée. Bye everyone.

--- Whereupon the meeting concluded at 2:13 p.m. /

La réunion s'est terminée à 14 h 13