Moving towards a cleaner future

Atomic Energy of Canada Limited 2024 Annual Report

AECL
EACL

AECL Overview

As a federal Crown corporation, Atomic Energy of Canada Limited (AECL) advances Canada's interests through leading edge nuclear science and technology and environmental stewardship. This includes combating climate change, clean energy growth and decarbonization strategies, pioneering new treatments for cancer and other diseases, and accelerating Canada's environmental remediation projects.

Since 2015, AECL has been delivering its mandate through a Government-owned, Contractor-operated model, whereby a private-sector organization, Canadian Nuclear Laboratories (CNL), operates AECL's sites.

Moving towards a cleaner future

It is clearer, now more than ever, that there is a need for clean sources of energy to meet the world's net-zero goals. Not only is climate change making itself known more frequently, widely, and violently, but we also recognize the evolving energy needs for existing and future technologies.

AECL believes that the key to achieving these goals is to advance nuclear science and technology, and leverage CANDU technology in Canada and around the world.

Sustainability and environmental stewardship are core values at AECL, ensuring longevity and a better quality of life for future generations. We are making significant strides in our site remediation work, addressing legacy waste that was left as a result of decades of life-saving nuclear innovation, allowing Canada to place itself at the forefront of the nuclear landscape.

We continue to strengthen our relationships with Indigenous Nations and communities on the land on which we live, work and operate. Engagement with numerous parties continues, moving in a positive direction and we are proud to say that this is only the beginning.

AECL remains committed to Canada's clean energy goals, and is ready to lead the nuclear industry into a new chapter of adaptability and resiliency.

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AECL acknowledges, with gratitude, that we operate on unceded territories that have, since time immemorial, been the traditional lands of Indigenous peoples in Canada. We pay respect to all Indigenous people, from all nations across Canada. We acknowledge the traditional knowledge keepers, both young and old. And we honour their courageous leaders: past, present, and future.

Message from the Chair of the Board

The events of this past year have served to remind the world that nuclear technology is now, more than ever, an essential part of our future. The tangible effects of climate change and the increased demand for energy are a clarion call for new sources of clean energy. AECL is at the forefront of Canada's efforts to create new nuclear energy systems both at home and abroad.

For more than 70 years, AECL has been a trusted source of nuclear expertise that has brought us innovations such as the world-renowned CANDU reactor and life-saving medical isotopes. AECL is now taking full advantage of that knowledge to support the development of a myriad of new technologies, such as the Small Modular Reactor, and breakthroughs in medical isotopes such as Targeted Alpha Therapies. AECL is striving further and higher to drive the use of hydrogen and fusion as key enablers of global decarbonisation, to study the effects of radiation on human health, and to find ways to protect critical infrastructure such as nuclear power plants against cyber threats.

At the same time, AECL has made great strides in remediating contaminated sites across Canada, the result of years of research into – and production of – clean energy technologies and lifesaving health breakthroughs such as medical isotopes. The revitalization of the Chalk River Laboratories continues with confidence now that construction of the Near Surface Disposal Facility has received regulatory approval – providing a safe facility to manage radioactive waste for now and long into the future.

The past year has been remarkable for many reasons, including AECL setting the stage to advance reconciliation efforts with Indigenous Nations and communities. This is an evolving relationship and positive change is already underway. As we strive to broaden the communication channels with these communities, we are hopeful that we can build enduring relationships based on trust, collaboration and cultural awareness.

The Government of Canada has also demonstrated its support for AECL's mandate in the form of multi-year funding contained in Budget 2024, which confirmed a $3.1 billion investment over 11 years, starting in 2025, to support ongoing nuclear science research, environmental protection and site remediation work. This demonstrates the importance of AECL's work, enables it to plan long-term projects and carry out its ambitious mission.

Success in that mission will be reliant on the performance of Canadian Nuclear Laboratories (CNL). AECL delivers its mandate through a Government-owned, Contractor-operated (GoCo) model, whereby a private-sector organization, CNL, is responsible for operating AECL's sites. This model has allowed international experts to introduce best practices and innovative solutions, injecting private sector rigour into our operations, budgets and timelines. AECL has launched a competitive procurement process to continue the management and operation of CNL beyond the current contract, which expires in September 2025.

The Board of Directors leads the work of AECL as it charts its course into this exciting, but challenging future. Looking back at 2023-24, we are especially proud of the Long-Term Relationship Agreement signed between AECL, CNL, and the Algonquins of Pikwàkanagàn in June 2024, and implemented throughout the reporting period. This groundbreaking agreement has the potential to position us as a leader in making reconciliation real, and we look forward to what we will achieve together.

Now more than ever, AECL is well positioned for this new era of nuclear innovation which will bring environmental and health benefits to all Canadians, and demonstrate to the world, that Canada remains a leader in nuclear science and technology.

James Burpee, *Chair of the Board*

Message from the President and CEO

AECL is entering an exciting era of growth in the nuclear industry spurred by the drive to help Canada reach our net zero target and we are well positioned to lead Canada into that future with our unique and historic expertise in nuclear innovation. Each step of the way, we will continue to infuse our work with the firm commitment to preserving the environment and to protecting the health and safety of the communities we serve.

AECL's achievements over the past year have been many, thanks to our team of dedicated professionals. We have learned that we can not build this better and brighter future alone – that we need the support and expertise of others. And new partnerships are among our greatest achievements this year.

As President and CEO of AECL, I am especially proud of the stronger relationships we are forging with Indigenous Nations and communities on whose lands AECL operates. A highlight was the signing of a Long-Term Relationship Agreement with the Algonquins of Pikwàkanagàn First Nation, an agreement built on trust, respect and responsibility, that will create a more inclusive partnership, as it opens our work sites and our planning to new ideas and traditional knowledge of these territories.

We were excited this year to announce a collaboration with AtkinsRéalis, that will propel our CANDU reactor technology into the future, with the goal of seeing it deployed in Canada and around the world. This new generation CANDU will help us achieve national objectives such as decarbonization and energy security; and being developed in Canada, by Canadians, it will generate economic growth and maintain Canada's Tier-1 nuclear nation status – a nation with a complete nuclear ecosystem from mining, to a domestic technology, to research, and a robust nuclear supply chain.

Collaboration is key to carrying out AECL's mandate to drive nuclear innovation, and we are uniquely qualified to bring together diverse players in Canadian's nuclear environment. In February 2024, AECL convened the Pan-Canadian Small Modular Reactor and Advanced Reactor Workshop where industry, utilities, academics and government gathered to better understand the opportunities, barriers to deployment, and research, capabilities and infrastructure needs in the short and longer term.

AECL also works with 15 federal departments and agencies through our Federal Nuclear Science and Technology work plan to advance research into health, nuclear safety, energy and the environment. Throughout the year, AECL and CNL continued to add new institutions to our Academic Partnership Program including the University of New Brunswick and Queen's University, bringing the partnership program to seven Canadian universities.

In all of our work, AECL is leveraging CNL's capabilities and expertise, particularly those located at our Chalk River Laboratories site, the location of our historic nuclear breakthroughs in isotope and reactor technologies. We are transforming, with CNL, the Chalk River Laboratories – safely demolishing more than one hundred structures and building modern laboratories and facilities that will attract industry and the new generation of scientists who will be the innovators of tomorrow. This year we opened the Science Collaboration Centre, a sustainable facility that will serve as the central planning and collaboration space for the company's science and technology program. Construction continues on the Advanced Nuclear Materials Research Centre, destined to be one of the largest nuclear research facilities ever built in Canada, and is expected to open its doors in 2028.

An essential element of this revitalization is the Near Surface Disposal Facility, which will provide safe, long-term disposal for low-level radioactive waste. A milestone was reached in January 2024 when the Canadian Nuclear Safety Commission approved the construction of the Near Surface Disposal Facility.

Chalk River Laboratories is now home to partnerships which include a joint venture with ITM Isotope Technologies Munich SE to launch industrial scale production of Actinium-225, a new medical isotope that has the potential to treat cancer patients; we are working with SMR developers to advance new forms of small modular or advanced reactor nuclear energy technology, and potentially leverage AECL sites as a location for a demonstration reactor; CNL has launched the Canadian Hydrogen Safety Centre, fostering development of hydrogen safety solutions across multiple industrial sectors and regions; and CNL is working with several fusion developers to advance their technology and has signed an agreement with Kyoto Fusioneering to explore development of fusion fuel cycle technology. We're also working on national security and critical infrastructure, which includes nuclear forensics, emergency response planning, and physical and cyber security.

AECL is creating the right conditions to move into this new era. We have launched a competitive procurement process to renew the management of CNL, the private sector company that operates AECL sites. The Government of Canada has also invested in the long-term success of AECL in the form of multi-year funding announced in Budget 2024.

With this foundation, AECL can look ahead to a promising nuclear future as we advance nuclear science and technology solutions to build a brighter, more sustainable future for Canada.

Fred Dermarkar, *President and CEO*

Who We Are and How We Operate

AECL works to advance Canada's interests through leading edge nuclear science and technology and environmental protection initiatives. This includes combating climate change through clean energy growth and decarbonization strategies, pioneering new treatment methods for cancer and other diseases, and accelerating Canada's environmental remediation projects.

Mission

Driving nuclear innovation to deliver clean energy technologies and improve the quality of life of Canadians while caring for the land.

Vision

Leveraging the full potential of Canada's expertise in nuclear technology to achieve a better future for Canada and the world.

We deliver our mandate through a long-term contract with Canadian Nuclear Laboratories (CNL) for the management and operations of our sites.

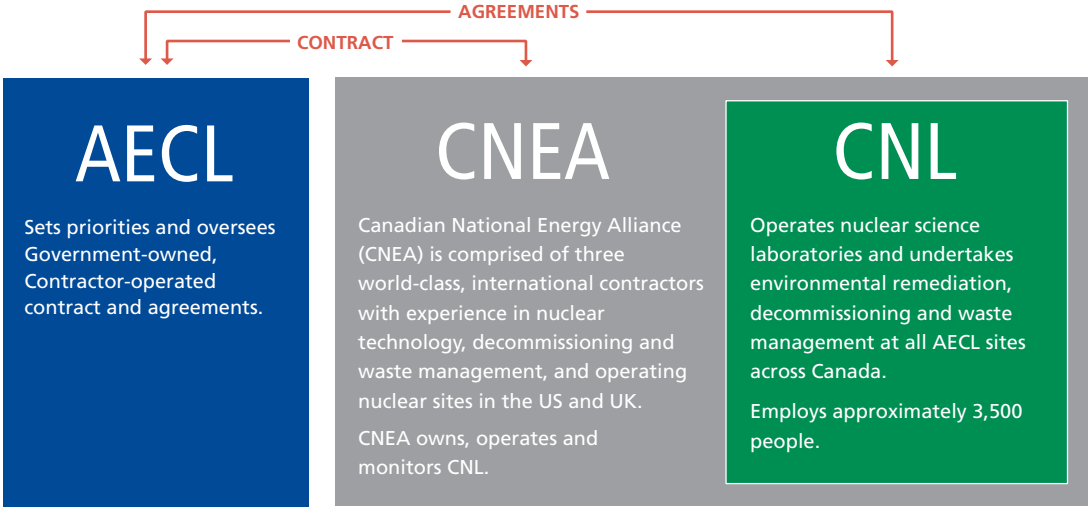
Under this Government-owned, Contractor-operated model, we set priorities, oversee CNL's work and measure performance. AECL owns the sites, facilities, assets, intellectual property and environmental liabilities, while CNL is responsible for the day-to-day operations of our sites.

AECL accepts CNL's annual plans and monitors and assesses performance based on targets and measures that we establish at the beginning of each year. We also oversee two target-cost contracts with CNL for the decommissioning and closure of two nuclear sites: the Nuclear Power Demonstration reactor, in Ontario, and the Whiteshell Laboratories, in Manitoba.

The Government-owned, Contractor-operated model allows us to leverage international knowledge and skills to advance work and priorities while bringing private sector rigour and efficiencies to the operation of our sites. This is supported by our own team of experts who have the necessary broad-based experience to oversee the contract with CNL and play an appropriate oversight and challenge function to achieve value for Canada.

AECL also exercises its oversight function via a separate model, outside of the GoCo construct, for another important element of its mandate: management of the CANDU intellectual property. AECL is working with its licensee AtkinsRéalis under Memorandum of Understanding announced on February 22, 2024 to position CANDU for opportunities in the context of new investments in large nuclear reactors.

Government-owned, Contractor-operated model



Working Towards Reconciliation

The lands on which AECL's sites are situated have been stewarded by Indigenous peoples since time immemorial. In alignment with the Government of Canada, AECL is committed to reconciliation with First Nation, Métis and Inuit peoples through a renewed relationship based on recognition of rights, mutual understanding and respectful, meaningful engagement and collaboration.

We have made four commitments related to reconciliation:

- Listening, understanding, improving, and taking meaningful actions to advance reconciliation with Indigenous Nations and communities on whose lands we operate.
- Continuously learn about Indigenous history, culture, traditions, and world views.
- Integrating Indigenous knowledge and values into AECL's policies, procedures, practices, and projects so that they become embedded in all that we do.
- Finding ways to empower Indigenous Nations and communities to participate in projects across AECL sites.

We acknowledge that this takes time, resources and tangible actions that build trust, including co-developing plans and strategies; integrating Indigenous knowledge, perspectives, practices and ceremony across operations; prioritizing capacity-building initiatives; and developing long-term relationship agreements to support these commitments.

Creating a Diverse and Inclusive AECL

AECL has in place a *Diversity and Inclusion Action Plan* that includes three overarching goals: 1) promote a culture that encourages collaboration, flexibility and fairness; 2) attract, retain and develop a talented and diverse workforce; and 3) enable and promote knowledge and understanding about diversity and inclusion and why they are important. AECL is also a member of Equal by 30 – an initiative dedicated to equal pay and equal opportunities for women in the clean energy sector.

While today women make up 55% of our workforce and 50% of our Board of Directors, AECL remains committed to closing the gender gap, particularly in leadership roles, and to strengthening the diversity and inclusiveness of our team.

In 2022-23, we introduced AECL's Accessibility Plan. The plan outlines our goals of making physical spaces at AECL more accessible and providing more training to employees. AECL is committed to being an accessible organization for employees and to sharing accessible information with all Canadians, including those who face accessibility challenges.

As a follow-up, we released our Accessibility Progress Report, which is a follow up to the Accessibility Plan. The report shares what AECL has accomplished and what we are working on to make change and meet federal requirements for accessibility under the *Accessible Canada Act*. The priority areas AECL has focused on under the Act, as addressed in the report, are built environment, employment, the procurement of goods and services, information and communication technologies, and communication. With a goal to improve, AECL is committed to being as accessible as possible for our employees and for all Canadians, especially those with disabilities.

Sustainability

Sustainability is at the core of everything AECL does. Historically, nuclear energy has played a significant role in reducing Canada's carbon footprint and it will play an even larger role as the Government of Canada embarks on its pathway towards net zero emissions by 2050.

AECL is working to advance Canada's interests through leading edge nuclear science and technology and environmental initiatives. This includes contributing to climate action efforts through clean energy growth and decarbonization strategies, and accelerating Canada's environmental remediation projects.

In tandem with CNL, we are championing the development and deployment of new nuclear projects, including our proven large-scale CANDU technology as well as Small Modular Reactors, that could provide clean energy options to help Canada achieve its emissions reduction objectives. At the same time and key to the sustainability of the nuclear industry, AECL and CNL, in collaboration with local Indigenous Nations and communities, are advancing some of Canada's largest and most complex environmental remediation projects. Responsible decommissioning and radioactive waste management are necessary to clean up AECL sites, restore and care for the environment, and make way for new infrastructure that supports future achievements, partnerships and innovation in health, clean energy, and environmental stewardship.

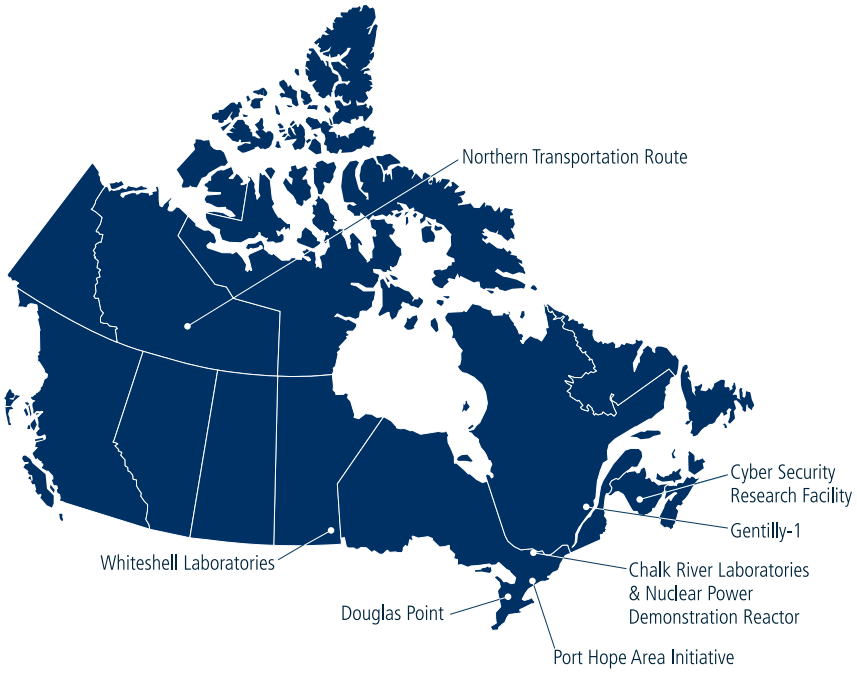
We published our 2023 Environmental, Social and Governance (ESG), and our 2023 Climate Resilience reports as we continue to progress in meeting the Government of Canada's goal to achieve net zero objectives by 2050. The reports focus on AECL performance in achieving the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). AECL is working to ensure we keep in step with the Sustainability Accounting Standards Board (SASB) as requirements are updated. AECL's ESG team has completed a materiality assessment and defined 6 strategic differentiators and set target state ambitions. The differentiators include Decarbonization, Engagement and Reconciliation with Indigenous Peoples, Nuclear Medicine, Science and Technology, Radioactive Waste Management and Decommissioning, and Community Engagement and Development.

Our Sites

The Chalk River Laboratories, in Ontario, is AECL's flagship site and Canada's largest science and technology centre. Research activities support federal responsibilities and priorities in the areas of health, nuclear safety and security, energy and the environment, and provide products and services to third parties in a commercial capacity. The Chalk River Laboratories are currently undergoing extensive renewal to transform the site into a modern, world-class nuclear science and technology campus. This work includes decommissioning – 118 buildings and structures since 2015 – and restoration to clean up contaminated lands and protect the surrounding environment.

As part of its mandate, AECL is also responsible for cleaning up legacy sites and radioactive wastes; many are the product of science and technology activities that have benefitted Canadians, for example the production of medical isotopes and research supporting the development and deployment of carbon-free nuclear energy.

In addition, AECL is responsible for environmental remediation and waste management in areas where the Government of Canada has assumed responsibility for historic low-level radioactive waste, notably through the Port Hope Area Initiative, and along the Northern Transportation Route in the Northwest Territories and northern Alberta.



Site	Location	Overview
Chalk River Laboratories	Chalk River, Ontario	The Chalk River Laboratories is Canada's largest science and technology centre. The federal government is investing in the site's infrastructure, which will help build a state-of-the-art nuclear science and technology campus. Already, multiple new buildings, including new laboratory space, have been commissioned to drive our science activities. The site's transformation is also enabled by large-scale decommissioning of outdated buildings and facilities, environmental restoration and waste management. This includes constructing the Near Surface Disposal Facility for the management of AECL's low-level radioactive waste.
Nuclear Power Demonstration Reactor	Rolphton, Ontario	The Nuclear Power Demonstration reactor was Canada's first nuclear power reactor to supply electricity to the grid and served as a key training facility for engineers and operators. It has been in safe shut down state for more than 30 years. CNL has proposed to decommission the reactor *in situ*.
Port Hope Area Initiative	Port Hope and Clarington, Ontario	The Port Hope Area Initiative represents the Government of Canada's commitment to cleanup and safely manage historic low-level radioactive waste located in both municipalities. Two engineered, near-surface facilities have been constructed to facilitate long-term waste management.
Douglas Point Reactor	Kincardine, Ontario	The Douglas Point reactor is a shutdown prototype nuclear reactor currently in a safe shutdown state pending full decommissioning.
Gentilly-1 Reactor	Bécancour, Québec	The Gentilly-1 reactor is a shutdown prototype nuclear reactor currently in a safe shutdown state pending full decommissioning.
Whiteshell Laboratories	Pinawa, Manitoba	The Whiteshell Laboratories were formerly AECL's second largest research site; today, they are being decommissioned for closure. CNL's plans include a proposal for *in situ* disposal of the WR-1 research reactor.
Northern Transportation Route	Northwest Territories and northern Alberta	The Northern Transportation Route represents AECL's commitment to work with Indigenous peoples and local communities to cleanup a small quantities of uranium ore in the Northwest Territories and northern Alberta, specifically in Sawmill Bay, Great Bear River sites, Hay River, Bell Rock, Fort Smith, Fort Fitzgerald and Halfway House.

Achievements 2023-24

This section highlights key targets achieved over the course of the year based on performance measures outlined in AECL's 2023-24 Corporate Plan Summary. For more details on our achievements and future activities, visit www.aecl.ca.

Indigenous Consultation, Reconciliation and Partnership

We continue to strengthen engagement with Indigenous Nations, communities and organizations and our commitment to build and renew relationships with Indigenous Nations on whose land we operate.

We are making measurable strides and acknowledge that it takes time to build trust and work towards reconciliation. We continue to pursue relationship agreements with Indigenous Nations to increase capacity and participation, strengthen community engagement, and integrate Indigenous knowledge and values into all aspects of our mandate. CNL, as a site operator, project proponent, and member of the local community, is also responsible for engaging and consulting with Indigenous peoples with respect to environmental remediation projects, future land uses, and site development.

Notably, AECL and CNL signed a historic long-term relationship agreement with the Algonquins of Pikwàkanagàn First Nation (AOPFN) in May 2023. Following years of discussion, this agreement establishes the Neya Waban (Guardian) Program that will enable a regular AOPFN-led monitoring presence at designated AECL sites, a leadership table, working groups for joint planning, and other cultural and economic protection and promotion activities. This is a significant achievement and a first step towards building trust, a lasting relationship, and the foundation for future collaborations and partnerships with AOPFN and their community members.

AECL and CNL are also working to develop Reconciliation Action Plans in consultation and collaboration with Indigenous partners.

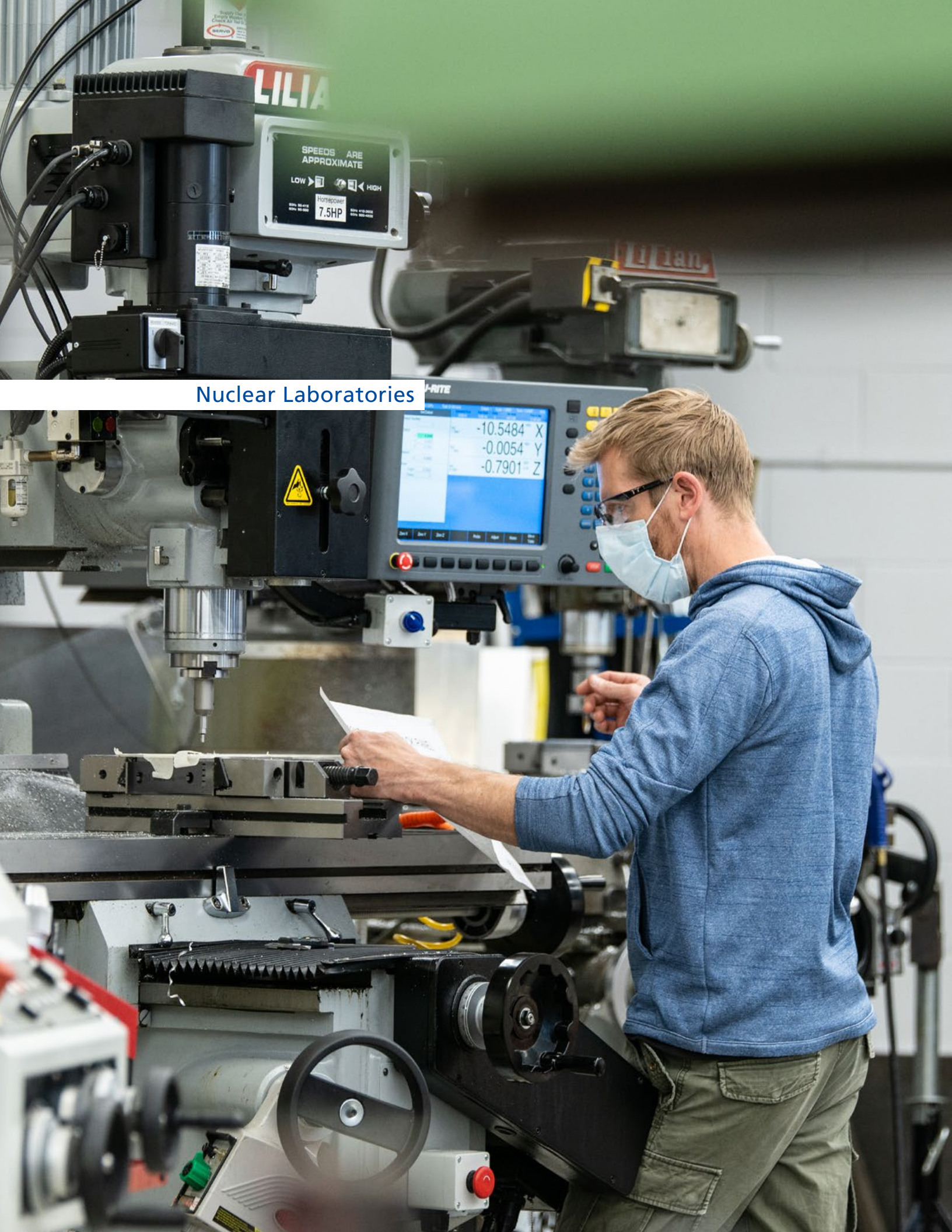
Targets	Results
Develop or renew between 3 and 5 agreements with Indigenous communities.	AECL and CNL finalized and signed a long-term relationship agreement with the Algonquins of Pikwàkanagàn First Nation; renewed 1 contribution agreement; and developed and signed 1 engagement protocol agreement and 1 Memorandum of Understanding. Discussions continue with respect to 3 other agreements.

Fueling the Next Generation of CANDU

AECL owns the intellectual property for the CANDU reactor from its former CANDU Reactor Division, a major nuclear success story, and one of Canada's most significant technological exports. Looking ahead at the five-year planning period, AECL sees a vital opportunity for CANDU technology: answering the call for new reactors to meet Canada's forecasted need for far greater clean electricity supply, supporting ongoing energy security and sovereignty through the use of a domestic technology and existing supply chain as well as creating jobs and economic growth for Canadians. This opportunity will involve competition among leading foreign companies and designs, and AECL sees CANDU as a prime contender for business in Ontario and beyond because of the articulated benefits it provides Canada. However, CANDU's competitive position for such opportunities will benefit from further investment in the CANDU design to meet the needs of the modern utility customer, including their interest in a 1GWe CANDU reactor. To achieve this, AECL concluded in 2023-24 a Memorandum of Understanding with its current licensee, AtkinsRéalis, to further efforts for an optimized CANDU model to position CANDU for the next generation of large nuclear reactors in Canada and abroad.

Key to the future success of any new CANDU projects will be the availability of heavy water, which has not been produced in Canada for over 25 years. AECL and CNL will look to leverage their extensive experience of heavy water related technologies to develop and demonstrate new production pathways, and ensure the timely availability of a secure, low carbon, domestic supply for the benefit of Canada. In early 2024, AECL and CNL signed a non-exclusive, non-binding agreement with AtkinsRéalis to cooperate on the upgrading and production of heavy water for the commissioning and operation of new CANDU nuclear reactors in Canada.

Successful CANDU deployment means both royalty revenue to Canada, and significant economic benefit resulting from business going to Canadian companies and well-paying jobs for Canadian workers. More importantly, the model and investments are needed to best position CANDU and Canada to successfully achieve decarbonization, energy security and economic objectives as well as sustaining Canada's nuclear nation status among a select group of Tier-1 nations worldwide (meaning a nation with a complete nuclear ecosystem from mining, to domestic technology, to research, and a robust nuclear supply chain). Careful management of the CANDU intellectual property is vital at this juncture to protect one of the government's strategic assets and gain the benefits that can be derived from it by Canada.



Nuclear Laboratories

AECL has been leading nuclear science and technology for over seven decades. The organization was the birthplace of Canada's nuclear industry, having hosted the first sustained criticality (controlled nuclear chain reaction) outside of the United States. More importantly, the Chalk River Laboratories were the birthplace of the CANDU reactor technology developed and commercialized by AECL's former CANDU Reactor Division, a technology that today is used at 19 reactors in Canada and 30 (CANDU or CANDU-derivatives) internationally. It also provided the research and facilities for breakthroughs in the life saving application of medical isotopes, including cobalt-60. Work undertaken at the Chalk River Laboratories has led to numerous and important scientific achievements – including two Nobel Prize winners.

Over the years, AECL has played an important role in supporting public policy and in delivering programs for the Government of Canada. This includes the production of medical isotopes and the provision of nuclear science and technology in the areas of energy, non-proliferation, emergency preparedness, counterterrorism, health, and security. AECL's unique facilities have made it an attractive research destination for scientists across Canada and the world, leading to home-grown innovation and the development and retention of highly qualified nuclear workers and scientists.

To further enhance these capabilities, the federal government is investing $1.3 billion over ten years (starting in 2016) in new and renewed science and site infrastructure that is helping build a state-of-the-art nuclear science and technology campus.

Nuclear science and technology activities at the Chalk River Laboratories support federal needs and priorities, and CNL offers research and development services that support the broader nuclear sector in Canada. Importantly, CNL is focused on innovation, aligning science and technology activities with best-in-class project management practices, increasing the number of commercial partnerships, and optimizing administrative and management costs to deliver more science for the benefit of Canadians.

Over the years, AECL has been building strategic partnerships nationally and internationally to maximize our investments in research and capabilities at the lab and enhance innovation. Nationally, AECL and CNL are strengthening our partnerships with academia to facilitate research collaborations, the development and mobility of Highly Qualified Personnel (HQP), and access to specialized infrastructure. Memorandum of Understandings (MOU) have been signed with seven universities: McMaster, Ontario Tech University, Western University, University of Waterloo, University of New Brunswick and Queens University that are aligned with S&T priority areas, a demonstrated history of successful collaboration, and complementary expertise & infrastructure. AECL is a non-voting member of University Network of Excellence in Nuclear Engineering (UNENE) and retains a board seat. UNENE is a network of Canadian Universities, industry, government, and international institutions dedicated to advancing nuclear knowledge, building capacity and heightening visibility of Canada's strength as a global partner and to elevate the role of nuclear in advancing g global sustainability and a clean energy future.

Internationally, we continue to build on our relationships with the US, UK, and France. A highlighted achievement here is the tripartite (Canada-UK-US) workshop on *in situ* Decommissioning held in Ottawa in December 2023, which brought together numerous experts in both science, regulation, and public engagement to discuss case studies, best practices, policy issues, and tour the NPD Reactor site. This is in addition to ongoing collaboration on a number of topics including workforce development, sustainability, and engagement. In 2023-24, AECL signed an MOU with the Korea Atomic Energy Research Institute in nuclear science and technology focused on enabling scientific collaboration and the development of small modular reactor technology. AECL is active in our multilateral participation in international organizations such as the Generation IV International Forum (GIF), International Atomic Energy Agency (IAEA) and Organisation for Economic Co-operation and Development (OECD) Nuclear Energy Agency (NEA).

In February 2024, AECL convened stakeholders and partners from government, the industry, and academia to a Pan-Canadian workshop to assess the opportunities and barriers to the deployment and operation of Small Modular Reactors (SMR) and Advanced Reactors (AR). At the same time, AECL released its Compendium on SMR, AR and Micro Modular Reactor (MMR). The Compendium provides an overview of the research and development (R&D) efforts and capabilities built under the FNST Work Plan, highlighting the significant impact of the investments in ARs, SMRs, and MMRs to support their demonstration and deployment. The Compendium will be published on the AECL website in 2024-25.

Federal Nuclear Science and Technology Work Plan

AECL oversees the delivery of the Federal Nuclear Science and Technology Work Plan for nuclear research and development to support the government's priorities and core responsibilities in the areas of health, nuclear safety and security, energy, and the environment. The Federal Nuclear Science and Technology Work Plan serves to build, maintain and maximize those capabilities that are unique to CNL. AECL engages with fifteen federal departments and agencies to develop a program of work that meets broad federal needs and priorities and fosters innovation through the development of technologies and applications, while supporting Canada's international partnerships, commitments, and obligations.

The Federal Nuclear Science and Technology Work Plan focuses on four themes:

1) Supporting the development of biological applications and understanding the implications of radiation on living things.
2) Supporting environmental stewardship and radioactive waste management.
3) Enhancing national and global security, nuclear preparedness, and emergency response.
4) Supporting safe, secure, and responsible use and development of nuclear technologies.

Activities in 2023-24 supported AECL's priorities, including support for the government's priorities and the achievement of its climate change targets in 2030 and 2050. This included:

- Advancing small modular reactor technologies and deployment for Canada to inform regulatory guidance, assessments, and policies such as experimental validation of predictive models in support of safety analysis and licensing and the development of sensor monitoring of remote and underground structures.
- Examining the safety and efficacy of Actinium-225 in support of new medical applications and developing proof-of-concept production of high-quality radioisotopes for cancer treatments.
- Supporting regulatory and licensing decisions for projects to understand the behavior of materials in advanced reactors, small modular reactors and the current fleet in extreme environments.
- Examining the effects of aging, corrosion and degradation of in-core materials for new and current reactor types as well as developing state of the art online monitoring networks.
- Examining the potential for small modular reactors to meet the needs of a near-zero carbon remote mining operation.
- Contributing to Canada's emergency response capability by developing improved bio dosimetry techniques for rapid triage in emergency response; improvement of techniques for rapid measurement of radionuclides and development of decorporation and decontamination techniques.
- Improving the understanding of the basis of biological effectiveness of different radiations at low doses and dose rate.
- Advancing technologies for the detection of special nuclear materials at the border.
- Studying nuclear security and emergency response considerations for deployment of small modular reactors in remote sites.
- Reducing uncertainties in low-dose risk assessment to address challenges in regulatory policy, health assessment and public communication through in vivo mice studies.
- Improving the understanding of environmental impacts and waste of small modular reactor operations in support of the Small Modular Reactor Action Plan.
- Hosting exercises to test cyber security resilience for nuclear power plants in a full-scale cyber physical simulation of the control and safety systems.
- Supporting Canada's interests, commitments and arrangements in non-proliferation, counter-terrorism and disarmament priorities such as the International Partnership for Nuclear Disarmament Verification.
- Developing a roadmap for fusion energy in Canada to support decisions to developing a domestic fusion energy R&D program.
- In the Energy Theme area, the Canadian Hydrogen Safety Centre was newly launched to provide needed safety expertise. Across the globe, countries are pledging and investing into the research, development and infrastructure to reach net-zero emissions by 2050. With hydrogen as a key enabler for decarbonisation, the Canadian Hydrogen Safety Center was developed to understand the challenges and safety considerations that come with technology.

Targets	Results
Deliver quality research projects on time, as set out in the Federal Nuclear Science and Technology Work Plan and detailed in CNL's annual plan.	94% of project milestones were met.

Canadian Nuclear Laboratories as a Federal Laboratory

In addition to working for federal departments and agencies under the Federal Nuclear Science and Technology Work Plan, CNL provides services and access to its unique expertise and facilities on a commercial basis. These capabilities are also made available to international agencies such as the International Atomic Energy Agency and the Nuclear Energy Agency. In 2023-24, CNL continued to work with various government departments and agencies, including Defense Research and Development Canada through its Canadian Safety and Security Program, the Canadian Nuclear Safety Commission, Transport Canada, Department of National Defense, and Natural Resources Canada.

Targets	Results
Propose and develop between 3 and 5 collaborative agreements, memoranda of understanding or other agreements with organizations.	6 new agreements were signed with government.

New Technology Initiatives Fund

The New Technology Initiatives Fund allows CNL to undertake science and technology activities to build expertise and capability at the Chalk River Laboratories, with a long-term view to attracting and retaining world-class expertise and building skills and knowledge that are anticipated to be needed for future or emerging opportunities. Consistent with similar programs at national laboratories around the world, providing funding to support work and projects that may be at very early stages, peripheral to current research priorities, high risk, or exploratory, the New Technology Initiatives Fund is expected to promote innovative thinking, reward initiative, balance near-term priorities with long-term vision, and improve employee engagement.

Activities in 2023-24 include:

- Launch of the sixth iteration of the Strategic, Enabling, Engaging, Development (SEED) Crowd Sourcing Initiative. This program draws inspiration from the startup model and crowd sources employee ideas for new projects, investing in those selected for the research pipeline.
- The integration of nuclear and renewable energy systems in support of 2030 and 2050 Canada Climate targets by producing hydrogen from these low-carbon energy systems.
- Advancing the modelling of nuclear graphite and modelling of corrosion of the silicon carbide (SiC) layer in support of SMR and advanced reactor deployment.
- Targeted alpha therapy using intracellular nanobodies for targeted delivery of radioisotopes in cancer therapy.
- The characterization of boron nanotube composite materials for radiation protection in space. The intended use of this technology is to provide a lightweight, radiation shielding material for space applications.
- A novel prototype neutron detector based on nanoparticle aerogels. This project was initiated following a successful SEED project, where neutron absorbing nanoparticle aerogel technology was investigated as possible alternative neutron detectors to Helium-3. This project will enable CNL to maintain and expand its unique expertise in neutron detection and development of novel neutron detectors.
- Developing a muon-induced neutron emission technique for nuclear verification and non-proliferation.

Targets	Results
Maintain and enhance expertise and capabilities.	Eleven of this year's projects were continuing projects from 2022-23, and four were new projects.

Commercial Science and Technology

To further meet the specific needs of industry, CNL provides technical services and research and development products to third parties on a commercial basis. CNL has also expanded its commercialization efforts into intellectual property development with strategic partners and participating in industry-led or partnership initiatives to advance technology, products, or services and make them available to industry. Unlike most national laboratories globally, CNL is inherently an applied-science laboratory with a unique role in connecting basic research to meaningful industry applications.

CNL continues to work with its ongoing and key expertise support of the operation and maintenance of the existing fleet of reactors in Canada through service work. CNL is expanding its reach to include new markets, playing a key role in maximizing the potential of nuclear technology to deliver benefit to Canada, including but not limited to:

- The light water reactor fleet
- Decommissioning and waste management
- Small modular reactors
- Hydrogen
- Tritium (fusion fuel cycle)
- Safety & Security
- Health Research & Development (R&D)
- Medical isotope production

Commercial work is both an important component of, and an enabler to, CNL's science and technology mission. Working with private industry not only supports the success of the Canadian sector, it further enables CNL to maintain and enhance its scientific and technical capabilities and facilities, and attract, develop and retain world leading experts within Canada. This further underpins Canada's role as a tier-1 nuclear nation, (meaning a nation with a complete nuclear ecosystem, technology, capabilities, facilities, research, and a robust nuclear supply chain), and contributes to Canada's broader science and innovation goals on both the domestic and international stage.

Building on previous years' efforts, in 2023-24, CNL continued to engage with and respond to existing customers' requests and explore new markets.

Targets	Results
Generate $69M in revenue.	Revenue generated for 2023-24 was $67.5M or 98% of target.

AECL, through CNL, continues to build on its vision is to serve the world as a global hub for SMR research and technology. This includes ambitions for the siting of a demonstration unit built on a CNL managed site. CNL's staged invitation process for those technology developers interested in siting their demonstration unit remains open. The most advanced project in the pipeline, Global First Power (GFP), has begun the licencing process and an Environmental Assessment for a demonstration High Temperature Gas Reactor (HTGR) at the Chalk River campus.

CNL has continued to build on the success of its Canadian Nuclear Research Initiative (CNRI), a CNL-led program that supports collaborative research projects on advanced reactor technology with third-party proponents, attracting a further 10 applications to its 2023-24 program, with 9 joint R&D scopes of work proceeding to the project negotiation phase. This cost share program has been developed by AECL and CNL to make technical capabilities and expert knowledge available and accessible to the advanced reactor community, in order to equip them with the technical support required to progress towards deployment in Canada. In doing so, CNL further strengthens the unique role it must play to accelerate the deployment of safe, secure, clean, and cost-effective advanced reactors in Canada.

AECL and CNL recognize the importance of partnerships in maximizing the value derived from the unique capabilities, expertise, and facilities at CNL as critical to drive nuclear opportunity for Canada and deliver benefit to Canadians. CNL is therefore adopting a proactive approach to existing and new markets, deploying a range of models to best utilize CNL as a catalyst for Canadian nuclear innovation. This includes the formation of new strategic commercial partnerships to develop products and services, and facilitate their route to market. Over the course of the year, CNL and AECL entered into numerous agreements and partnerships with academia, industry and other national institutions with this goal in mind. Specific examples include:

Radiopharmaceuticals: The launch of a new joint venture between CNL and Isotope Technologies Munich (ITM), a leading radiopharmaceutical biotech company, for the development of industrial scale production of Actinium-225 as a promising new tool in the fight against cancer. In this partnership, CNL will provide the starting material for irradiation and initially manage the production process during the interim scale of radiochemical grade 225Ac supply, while ITM will further process the resulting 225Ac to pharmaceutical grade under Good Manufacturing Process (GMP) specifications. ITM will also be responsible for global marketing, sales, and distribution, which will be supported by its well-established global sales network.

Fusion: Continuing efforts to meet the demands of the rapidly growing fusion sector and leveraging unique experience of tritium safety and management. CNL signed a Memorandum of Understanding (MOU) with Stellarex Inc., a fusion energy technology development company, which includes leading experts from Princeton University and the international fusion energy community, which provides a framework for collaboration and cooperation in the science and technology of fusion energy production, and the signing of a collaboration framework agreement to partner with the United Kingdom Atomic Energy Authority (UKAEA) on the development of technologies in relation to the management of tritium, a fusion energy fuel.

Hydrogen: Responding to Canada's Growing Hydrogen Industry, CNL introduced a Canadian Hydrogen Safety Centre that will leverage its decades of technical expertise and capabilities in hydrogen and drive a collaborative approach that integrates industry, government and academic membership. The mission of the centre is set to deliver hydrogen safety solutions across multiple industrial sectors and regions. It will seek to meet the demand for timely, technical solutions to address safe infrastructure growth, provide education and training, and support governments, regulators, policy makers and industry on safety-related issues and solutions.

Space: Having signed a contribution agreement with the Canadian Space Agency, CNL's expertise in materials sciences, radiobiology and post-irradiation analysis will be utilized to produce strong, lightweight nanomaterials to enable safer space travel. Funded through the CSA's Space Technology Development Program, the $1 million project will contribute to Canada's ongoing efforts to enable space exploration, by advancing the development of materials that can withstand the extreme conditions in space, while safely shielding spacecraft personnel and equipment.

Fuel: The signing of an MoU with Clean Core Thorium Energy, a nuclear fuel company exploring thorium-driven nuclear innovation, to further the development and deployment of Clean Core's advanced nuclear fuel (ANEEL). This collaboration will see CNL's capabilities leveraged in support of critical activities including R&D and licencing.

National Research Universal Reactor

After 60 years of operation, the National Research Universal reactor was shut down in March 2018. Designed in the early 1950's, the low-temperature, low pressure, research reactor enabled great advances across a wide variety of globally important industrial sectors. The National Research Universal reactor was used to prove out many concepts which later appeared in the CANDU reactor. It spawned a global medical radioisotope industry and provided the neutron source to conduct research across a wide spectrum of sciences, both applied and basic.

The reactor shutdown has left a significant gap in research capabilities at the Chalk River Laboratories. AECL and CNL are currently exploring options around a future research reactor. A decision to deploy domestic nuclear technology (i.e. CANDU) to support Canada's energy transition will have a significant impact on the business case for a research reactor, though a research reactor would be able to support any technology choice.

Revitalization of the Chalk River Laboratories

Owned by AECL and managed by CNL, the Chalk River Laboratories comprises several licensed nuclear facilities and more than 50 unique research amenities. It supports key nuclear science and technology priorities for government and industry, including research and advancements in health, safety, security, environmental stewardship, and clean energy.

CNL's long-term plans for targeted and strategic capital investments will allow the laboratories to grow the unique complement of science and technology capabilities, while remaining flexible to quickly adapt to the evolutionary opportunities of nuclear and energy-related, leading-edge innovation. These investments will contribute to an efficient and cost-effective campus, replacing aged facilities and infrastructure that are costly to operate and maintain.

As part of AECL's role in overseeing CNL's activities for the management and operations of our sites, a clear focus is placed on the ongoing, safe operations of the nuclear laboratories and decommissioning sites. Above and beyond the role of the Canadian Nuclear Safety Commission which, as a regulator, ensures that all nuclear activities in Canada are delivered safely, AECL expects and holds CNL accountable for delivering high levels of performance in health, safety, security, and environmental protection.

AECL has also asked CNL to transform its operations to increase value for money and reduce costs and risks to Canada. The overall objective is to have in place a cost-effective, modern campus-like site with new and refurbished facilities to support the future growth of CNL. Any capital investments at AECL sites will take into consideration best practices with respect to sustainability and green building standards in order for AECL to meet its GHG emission reduction targets.

The Capital Plan addresses two main areas of focus:

- New Science Infrastructure – These investments are part of a longer-term plan to revitalize the Chalk River site and construct new science facilities in order to build a modern, world-class nuclear science and technology campus that serves the needs of government and industry.

- Site Infrastructure – Investments have been required to support existing and aging infrastructure systems and facilities at the Chalk River site such as potable water, storm sewer, sewage treatment, electrical and other utilities. These investments are necessary to respond to regulatory and health, safety, security and environmental requirements, as well as to maintain a cost-effective and reliable site.

The following projects are transforming the site into a modern, world-class nuclear science and technology campus.

Advanced Nuclear Materials Research Centre – combines the capabilities of existing but outdated facilities into a modern shielded facility and laboratory research complex that will support further advancements in nuclear science and technology, including small modular reactors and nuclear safety and security. Construction was started in 2022 and is expected to be completed in 2028. In 2023-24, pouring of the foundations and off-site fabrication of the hot cells began.

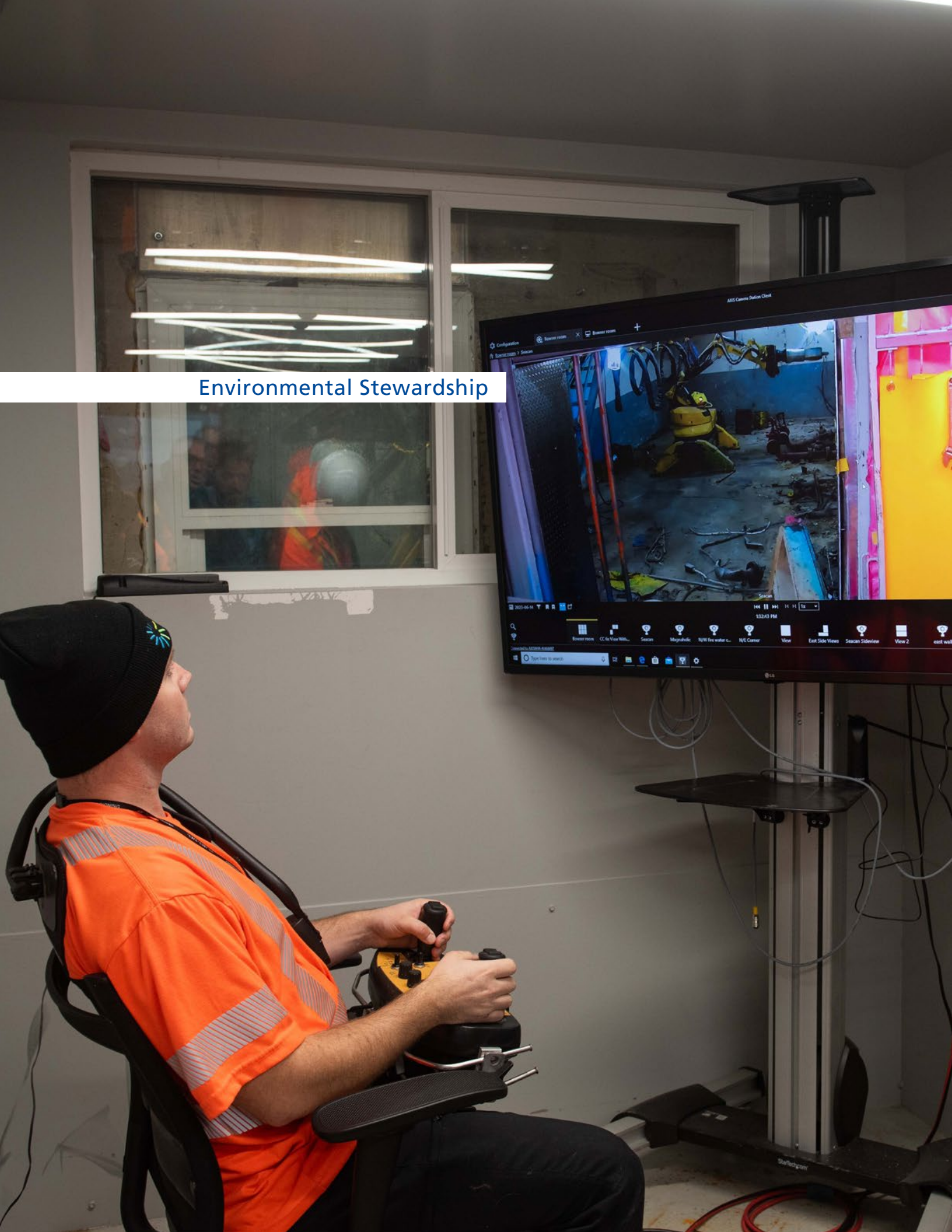
Science Collaboration Centre – this six-story office building will serve as a business hub and accommodate current and future CNL staffing projections; support process efficiencies, collaboration and business development; and enable potential expansion based on the future of work and programs at the Chalk River Laboratories. Construction was completed in 2023-24.

Targets	Results
Complete and commission new non-nuclear facilities.	The Science Collaboration Center is completed and operational.
Improve stability in health, safety, security, and environmental industry standard metrics against industry standard benchmarks.	At the Chalk River site, CNL achieved excellent safety performance and is well placed in the top quartile of industry performance, while other key indicators demonstrate solid continuous improvement.
Implement actions to achieve CNL's objectives to manage operating costs while maintaining safety and the protection of the environment, with a view to ensuring a sustainable and science-focused organization in the long-term.	Cost pressure due to post-pandemic inflation and abnormal escalation continue to be a challenge. Efforts have been made to reduce costs through energy efficiency initiatives and other means. Activities in this regard will continue in the coming years.

Advanced Nuclear Materials Research Centre

The Advanced Nuclear Materials Research Centre is AECL's most significant capital investment at the Chalk River Laboratories. The objective is to combine the capabilities of existing, outdated facilities into a modern shielded facility and laboratory research complex essential to Canada's nuclear operations and status as a tier-1 nuclear nation (a country with a complete nuclear ecosystem from natural resources to research to operations and more). The facility will enable support to, and extension of, the operational life of Canada's CANDU fleet, the needs of the federal government (particularly in safety, security and nuclear forensics), and new and emerging science and technology areas such as small modular reactors and the associated fuel development technology.

Environmental Stewardship



AECL's objective is to protect the environment by advancing key decommissioning, remediation, and waste management projects to address risks and hazards.

AECL has been conducting nuclear science and technology activities for seven decades. While these activities have had important benefits for Canada and Canadians—for example the production of medical isotopes used in the detection and treatment of cancer—they also produced radioactive waste. AECL has various types of radioactive waste at its sites, including high-level waste (used fuel), intermediate- and low-level waste. Several sites, buildings and structures have also been contaminated as a result of nuclear science and technology activities and past waste-management practices; these need to be decontaminated and demolished, sites cleaned up and remediated, and the radioactive waste managed properly and safely.

AECL is also responsible for fulfilling Canada's responsibilities with respect to historic low-level waste at sites where the original owner no longer exists, or another party cannot be held liable and for which the government has accepted responsibility. This includes the cleanup and safe long-term management of historic, low-level radioactive waste in the municipalities of Port Hope and Clarington, in Ontario, pursuant to an agreement between Canada and the municipalities. This project is one of the largest and most complex environmental projects in Canada.

With the implementation of the Government-owned, Contractor-operated model, AECL was given a mandate to accelerate these activities to reduce risks and costs for Canada in a safe manner, consistent with international leading practices. Specifically, AECL has asked CNL to propose long-term radioactive waste disposal solutions and to advance other decommissioning activities to reduce its environmental liabilities.

This work is well underway, with significant progress having been made at the Chalk River Laboratories where 118 old and outdated buildings and facilities have been demolished. This not only reduces AECL's environmental liabilities and overall site maintenance costs, but it also paves the way for new facilities to be constructed as part of the site's revitalization.

Working in collaboration with Indigenous Nations and local communities, industry experts and key stakeholders, AECL and CNL are advancing decommissioning activities and looking at various solutions to address the unique challenges and opportunities associated with long-term radioactive waste disposal.

Remediation, Decommissioning and Radioactive Waste Management at the Chalk River Laboratories

Activities in this area include all waste and decommissioning activities to address AECL's environmental, decommissioning, and waste management responsibilities at its Chalk River Laboratories.

Waste Management and Disposal at the Chalk River Laboratories

Radioactive waste is safely stored at the Chalk River site. However, long-term management and disposal solutions must be developed for various types of wastes to allow for the remediation of contaminated buildings, lands and soils, and to move away from continuous temporary storage. As such, CNL has proposed to build a Near Surface Disposal Facility (NSDF) for the disposal of AECL's low-level radioactive waste, as well as small amounts of waste from other Canadian producers such as hospitals and universities.

The facility would allow for the disposal of the vast majority of AECL wastes currently in interim storage, as well as waste generated as a result of contaminated land remediation activities, decommissioning activities and continued operations of the nuclear laboratories. This project is critical to advance decommissioning and remediation activities at AECL sites, and to further protect the environment.

Permission to begin construction of the NSDF was granted to CNL on January 9, 2024, following public hearings by the Canadian Nuclear Safety Commission.

In the meantime, interim waste storage has continued to expand to accommodate waste which is produced as a result of continued building decontamination and decommissioning at the Chalk River site, as well as ongoing nuclear science and technology operations.

With respect to AECL's intermediate-level waste, CNL continued to engage with the Nuclear Waste Management Organization in its work, requested by the Minister of Energy and Natural Resources, to develop an Integrated Radioactive Waste Strategy for Canada. AECL's high-level waste (used fuel) is destined to be disposed of in the Nuclear Waste Management Organization's proposed repository. Projects to manage used fuel are discussed in more detail in the section on Management of used fuel and repatriation of highly-enriched uranium below.

CNL also manages AECL's inventory of highly radioactive stored liquid waste which is a byproduct of medical isotope production. A project is in place to safely remove and process the legacy radioactive liquid waste from existing tanks at the Chalk River site and to decommission the tanks and associated structures.

Until disposal solutions are approved and available, CNL continues to manage radioactive waste inventories at dedicated waste management facilities at the Chalk River site in a manner that is safe and minimizes the impacts on the environment.

Targets	Results
Develop a program for radioactive waste where there are no plans for disposal. This will be aligned with the Nuclear Waste Management Organization's work, as requested by the Minister of Energy and Natural Resources, to develop an Integrated Radioactive Waste Strategy for Canada.	In October 2023, the Minister of Energy and Natural Resources accepted the recommendations of the Nuclear Waste Management Organization for an Integrated Radioactive Waste Strategy for Canada. This includes having the Nuclear Waste Management Organization be responsible for the disposal of Canada's intermediate-level waste, including AECL's. AECL and CNL will work with the Nuclear Waste Management Organization on the details of this solution in the coming years.
Receive low-level radioactive waste from the Whiteshell Laboratories site for storage and/or disposal.	Low-level radioactive waste from the Whiteshell Laboratories continues to be shipped to Chalk River Laboratories for storage and eventual disposal.
Receive regulatory approval to begin construction on the Near Surface Disposal Facility.	On January 9, 2024, CNL received approval from the Canadian Nuclear Safety Commission to commence construction of the Near Surface Disposal Facility.

Environmental Restoration at the Chalk River Site

For more than 70 years, nuclear science and technology activities at the Chalk River site have led to the production of a variety of radioactive and other hazardous wastes. This waste is carefully managed in dedicated areas, otherwise known as waste management areas. While the majority of the Chalk River site remains undisturbed, certain areas, including the waste management areas have contaminated soil and waste requiring retrieval and processing to allow for final disposal. As there remains a significant amount of buried waste, soil contamination and associated plumes, remedial actions are required to further protect the environment. Until such a time, legacy waste is being safely managed and closely monitored.

The remediation of the Waste Management Areas cannot progress until the Near Surface Disposal Facility is available. The intent is to align the completion of the characterization and remediation planning of the waste management areas with the availability of the disposal facility. CNL completed a remediation action plan for Waste Management Area F in 2023-24, as planned, and 2024-25 will see a focus on completing the Laundry Pit remediation action plan.

Targets	Results
Complete characterization and remediation plans for various waste management areas at the Chalk River site.	Characterization is ongoing for waste management areas at the Chalk River site. CNL has completed a remediation action plan for Waste Management Area F.

Decommissioning at the Chalk River Site

The Chalk River site includes multiple redundant and outdated buildings which require decontamination, decommissioning and demolition. The site has been in existence since the 1940s, and some buildings still standing today date back to that era. Some facilities were used as nuclear science and technology facilities (and therefore may have some level of radioactive contamination), while others were used as support buildings (for example machine shops, garages, etc.). Most of these facilities and buildings are outdated, no longer required to meet operational needs and contribute to high site costs through ongoing maintenance for safety and security purposes, energy consumption, etc. Buildings also need to be removed to make way for the Chalk River site revitalization.

Since 2015, there has been significant acceleration of decommissioning work at the Chalk River site: 118 buildings and structures have been decontaminated, decommissioned and demolished. This significantly reduces site costs and makes way for safer, more sustainable world-class nuclear science and technology buildings. It should also be noted that delays in the approval for the Near Surface Disposal Facility (NSDF) – while site decommissioning work continued – have required expanded interim storage for low level waste which will ultimately be housed in the NSDF. While the permit for construction of the NSDF has been granted, there are several applications for judicial review of the permitting process before the Federal Court which, if accepted, could significantly delay that project further.

In terms of AECL oversight, a key challenge emerged this past year at Chalk River when CNL uncovered in February 2024 errors in the Learning Management System which failed to notify certain personnel that required training certifications had expired. AECL took immediate action in overseeing the CNL response, with daily meetings, short and longer-term action plans and follow-up, and more. CNL paused all affected work, delivered remedial training immediately, communicated training documentation procedures to all staff, and worked to analyze and understand any systemic or technological issues. AECL will continue to ensure strong performance here in the future. The target below of demolishing 1 building and structure is low, compared to previous years, only because so many buildings – particularly smaller and easier to deal with structures – have been dealt with.

Targets	Results
Demolish 1 building and structure.	The last water tower at the Chalk River Laboratories was demolished in 2023-24.

Management of Used Fuel and Repatriation of Highly-Enriched Uranium

Highly-enriched uranium originating in the United States was used at the Chalk River site as reactor fuel and in the production of medical isotopes. This material requires high levels of security as well as costly and complicated storage. As part of the Global Threat Reduction Initiative (an initiative which aims at reducing proliferation risks by consolidating highly enriched uranium inventories in fewer locations around the world), AECL is working with the United States Department of Energy and CNL to return (repatriate) this material to the United States for conversion and reuse. This initiative provides for a safe, secure, timely and permanent solution to Canada's long-term management of this material.

CNL is also advancing efforts to consolidate AECL's inventory of used fuel. This entails transferring used fuel, currently stored in various locations across Canada, to the Chalk River Laboratories. Consolidating used fuel in a single location will increase safety and security and reduce costs while the Nuclear Waste Management Organization develops a permanent disposal solution.

Targets	Results
Continue to investigate and pursue the disposition or repatriation of fresh and irradiated fuel material to further reduce liabilities for Canada.	The repatriation of fuel continued, consistent with commitments made by Canada at the Nuclear Security Summit. In total, 6 shipments were made to the United States during fiscal year 2022-23, and 1 in 2023-24, thereby reducing risks for Canada.
Prepare plans and begin stakeholder and Indigenous engagement activities for the shipments of AECL used fuel to the Chalk River site.	Planning and a variety of stakeholder and Indigenous engagement activities are ongoing to support the shipment of AECL used fuel to the Chalk River site from within Canada.
New fuel storage capacity is ready to accommodate AECL used fuel.	The new fuel storage capacity has been constructed at the Chalk River Laboratories.

Decommissioning of Prototype Reactors

Gentilly-1 and Douglas Point are shutdown prototype nuclear reactors owned by AECL and located in Bécancour, Quebec and Kincardine, Ontario, respectively. The reactors operated in the late 1960's through the mid 1980's to advance the understanding of boiling light water power reactors (Gentilly-1) and steam condenser power reactors (Douglas Point). Both reactors are now shut down and in a safe shutdown state prior to being fully decommissioned.

Originally the decommissioning of these prototype reactors was not planned to occur for many decades. However, to reduce costs associated with storage and surveillance of this aging infrastructure, decommissioning plans are being prepared to advance this work. In order to move forward with the decommissioning of certain non-nuclear buildings at the Douglas Point site, CNL requested an amendment to its operating license. Permission to begin removing these facilities was granted in 2021. In 2023-24, asbestos removal was completed which allowed the demolition contractor for the turbine and administration building to mobilize to site and begin soft strip of the facilities.

At Gentilly-1, asbestos removal from the reactor building was completed in March 2024. The development of the detailed decommissioning plans also progressed, with the goal of advancing the decommissioning of the facility. CNL will have to present its plans and receive approval from the Canadian Nuclear Safety Commission in order to move forward. Already, stakeholder and Indigenous engagement activities have begun to discuss potential plans, and seek feedback and input.

Targets	Results
Demolish supporting and/or redundant facilities at the Douglas Point reactor.	Demolition work has started and will be completed in 2024. The administration building hazard removal is nearing completion and will also be completed in 2024.
Review options for Douglas Point and Gentilly-1 for transport of fuel to the Chalk River Laboratories.	Consideration for the consolidation of the Douglas Point used fuel at Chalk River Laboratories is currently on hold until the location of the proposed deep geological repository for used fuel is determined (the project is led by the Nuclear Waste Management Organization). CNL is advancing work to consolidate the used fuel from Gentilly-1 to the Chalk River Laboratories.

Port Hope Area Initiative

The Port Hope Area Initiative represents Canada's commitment to clean up and safely manage historic low-level radioactive waste situated in the municipalities of Port Hope and Clarington, in Ontario. The objective is to safely relocate and manage roughly 2.1 million cubic meters of historic low-level radioactive waste and contaminated soils. To achieve this, two projects are being undertaken: the Port Granby Project and the Port Hope Project. Both involve the remediation of contaminated material and the construction of a near surface long-term waste management facility (one in each municipality). Whereas the Port Granby Project is now complete, the Port Hope Project is significantly more complex and will remain ongoing for the coming years.

The project has faced challenges associated with scope increase on many fronts as remediation work has progressed, with higher-than-anticipated volumes of waste needing to be remediated. At the Port Granby site, the total estimated waste volume increased 1.36 times from the original estimates (550,000 m3 to 750,000 m3) due to the wider spread of contamination. That said, remediation was completed in the fall of 2020 and the facility is now capped and closed, with internal roads having been removed. The Port Granby site has now transitioned to the long-term monitoring and maintenance phase.

As part of the Port Hope project, CNL completed the construction of the last cell of the Long-term Waste Management Facility in 2022-23. In 2023-24, CNL continued to make progress on the remediation of the Port Hope harbour, despite technical challenges. Completion is expected in 2025, with restoration and hand-over to the Town of Port Hope in 2026.

Significant progress was made on the remediation of industrial sites during 2023-24. Both the Chemetron Lagoon and the Lions Park sites were remediated and backfilled, with full restoration expected to conclude in late 2024 or early 2025. The Water Work West site was completed in early 2024, which was behind schedule due to the extensive spread of contamination, over three times the amount of contaminated soil had to be removed than had originally been estimated. Finally, remediation of the coal gasification site began in early 2024, and backfill is now expected to be completed later in the year. The remaining large remediation sites are the Alexander Street Ravine and the Highland Drive South Ravine, both of which are expected to be completed this year.

The largest challenge in this project relates to the scope and execution of the remediation of residential properties. As characterization activities have advanced, the number of properties requiring remediation work has increased. Port Hope property owners and residents have expressed dissatisfaction about the time it will take to remediate their properties. CNL's experience in the field has identified the fact that a significant number of property cleanups are being driven by the generic, conservative cleanup criteria for arsenic in soil. As such, CNL is recommending changes to the Port Hope Area Initiative cleanup criteria for arsenic to minimize unintended negative environmental impacts and disruption to the community.

CNL has made an application to the Canadian Nuclear Safety Commission to amend the cleanup criteria and is engaging federal and provincial regulators, the municipality, local Indigenous Nations and communities, and the public to move its application forward. This would minimize impacts to the environment and to the surrounding communities, while still being protective of human health and the environment. Importantly, it would continue to meet the intent of the Government of Canada's commitment in the original Legal Agreement with the Municipalities to leave properties such that they can be used for "all current and foreseeable unrestricted uses." Should the revised cleanup criteria be accepted by the Canadian Nuclear Safety Commission, this would have the effect of reducing the scope of the cleanup and the overall number of properties requiring remediation. In 2023-24, CNL continued to work with the Canadian Nuclear Safety Commission and other federal departments to advance this proposal.

Targets	Results
Place the long-term waste management facility into long term surveillance.	The Port Granby site is now transitioned to a long-term monitoring and maintenance phase.
Engage local Indigenous Nations and communities to explore options and gather feedback on potential changes to the cleanup criteria for the Port Hope Project.	Engagement continued with Indigenous Nations, the local municipality and community members.

Low-Level Radioactive Waste Management Office

The Government of Canada, through AECL, has assumed responsibility for historic, low-level radioactive waste where the original owner no longer exists, and the current owner cannot reasonably be held responsible. Through CNL, AECL is managing these responsibilities which include the cleanup of historic low-level radioactive waste at various sites across Canada (excluding the Port Hope Area Initiative, discussed above). This includes ongoing interim waste management and remediation projects mostly in Ontario, Alberta and the Northwest Territories.

Planning, stakeholder and Indigenous engagement continued to enable the remediation of sites along the Northern Transportation Route.

Targets	Results
Engage local stakeholders and Indigenous communities to agree on phase 2 cleanup plans for sites along the Northern Transportation Route located in the southeastern Northwest Territories and northern Alberta.	Engagement activities continued with local stakeholder and Indigenous communities regarding phase 2 cleanup plans.

Decommissioning and Closure of the Whiteshell Laboratories

The Whiteshell Laboratories, located in Pinawa, Manitoba, is the second largest of AECL's sites operated by CNL. It was established in 1963 as a research laboratory, with a focus on the largest organically cooled, heavy water moderated nuclear reactor in the world, the WR-1. Facilities also included a SLOWPOKE reactor as well as shielded hot cell facilities and other nuclear research laboratories. The site also includes a radioactive waste management area which serves to provide interim storage of radioactive waste for the Whiteshell site which was created as a result of the operations of the research reactor and nuclear laboratories.

In 1998, the Government of Canada announced the closure of the Whiteshell Laboratories, and decommissioning activities have been underway since then. With the implementation of the Government-owned, Contractor-operated model and the increased emphasis placed on tackling its environmental and decommissioning responsibilities, AECL has asked CNL to accelerate and complete the decommissioning and closure of the site. As a result, CNL is proposing to decommission and close the site closer to 2030, nearly 30 years ahead of the previous schedule. The acceleration of the decommissioning of the site includes a proposal by CNL to decommission the WR-1 reactor *in situ*. That project is undergoing an Environmental Assessment.

In Situ Decommissioning

In situ (leaving in place) decommissioning approach involves preparing systems and structures for grouting whereby the below-grade sealed structure will encapsulate and contain radiological sources and hazardous materials for a defined period of institutional control. *In situ* decommissioning encapsulates both Intermediate and Low Level Waste (ILW & LLW).

Since 2016, CNL has been undertaking environmental and technical assessments and engaging regulators, Indigenous Nations, local municipalities, and the public to share information about *in situ* disposal, gather input, and respond to questions and comments about the proposed project.

In 2022-23, CNL submitted a final version of its Environmental Impact Statement to the Canadian Nuclear Safety Commission, based on its work to broaden understanding of municipal and Indigenous perspectives through collaborative capacity-building initiatives, Traditional Knowledge studies and community participation in site monitoring activities. In January 2023, the Canadian Nuclear Safety Commission indicated that CNL's proposal had passed the completeness check; activities are now underway to plan for a public hearing on the matter, at a date to be determined by the Canadian Nuclear Safety Commission.

Other activities to advance the decommissioning of the Whiteshell Laboratories have included the decontamination and demolition of several buildings. However, significant challenges have emerged with respect to the complexity and level of hazard related to the retrieval, processing and transport of radioactive waste currently being stored in a radioactive waste management area known as the 'standpipes and bunkers'. These are concrete structures, mostly below grade, which contain intermediate-level waste and potentially fissile nuclear material that cannot be fully characterized before retrieval begins. Given the level of risk involved with their remediation, CNL has had to adjust its approach, to include a more complex and costly (as it is based on remote tooling and robotics) method, to protect workers and the environment.

These achievements notwithstanding, no discussion of progress at Whiteshell is complete without touching on the concerning performance of the fire protection program. Over the course of the last year CNL discovered serious issues with respect to training documentation within the fire protection program at Whiteshell. CNL immediately disclosed this gap to both AECL and the CNSC, and took action to stand-down operations at the site until issues could be fully understood and remedied. This resulted in an eight-step plan to return to full compliance and operations, which CNL has been working through over the course of the year, with a full return to operations projected for early 2024-25. In August 2023, the CNSC issued an Administrative Monetary Penalty to CNL for shortcomings in its response to the issue. CNL has conducted a full root cause analysis, has reviewed and documented all training, brought in fire protection staff from other areas in the interim to ensure appropriate coverage, and has generally responded vigorously to address the acute training issue and systemic problems. Throughout this process AECL has exercised close oversight over CNL performance, with a paramount focus on health and safety, and ensuing safe operation of the site. Nonetheless, this shortcoming, and the subsequent time required to restore normal operations, is a serious issue, and will remain a focus of AECL oversight going forward.

Targets	Results
Decommission the majority of buildings on the main campus by 2022.	Given the complexities related to the retrieval of some of the waste located in the management area (discussed above), a decision was made to extend the life cycle of many buildings beyond 2022 in order to accommodate staff and operations. The length of extended operations in these buildings is still being developed in 2024-25.
Prepare the retrieval system for the standpipes and bunkers to start operations.	Design of the retrieval system was advanced in 2022-23, with integrated system operability testing at the fabrication facility in 2024-25.
Submit the final Environmental Impact Statement for the proposed *in situ* decommissioning of the WR-1 reactor.	CNL submitted the final Environmental Impact Statement in 2022-23, with the document passing the completeness check as assessed by the Canadian Nuclear Safety Commission. It is now undergoing final technical reviews by the federal, provincial and Indigenous review team.

Looking to the final site closure and being mindful of the impact on the local community, AECL will continue to work with local communities and Indigenous communities to discuss the future of AECL's lands, which could include consideration for siting a small modular reactor at the Whiteshell site.

Closure of the Nuclear Power Demonstration Reactor Site

The Nuclear Power Demonstration reactor, located in Rolphton, Ontario, was the first Canadian nuclear power reactor and the prototype for the CANDU reactor design. For 25 years, the reactor produced low-carbon energy and operated as a training centre for nuclear operators and engineers from Canada and around the world. Operations at the Nuclear Power Demonstration reactor ended in 1987, after which the first stages of decommissioning were completed, including the removal of all fuel from the site and the draining of the systems. The site has been in a safe shutdown state for the last 30 years.

As part of its objectives to protect the environment and address its environmental and decommissioning responsibilities, AECL has asked CNL to propose plans to safely decommission and close the reactor site. As a result, CNL is proposing to decommission the reactor *in situ*, meaning that it would be immobilized in place by grouting (cementing) the reactor which is located below the surface. The project is currently undergoing an Environmental Assessment.

Since the launch of the Environmental Assessment process in 2016, CNL has been developing its safety case and preparing scientific studies with a view to providing all necessary documentation and responding to stakeholders and Indigenous groups' concerns. A final draft Environmental Impact Statement was submitted in 2023. While the project is more than three years delayed, it has allowed for additional engagement of stakeholders and Indigenous communities on the project in order to gather input and adjust the proposed approach as necessary. Activities have included multiple meetings, site tours and outreach to Indigenous communities, including providing funding for capacity building and traditional knowledge studies, and to enable Indigenous communities to engage technical experts to comment on the Environmental Impact Statement.

Targets	Results
Submit the final Draft Environmental Impact Statement for the proposed *in situ* decommissioning of the Nuclear Power Demonstration reactor.	CNL had planned to submit a final Draft Environmental Impact Statement to the Canadian Nuclear Safety Commission in 2023-24. However, this has been delayed to 2024-25 due to the fact that CNL is now reflecting lessons learned from the Environmental Assessment process of the Near Surface Disposal Facility into the existing documentation.

Third-Party Waste

AECL's sites and waste management capabilities are unique in Canada. Historically, AECL has accepted small amounts of radioactive waste from Canadian facilities, most notably hospitals and universities. CNL continues to provide these services to third parties for the handling, storage and disposal of radioactive waste. These activities are delivered on a full cost-recovery basis and do not require government funding.

Management Discussion and Analysis

Forward Looking Statements

This Management Discussion and Analysis has been reviewed by AECL's Audit Committee and approved by AECL's Board of Directors. It provides comments on the performance of AECL for the year ended March 31, 2024, and should be read in conjunction with the financial statements and accompanying notes included in this Annual Report.

This Management Discussion and Analysis contains forward-looking statements with respect to AECL based on assumptions that management considers reasonable as at June 11, 2024, when AECL's Board of Directors approved this document. These forward-looking statements, by their nature, necessarily involve risks and uncertainties that could cause future results to differ materially from current expectations. We caution the reader that the assumptions regarding future events, many of which are difficult to predict, may ultimately require revision.

Organization

AECL is an agent Crown corporation reporting to Parliament through the Minister of Energy and Natural Resources. AECL's operations are funded through Parliamentary appropriations and third-party revenues which result from commercial work that CNL undertakes, as a contractor of AECL, principally in the areas of nuclear science and technology as well as the sale of heavy water.

AECL operations include activities associated with the management and oversight of the Government-owned, Contractor-operated model, including Environmental Stewardship activities as well as the Nuclear Laboratories. In this respect, AECL sets priorities for CNL, oversees the contract and assesses CNL's performance. AECL also supports the Government of Canada's development of nuclear policy.

Through the Federal Nuclear Science and Technology work plan, AECL also serves the needs of fifteen federal departments and agencies in the area of energy, health, safety and security, and the environment.

Risks and Opportunities

AECL carefully plans for and manages risks as part of sound risk management practices. Due to its oversight role, AECL's risk management approach goes beyond the internal organizational risk and includes oversight of CNL risks. Through ongoing communication between AECL and CNL, plans and activities are monitored to mitigate risks as necessary. This section highlights some risks and opportunities that could ultimately impact financial results.

Re-procurement of the GoCo contract: AECL has launched a competitive procurement process to continue the management and operation of CNL beyond the current contract, which expires in September 2025. Risks being managed include delays to the process that would impact the timing of contract award, risks of a legal challenge to the procurement process, as well as negative impacts on current CNL operations (i.e. delays to existing projects, distracted workforce, etc.) should a new contractor be selected. To mitigate these, a dedicated team made up of some of AECL's most senior and experienced staff has been put in place to manage the procurement and associated contracting responsibilities, and to oversee all transition activities. The team is supported by external legal counsel and expert advisors.

Contractor Performance: As AECL relies on a private-sector contractor to execute scope related to its mandate, an inherent internal risk is the inability of the contractor to consistently execute and perform based on agreed-upon plans. To mitigate this risk and drive the appropriate behavior, the contract with CNL is carefully structured to include several mechanisms for AECL to track CNL's performance. Key amongst these is a performance measurement plan, which is used by AECL to set priorities supported by achievable stretch targets in order to drive value for money for Canada. Ongoing evaluation of the contractor against the plan throughout the year provides AECL the opportunity to highlight strengths and weaknesses and the contractor the opportunity to correct course where needed.

Costs to Operate Chalk River Laboratories: The shutdown of the National Research Universal reactor in 2018 has created cost and funding pressures. This is due to the combination of lost revenue from the activities of the reactor (including isotope sales), diminished funding for the National Research Universal reactor, and operation costs that have not decreased to the same extent as declining funding and revenue. Key mitigation measures include working with CNL to look at all options for lowering costs and increasing revenues. This is actively being pursued and implemented to enable a sustainable and science-focused organization in the long-term, while protecting workers, the public, and the environment.

Human resources: AECL is a small organization that relies on a small complement of national and international experts, many of whom bring experience in the management of similar Government-owned, Contractor-operated arrangements, both from a government and contractor perspective. AECL's goal is to maintain the necessary expertise and capabilities to oversee the Government-owned, Contractor-operated contract and bring value for Canada.

Given AECL's small size, an ongoing challenge is to adapt to fluctuating resourcing requirements across different areas of the organization and backfill those on short-term leave where appropriate. To mitigate this risk, workforce and succession plans have been developed, and AECL regularly reviews its total compensation package to remain competitive amongst similar employers nationally and internationally. AECL strives to be adaptable and flexible, deploying a handful of third-party service contracts to bolster resourcing when and where required and cross-training employees when opportunities arise.

Environmental Assessments: As part of AECL's environmental stewardship responsibilities, three projects are or were undergoing Environmental Assessments through the Canadian Nuclear Safety Commission:

- Construction of a near surface disposal facility at the Chalk River Laboratories.
- *In situ* decommissioning of the WR-1 research reactor at the Whiteshell site.
- *In situ* decommissioning of the Nuclear Power Demonstration facility in Rolphton, Ontario.

All three projects have faced significant delays, which are due to enhanced public and Indigenous engagement requirements, requests from the CNSC to provide additional technical studies, and the COVID-19 pandemic which slowed work at its peak. As a result, additional time has been needed to prepare the safety case for each project, which includes: making adjustments based on feedback and comments received from the regulator, other government organizations, the public, and Indigenous Nations and communities; continuing engagement with key stakeholder and Indigenous Nations and communities; and focusing communications activities with a view to increasing understanding of the rationale behind the projects – protection of the environment – as well as AECL's role specifically. Overall, while these delays have impacted CNL's ability to commence large-scale cleanup and remediation activities at AECL sites, they have allowed for more public and Indigenous engagement, and the development of additional studies in support of the projects' safety cases (which are also facilitating public and Indigenous engagement).

Progress has been made on the Near Surface Disposal Facility project as the Canadian Nuclear Safety Commission (CNSC) issued its decision, in January 2024, to amend the CNL operating license at Chalk River Laboratories to permit the construction of the proposed near surface disposal facility. This decision comes after a lengthy regulatory process, including a July 2022 CNSC decision to extend the Indigenous consultation period requiring the CNSC staff, CNL and AECL to submit additional evidence and information on the subject of engagement and consultation. A public hearing to deliver final arguments was held in August 2023. CNL is now working to understand and fulfill CNSC conditions associated with the project, as well as collaborating with Indigenous Nations and communities on pre-construction preparation. It is possible that the project will be further delayed as applications for judicial review have been initiated. Site clearing is expected to commence in Fall 2024.

The *in situ* decommissioning of the WR-1 research reactor and the Nuclear Power Demonstration reactor is progressing with collaboration and engagement between CNL and Indigenous Nations and communities, with both projects adjusting their approach and documentation to reflect the lessons learned from the regulatory process of the Near Surface Disposal Facility.

Financial Review

	March 31	
($ millions)	**2024**	2023
	$	$
Revenues		
Parliamentary appropriations	**1,345**	1,083
Commercial revenue	**112**	137
Interest income	**28**	16
Other proceeds	**–**	7
	1,485	1,243
Expenses		
Cost of sales	**80**	87
Operating expenses	**90**	75
Contractual expenses	**237**	247
Decommissioning, waste management and contaminated sites expenses	**734**	(28)
	1,141	381
Surplus for the year	**344**	862

Parliamentary Appropriations

The Government of Canada provides funding for AECL to advance its priorities and deliver on its mandate. AECL recognized $1,345 million of Parliamentary appropriations in fiscal year 2023-24, an increase of $262 million compared to the prior year. The increase is largely a result of increased activities in decommissioning, waste management and remediation of contaminated sites.

Commercial Revenue

In 2023-24, revenue was $112 million, a $25 million drop from the prior year. Revenue included technology sales and research and development activities performed by CNL for commercial customers as well as heavy water sales. The drop is a result of decreased heavy water sales compared to the prior year.

Interest Income

Interest income is earned on cash and investments. Income earned increased compared to the prior year due to higher market interest rates.

Other Proceeds

Other proceeds related to commercial settlements recorded during the prior year.

Cost of Sales

Cost of sales decreased due to lower commercial revenue, and increased as a percentage of revenue due to decreased higher margin heavy water sales compared to last year.

Operating Expenses

Operating expenses are largely comprised of AECL's oversight expenses and amortization of tangible capital assets. There were operating expenses of $90 million in 2023-24 compared to $75 million in 2022-23. Operating expenses are higher compared to 2022-23 due largely to an increase in professional services related to the ongoing Government-owned, Contractor-operated procurement, as well as an increased staff complement for the organization overall. This unique project represents a significant, time-bound increase in AECL operations as AECL has stood up a dedicated project team for renewal of the Government-owned, Contractor-operated contract. This team involves both senior AECL staff, key advisors, and legal support, and is projected to be in place for three years. The increase over the prior year is also a result of a reduction in provisions in the prior year.

Contractual Expenses

AECL delivers its mandate through a contract with CNL for the operation of its sites. A portion of CNL expenditures are reported by AECL as Contractual expenses. Expenses in this category for 2023-24 total $237 million, consistent with the $247 million recorded in 2022-23.

Decommissioning, Waste Management and Contaminated Sites Expenses

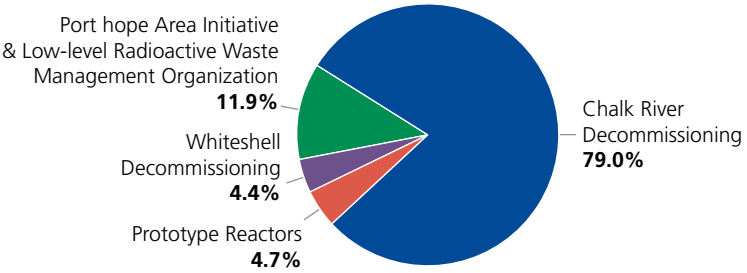
Decommissioning, waste management and contaminated sites expenses consist of financial expenses, the impact on the liability of a change in discount rate, and the revaluation (gain) loss on these reported liabilities. Financial expenses reflect the increase in the net present value (accretion of discount) of these reported liabilities. Changes in discount rate will impact the net present value of the reported liabilities. If the discount rate increases during the year, the result would be a decrease in the Decommissioning, waste management and contaminated sites expenses. If the discount rate decreases, the result would be an increase to the reported expenses. Refer to Notes 8 and 9 for a sensitivity of a 1% change in the discount rate.

The $762 million increase in 2023-24 is primarily a result of a change in the discount rate this year compared to last year. Last year the rate increased significantly resulting in a decrease in the liability. This year, it increased less and so didn't fully offset the changes in estimate for the liability.

The decommissioning and contaminated sites liability is made up of a collection of estimates which provide a projected value of the cost of undertaking decommissioning, remediation and waste management projects, some far into the future. As projects near, they are examined in more detail to plan for execution, which can lead to increases in estimates. This is due to the fact that these projects are related to legacy sites, which brings a high level of uncertainty around sites, waste and contamination levels. As work is planned for and undertaken, risks may materialize which leads to increased costs. This is typical of legacy nuclear research sites, and consistent with what is experienced in other similar sites in other countries such as the United States and United Kingdom.

Decommissioning and Contaminated Sites Liability 2023-24

$9,844 million



Surplus (Deficit) for the Year

Consistent with AECL's financial reporting framework, appropriations are recognized as revenue when received in a given year and may be greater or less than the reported expenditures for the same year. For instance, amounts received to fund decommissioning, waste management and contaminated sites expenditures are recorded as Parliamentary appropriations revenue in the current year while the related expenditures are drawn down from the associated liabilities previously recorded on the Statement of Financial Position.

With respect to tangible capital assets, Parliamentary appropriations revenue includes amounts received in the year to fund the purchase and construction of these assets while the related expenditures are capitalized; therefore, the reported operating expenses include only the amortization of existing tangible capital assets. The excess of appropriations over the related expenses reported has been decreased by the effect of provision adjustments on decommissioning, waste management and contaminated sites liability, partly offset by the change in discount rate on the liability.

Outlook

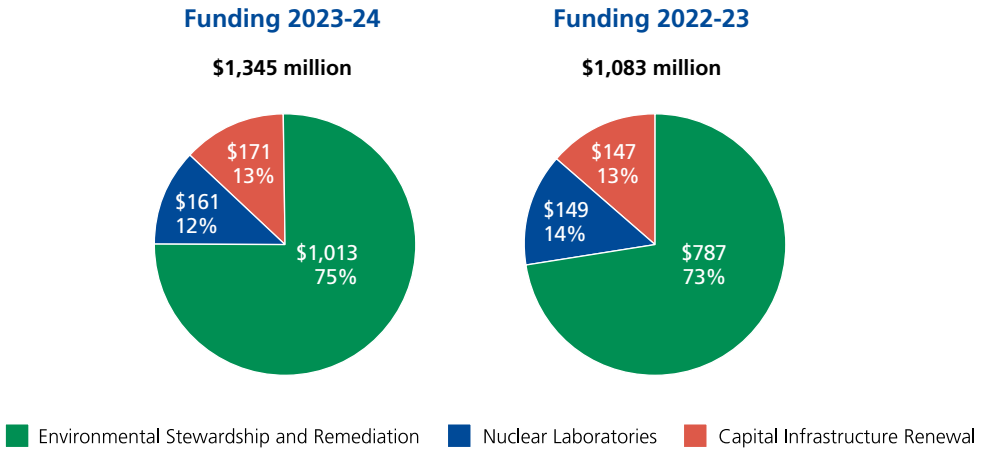
AECL will continue to deliver on its commitments based on its 2024-25 Corporate Plan. As part of the implementation of the Government-owned, Contractor-operated model, AECL has asked CNL to accelerate activities to address AECL's environmental responsibilities. This includes, for example, proposing solutions for AECL's low-level radioactive waste (for which CNL is proposing to build a near surface disposal facility at the Chalk River Laboratories), as well as the acceleration of the decommissioning and closure of the Whiteshell Laboratories and Nuclear Power Demonstration reactor (located in Manitoba and Ontario, respectively). There is also a focus on renewing the site infrastructure at the Chalk River Laboratories, including new and renewed science facilities and conventional (or non-nuclear) support buildings, that will allow CNL to grow its nuclear science and technology mission and serve the needs of the federal government as well as industry.

Funding

Total funding recognized in 2023-24 for operating and capital activities was $1,345 million (2022-23: $1,083 million).

The 2023-24 funding included:

- $161 million (2022-23: $149 million) to support nuclear science and technology activities as well as ongoing safe operations at the Chalk River Laboratories.
- $1,013 million (2022-23: $787 million) for environmental remediation, decommissioning and waste management activities at the Chalk River and Whiteshell sites and environmental remediation programs primarily as part of the Port Hope Area Initiative.
- $171 million (2022-23: $147 million) for capital infrastructure renewal at the Chalk River Laboratories.



Results Compared to 2023-24 Corporate Plan

	2024 Actual	2024 Corporate Plan
($ millions)		
	$	$
Parliamentary appropriations	**1,345**	1,547
Commercial revenue	**112**	115
Operating expenses	**90**	71
Contractual expenses	**237**	216
Decommissioning, waste management and contaminated sites expenses	**734**	291
Surplus	**344**	1,008

AECL reported a surplus of $344 million compared to a planned surplus of $1,008 million. This variance is mostly related to provision adjustments for the decommissioning and waste management provision and contaminated sites liability, partly offset by the above referenced surplus for the effect of change on discount rate. This also explains the variance in Decommissioning, waste management and contaminated sites expenses compared to plan. The variance in Parliamentary appropriations is due to lower than planned spending on Decommissioning, waste management and contaminated sites activities.

Cash Flow and Working Capital

	March 31	
($ millions)	**2024**	2023
	$	$
Cash provided by operating transactions	**388**	57
Cash applied to capital transactions	**(175)**	(154)
Cash applied to investing transactions	**(133)**	(19)
Increase (decrease) in cash	**80**	(116)
Balance at beginning of the year	**146**	262
Balance at end of the year	**226**	146

Operating Transactions

Operating transactions resulted in a net cash inflow of $388 million compared to a net inflow of $57 million in 2022-23. This variance is mainly due to receiving the final appropriations for the fourth quarter before the end of year. In the prior year this was a receivable at year-end.

Capital Transactions

The $175 million cash used in capital transactions in 2023-24 was higher than the $154 million in the prior year. The increase is primarily due to increased spending in the current year toward new Chalk River site infrastructure and new build projects.

Investing Transactions

The $133 million cash used in investing transactions in 2023-24 was higher than the $19 million in the prior year. The increase is primarily from investing excess cash at the end of the year.

Overall, AECL's March 31, 2024 closing cash position increased by $80 million to $226 million from the previous year's balance of $146 million.

Highlights of the Statement of Financial Position

	March 31, 2024	March 31, 2023	Variance in $	Variance by %
($ millions)				
	$	$	$	%
Financial Assets	**653**	607	46	8
Liabilities	**10,168**	10,346	(178)	-2
Non-Financial Assets	**1,097**	975	122	13
Accumulated Deficit	**(8,418)**	(8,764)	346	-4

The increase in Financial Assets of $46 million is largely a result of the increased investments balance at the end of the year from commercial receipts, partially offset by a decrease in inventories held for resale.

The decrease in Liabilities of $178 million can be attributed primarily to the decrease in the decommissioning, waste management and contaminated sites liability.

The increase in Non-Financial Assets of $122 million is mainly a result of spending toward tangible capital assets during the year.

Use of Parliamentary Appropriations

AECL receives its funding primarily through Parliamentary appropriations. The appropriations are drawn down based on quarterly cash flow projections and may not necessarily match the timing of expenses reported in the Statement of Operations. Refer to Note 13 of the financial statements for a reporting on how appropriations received were used during the period.

Five-Year Financial Summary

Unaudited

	2024	2023	2022	2021	2020
($ millions)					
	$	$	$	$	$
Parliamentary appropriations					
Operating	**1,174**	936	893	817	753
Capital	**171**	147	116	119	113
Statutory	**–**	–	–	5	2
	1,345	1,083	1,009	941	868
Operations					
Commercial revenue	**112**	137	137	95	112
Interest income	**29**	16	3	4	6
Other proceeds	**–**	7	20	–	50
Decommissioning, waste management and contaminated sites expenses	**(734)**	27	(1,317)	(678)	(955)
Operating, contractual and other expenses	**(408)**	(409)	(428)	(355)	(400)
Surplus (deficit)	**344**	861	(576)	7	(319)
Financial position					
Cash	**226**	146	262	145	80
Investments	**339**	199	175	120	99
Appropriations receivable	**–**	161	–	123	100
Inventories held for resale	**41**	61	94	129	151
Tangible capital assets	**1,097**	974	857	787	716
Due to Canadian Nuclear Laboratories	**289**	248	190	176	164
Decommissioning and waste management provision and Contaminated sites liability	**9,844**	10,057	10,836	8,152	8,062
Other					
Number of employees	**59**	49	46	45	45

* Certain amounts have been reclassified to conform to the 2024 Financial Statement presentation.

Financial Statements

Management's Responsibility

The financial statements, all other information presented in this Annual Report and the financial reporting process are the responsibility of management. These statements have been prepared in accordance with Public Sector Accounting Standards and include estimates based on the assumptions, experience and judgment of management. Financial information presented elsewhere in this Annual Report is consistent with the financial statements.

AECL maintains books of account, financial and management control, and information systems, together with management practices designed to provide reasonable assurance that reliable and accurate financial information is available on a timely basis, that assets are safeguarded and controlled, that resources are managed economically and efficiently in the attainment of corporate objectives, and that operations are carried out effectively.

These systems and practices are also designed to provide reasonable assurance that transactions are in accordance with Part X of the *Financial Administration Act* (FAA) and its regulations, the *Canada Business Corporations Act,* and the articles, by-laws and policies of AECL. AECL has met all reporting requirements established by the FAA including submission of a Corporate Plan, an operating budget, a capital budget and this Annual Report. AECL's internal auditor has the responsibility of assessing the management systems and practices of AECL. AECL's independent auditor, the Auditor General of Canada, conducts an audit of the financial statements of AECL and reports on its audit to the Minister of Energy and Natural Resources.

The Board of Directors is responsible for ensuring that management fulfills its responsibility. To accomplish this, the Board has two standing committees: the Audit Committee and Human Resources and Governance Committee. The Audit Committee, composed of independent directors, has a mandate for overseeing the independent audit, directing the internal audit function and assessing the adequacy of AECL's business systems, practices and financial reporting. The Audit Committee meets with management, the internal auditor and independent auditor on a regular basis to discuss significant issues and findings, in accordance with their mandate.

The independent auditor and internal auditor have unrestricted access to the Audit Committee, including without management's presence. The Audit Committee reviews the financial statements and the Management Discussion and Analysis report with both management and the independent auditor before they are approved by the Board of Directors and submitted to the Minister of Energy and Natural Resources. The Board of Directors, on the recommendation of the Audit Committee, approves the financial statements.

Fred Dermarkar
President and Chief Executive Officer

June 11, 2024

Thomas Assimes
Chief Financial Officer

June 11, 2024

Office of the Auditor General of Canada

Bureau du vérificateur général du Canada

Independent Auditor's Report

To the Minister of Energy and Natural Resources

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of Atomic Energy of Canada Limited (AECL), which comprise the statement of financial position as at 31 March 2024, and the statement of operations, statement of remeasurement gains and losses, statement of change in net debt and statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of AECL as at 31 March 2024, and the results of its operations, its remeasurement gains and losses, changes in its net debt, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

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

Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

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

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

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

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

Auditor's Responsibilities for the Audit of the Financial Statements

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

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

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

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

Report on Compliance with Specified Authorities

Opinion

In conjunction with the audit of the financial statements, we have audited transactions of Atomic Energy of Canada Limited coming to our notice for compliance with specified authorities. The specified authorities against which compliance was audited are Part X of the *Financial Administration Act* and regulations, the *Canada Business Corporations Act,* the articles and by-laws of Atomic Energy of Canada Limited, and the directive issued pursuant to section 89 of the *Financial Administration Act*.

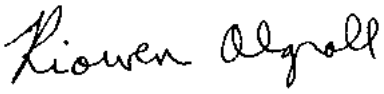
In our opinion, the transactions of Atomic Energy of Canada Limited that came to our notice during the audit of the financial statements have complied, in all material respects, with the specified authorities referred to above. Further, as required by the *Financial Administration Act*, we report that, in our opinion, the accounting principles in Canadian public sector accounting standards have been applied on a basis consistent with that of the preceding year.

Responsibilities of Management for Compliance with Specified Authorities

Management is responsible for Atomic Energy of Canada Limited's compliance with the specified authorities named above, and for such internal control as management determines is necessary to enable Atomic Energy of Canada Limited to comply with the specified authorities.

Auditor's Responsibilities for the Audit of Compliance with Specified Authorities

Our audit responsibilities include planning and performing procedures to provide an audit opinion and reporting on whether the transactions coming to our notice during the audit of the financial statements are in compliance with the specified authorities referred to above.



Riowen Yves Abgrall, CPA, CA
Principal
for the Auditor General of Canada

Ottawa, Canada
11 June 2024

Statement of Financial Position

As at March 31

	Notes	2024	2023
(thousands of Canadian dollars)			
		$	$
Financial assets			
Cash		**225,870**	145,982
Investments	3	**338,522**	198,961
Trade and other receivables	4	**47,492**	40,892
Appropriations receivable	13	**–**	160,500
Inventories held for resale	5	**40,647**	60,746
		652,531	607,081
Liabilities			
Accounts payable and accrued liabilities	6	**22,846**	27,394
Employee future benefits	7	**11,729**	12,880
Due to Canadian Nuclear Laboratories		**288,854**	247,978
Decommissioning and waste management provision	8	**8,672,132**	8,723,480
Contaminated sites liability	9	**1,172,128**	1,333,856
		10,167,689	10,345,588
Net debt		**(9,515,158)**	(9,738,507)
Non-financial assets			
Tangible capital assets	10	**1,097,004**	973,537
Prepaid expenses		**–**	1,045
		1,097,004	974,582
Accumulated deficit		**(8,418,154)**	(8,763,925)
Accumulated deficit is comprised of:			
Accumulated operating deficit		**(8,416,891)**	(8,761,229)
Accumulated remeasurement losses		**(1,263)**	(2,696)
		(8,418,154)	(8,763,925)
Commitments	11		
Contingent liabilities	12		

The accompanying notes are an integral part of these financial statements

Approved on behalf of the Board

Martha Tory, *Director*

Fred Dermarkar, *President and Chief Executive Officer*

Statement of Operations

For the year ended March 31

	Notes	2024 Budget	**2024**	2023
(thousands of Canadian dollars)				
		$	**$**	$
Revenues				
Parliamentary appropriations	13	1,547,310	**1,344,720**	1,083,200
Commercial revenue	14	115,000	**111,757**	137,297
Interest income		4,000	**28,897**	15,862
Other proceeds		–	**–**	7,000
		1,666,310	**1,485,374**	1,243,359
Expenses				
Cost of sales		80,500	**80,168**	86,735
Operating expenses		70,937	**89,676**	75,316
Contractual expenses	15	216,024	**237,404**	247,161
Decommissioning, waste management and contaminated sites expenses		290,651	**733,788**	(27,474)
	16	658,112	**1,141,036**	381,738
Surplus for the year		1,008,198	**344,338**	861,621
Accumulated operating deficit, beginning of year		(8,761,229)	**(8,761,229)**	(9,622,850)
Accumulated operating deficit, end of year		(7,753,031)	**(8,416,891)**	(8,761,229)

The accompanying notes are an integral part of these financial statements

Statement of Remeasurement Gains and Losses

For the year ended March 31

	2024	2023
(thousands of Canadian dollars)		
	$	$
Accumulated remeasurement losses, beginning of year	**(2,696)**	(2,515)
Remeasurement losses arising during the year		
Unrealized gains on equity instruments quoted in an active market	**421**	–
Unrealized losses on Investments in other securities	**(156)**	(2,113)
Reclassifications to the Statement of Operations		
Realized losses on Investments in other securities	**1,168**	1,932
Net remeasurement gains (losses) for the year	**1,433**	(181)
Accumulated remeasurement losses, end of year	**(1,263)**	(2,696)

The accompanying notes are an integral part of these financial statements

Statement of Change in Net Debt

For the year ended March 31

	Notes	2024 Budget	**2024**	2023
(thousands of Canadian dollars)				
		$	**$**	$
Surplus for the year		1,008,198	**344,338**	861,621
Tangible capital assets				
Acquisition of tangible capital assets	10	(171,000)	**(175,189)**	(169,127)
Amortization of tangible capital assets	10	43,947	**49,859**	47,913
Write-down of tangible capital assets	10	–	**434**	2,271
Other changes	10	–	**1,429**	2,189
		(127,053)	**(123,467)**	(116,754)
Non-financial assets				
Changes in prepaid expenses		–	**1,045**	(902)
Net remeasurement gains (losses) for the year		–	**1,433**	(181)
Decrease in net debt		881,145	**223,349**	743,784
Net debt, beginning of year		(9,738,507)	**(9,738,507)**	(10,482,291)
Net debt, end of year		(8,857,362)	**(9,515,158)**	(9,738,507)

The accompanying notes are an integral part of these financial statements

Statement of Cash Flows

For the year ended March 31

	2024	2023
(thousands of Canadian dollars)		
	$	$
Operating transactions		
Cash receipts from Parliamentary appropriations	**1,505,220**	922,700
Cash receipts from customers and other sources	**106,292**	167,808
Cash paid to suppliers	**(285,462)**	(277,508)
Cash paid to employees	**(14,342)**	(13,477)
Cash paid for decommissioning, waste management and contaminated sites activities	**(946,864)**	(751,365)
Cash paid to Investments held in trust	**(404)**	(650)
Cash paid for acquisition of investments in the Long-term disposal of waste fund	**(34,840)**	(1,826)
Cash receipts from redemption of investments in the Long-term disposal of waste fund	**32,698**	–
Interest received	**25,763**	11,246
Cash provided by operating transactions	**388,061**	56,928
Capital transactions		
Acquisition of tangible capital assets	**(174,727)**	(153,852)
Cash applied to capital transactions	**(174,727)**	(153,852)
Investing transactions		
Cash paid for acquisition of Other investments	**(470,640)**	(19,188)
Cash receipts from redemption of Other investments	**337,194**	–
Cash applied to investing transactions	**(133,446)**	(19,188)
Increase (decrease) in cash	**79,888**	(116,113)
Cash, beginning of year	**145,982**	262,095
Cash, end of year	**225,870**	145,982

The accompanying notes are an integral part of these financial statements

Notes to the Financial Statements

For the year ended March 31, 2024

1. General Information

Atomic Energy of Canada Limited (AECL) is a federal Crown corporation whose mandate is to enable nuclear science and technology and manage the Government of Canada's radioactive waste and decommissioning activities. Since 2015, AECL has been delivering its mandate through a Government-owned, Contractor-operated model, whereby Canadian Nuclear Laboratories (CNL), a private-sector organization, operates and manages AECL's sites pursuant to a contractual arrangement.

AECL was incorporated in 1952 under the provisions of the *Canada Corporations Act* (and continued in 1977 under the provisions of the *Canada Business Corporations Act*), pursuant to the authority and powers of the Minister of Energy and Natural Resources under the *Nuclear Energy Act*.

In July 2015, AECL was issued a directive (P.C. 2015-1111) pursuant to section 89 of the *Financial Administration Act* to align its travel, hospitality, conference and event expenditure policies, guidelines and practices with Treasury Board policies, directives and related instruments on travel, hospitality, conference and event expenditures in a manner that is consistent with its legal obligations, and to report on the implementation of this directive in AECL's next Corporate Plan. As at March 31, 2024, AECL remains compliant with the requirements of the directive.

AECL is a Schedule III Part I Crown corporation under the *Financial Administration Act* and an agent of His Majesty in Right of Canada. As a result, AECL's liabilities are ultimately liabilities of His Majesty in Right of Canada. AECL receives funding from the Government of Canada and is exempt from income taxes in Canada.

AECL's 2024-2025 to 2028-2029 Corporate Plan received Governor in Council approval in the fourth quarter of the 2023-24 fiscal year. The Corporate Plan is aligned with the direction provided by AECL's sole shareholder, the Government of Canada, and reflects AECL's plans and priorities to be delivered under the Government-owned, Contractor-operated model.

2. Significant Accounting Policies

a) Basis of Accounting

These financial statements have been prepared in accordance with Canadian Public Sector Accounting Standards (PSAS) established by the Public Sector Accounting Board (PSAB), and reflect the policies below.

Both financial and non-financial assets are reported on the Statement of Financial Position. Non-financial assets are normally employed to provide future services, and are charged to expense through amortization or upon utilization. Non-financial assets are not taken into consideration when determining the net debt (or net financial assets), but rather are added to the net debt (or net financial assets) to determine the accumulated surplus (deficit).

Measurement Uncertainty

The preparation of the financial statements in accordance with PSAS requires management to make estimates and assumptions that affect the reported amounts of financial assets, liabilities and non-financial assets at the date of the financial statements, and the reported amounts of revenue and expenses during the reporting period. Items requiring the use of significant estimates and assumptions include those related to the fair value of financial instruments, useful life and write-down of tangible capital assets, employee future benefits, contingent liabilities and provisions including the decommissioning and waste management provision and contaminated sites liability. Estimates and assumptions are based on the best information available at the time of preparation of the financial statements and are reviewed annually to reflect new information as it becomes available. Where actual results differ from these estimates and assumptions, the impact will be recorded in future periods when the difference becomes known.

Budget Figures

The 2023-24 budget is reflected in the Statement of Operations and the Statement of Change in Net Debt. Budget data for 2023-24 presented in these financial statements is based upon the 2023-24 projections and estimates contained within the 2023-24 to 2027-28 Corporate Plan. Since actual opening balances of the accumulated operating deficit and net debt were not available at the time of preparation of Budget 2024, the corresponding amounts in the budget column have been adjusted to the actual closing balances of the previous year.

b) Foreign Currency Translation

Transactions denominated in a foreign currency are translated into Canadian dollars at the exchange rate in effect at the date of the transaction. Monetary assets and liabilities, not denominated in the functional currency of AECL and outstanding at the Statement of Financial Position date, are adjusted to reflect the exchange rate in effect at that date. Realized exchange gains and losses arising from the translation of foreign currencies, including those arising prior to settlement or derecognition of all financial instruments, are included in the Statement of Operations.

c) Financial Instruments

Financial instruments are classified in one of the following categories: (i) fair value; or (ii) cost or amortized cost. AECL determines the classification of its financial instruments at initial recognition.

Investments include fixed income instruments, equity instruments and investments with short-term maturities of one year or less such as investment accounts with withdrawal notice, guaranteed investment certificates and Government of Canada treasury bills. Investments in equity instruments that are quoted in an active market are measured at fair value. Investments in fixed income instruments and equity instruments not quoted in an active market are managed on a fair value basis and the fair value option is elected. Transaction costs are recognized in the Statement of Operations in the period during which they are incurred. Investments at fair value are remeasured at their fair value at the end of each reporting period. Any remeasurement gains and losses are recognized in the Statement of Remeasurement Gains and Losses and are cumulatively reclassified to the Statement of Operations upon disposal or settlement.

A write-down is recognized in the Statement of Operations for an investment where there has been a loss in the value of the investment considered as an "other than temporary" loss. Subsequent changes to the remeasurement of Investments are reported in the Statement of Remeasurement Gains and Losses. If the loss in value of an Investment subsequently reverses, the write-down to the Statement of Operations is not reversed until the investment is sold.

Other financial instruments, including Cash, investment accounts with withdrawal notice, guaranteed investment certificates, Trade and other receivables, Accounts payable and accrued liabilities, and Due to Canadian Nuclear Laboratories are initially recorded at their fair value and are subsequently measured at amortized cost, net of any provisions for impairment.

Interest income, dividends and realized gains and losses earned on Cash and Investments are recognized in the Statement of Operations.

d) Inventory

Heavy water and mechanical seals and raw materials are measured at the lower of cost and net realizable value. Cost includes amounts for improvements to prepare the assets for sale. Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and selling expenses. Where cost exceeds net realizable value, a write-down is recorded.

e) Employee Future Benefits

AECL provides employee benefits such as pension benefits, voluntary termination compensation benefits and other benefits, including continuation of health and dental benefits during long-term disability, and self-insured workers' compensation.

Pension Benefits

Substantially all AECL employees are covered by the Public Service Pension Plan (PSPP), a contributory defined benefit plan established through legislation and sponsored by the Government of Canada. Contributions are required by both the employees and AECL to cover current service cost.

Pursuant to legislation currently in place, AECL has no legal or constructive obligation to pay further contributions with respect to any past service or funding deficiencies of the PSPP. Consequently, contributions are recognized as an expense in the year when employees have rendered service and represent the total pension obligation of AECL.

Non-pension Post-Employment Benefit Plans

AECL's obligation with respect to its non-pension post-employment defined benefit plans is the amount of future benefit that employees have earned in return for their service in the current and prior periods. The voluntary termination compensation obligation is discounted to determine its present value. The calculation is performed annually by a qualified actuary using the projected benefit method prorated on service and Management's best estimate of salary escalation, retirement ages of employees, mortality and expected employee turnover.

The discount rate is based on AECL's cost of borrowing as determined based on long-term Government of Canada bond yields. AECL amortizes any actuarial gains and losses arising from non-pension defined benefit plans into the Statement of Operations over the expected average remaining service life.

Other Long-Term Employee Benefits

AECL's obligation with respect to other long-term employee benefits is the amount of future benefit that employees have earned in return for their service in the current and prior periods. These benefits include self-insured workers' compensation benefits and health and dental care benefits during long-term disability.

That obligation is discounted to determine its present value. The discount rate is based on AECL's cost of borrowing as determined based on long-term Government of Canada bond yields. The calculation is performed using a combination of the Projected Unit Credit Method prorated on service and event-driven calculations for Workers' Compensation. Any actuarial gains and losses are amortized into the Statement of Operations over the expected average remaining service life.

AECL expenses amounts reimbursed to Employment and Social Development Canada for workers' compensation claims in accordance with the *Government Employees Compensation Act* for current payments billed by the provincial compensation boards.

f) Decommissioning and Waste Management Provision

AECL has obligations to decommission nuclear facilities and to manage radioactive waste in order to protect the environment and satisfy regulatory requirements. A liability is recognized when all of the following conditions are met: there is a legal obligation to incur retirement costs in relation to a tangible capital asset; the past transaction or event giving rise to the liability has occurred; it is expected that future economic benefits will be given up; and a reasonable estimate of the amount can be made.

The provision takes into account current technological, environmental and regulatory requirements and is determined by discounting the expected future cash flows at a rate that reflects current market assessments of the time value of money and the risks specific to the provision. The liability is discounted using a current rate methodology with the Bank of Canada zero-coupon bond yield curve, in line with the expected weighted average spending profile. The estimated future cash flows are adjusted for inflation using a rate that is derived on the basis of Consensus Economics forecasts and Bank of Canada historical and target inflation rates. The initial estimate of the liability includes costs directly attributable to asset retirement activities, including post-retirement operation, maintenance and monitoring.

As the provision is recorded based on a discounted value of the projected future cash flows, it is increased quarterly to reflect the passage of time by removing one quarter's discount. The unwinding of the discount is charged to Decommissioning, waste management and contaminated sites expenses in the Statement of Operations. The provision is reduced by actual expenditures incurred.

The cost estimate is subject to periodic review and any significant changes in the estimated amount or timing of the underlying future cash flows are recorded as an adjustment to the provision. The provision includes future construction costs associated with certain enabling facilities, such as processing and disposal facilities for nuclear waste.

Decommissioning costs of new assets are added to the carrying amount and amortized over the related assets' useful lives. The effect of subsequent changes in estimating an obligation for which the provision was recognized as part of the cost of the asset is adjusted against the asset. For assets no longer in productive use, all subsequent changes in the estimate of the obligation are recognized as an expense in the period they are incurred.

g) Contaminated Sites Liability

AECL recognizes a provision for contaminated sites when all of the following conditions are met: an environmental standard exists; the level of contamination has been determined to exceed the environmental standard and AECL is directly responsible or accepts responsibility; it is expected that future economic benefits will be given up; and a reasonable estimate of the amount can be made at that time. The liability includes all costs directly attributable to remediation activities including post remediation operations, maintenance and monitoring. The liability is determined by discounting the expected future cash flows at a rate that reflects current market assessments of the time value of money. The liability is discounted using a current rate methodology with the Bank of Canada zero-coupon bond yield curve, in line with the expected spending profile of the liability.

h) Trade and Other Receivables, Accounts Payable and Accrued Liabilities

Certain contracts may have revenue recognized in excess of billings (unbilled revenues) and other contracts may have billings in excess of revenue recognized (customer advances and obligations). Unbilled revenues are recorded as an asset and included in Trade and other receivables. Billings collected in excess of revenue recognized on contracts and advances for which the related work has not started are recognized as a liability and included in Accounts payable and accrued liabilities.

i) Tangible Capital Assets

Tangible capital assets are recorded at cost less accumulated amortization. Cost includes amounts that are directly related to the acquisition, design, construction, development, improvement or betterment of the assets, overhead directly attributable to the construction and development, as well as the estimated costs of dismantling and removing the items and restoring the site on which they are located.

The cost of tangible capital assets in use is amortized on a straight-line basis over the estimated useful life, as follows:

Asset	Rate
Land Improvements	10-40 years
Buildings	20-40 years
Reactors, Machinery & Equipment	3-40 years

Construction in progress represents assets that are not yet available for use and therefore are not subject to amortization. When complete, the constructed asset is transferred to the appropriate category of tangible capital asset and amortized at the rate applicable to that category. Amortization commences when the asset is put into use and ceases when it no longer provides any further economic benefit to AECL or when it is no longer in service.

When conditions indicate that a tangible capital asset no longer contributes to AECL's ability to provide goods and services, or that the value of future economic benefits associated with the tangible capital asset is less than its net book value, the cost of the tangible capital asset is reduced to reflect the decline in the asset's value. The net write-down is then accounted for as an expense in the Statement of Operations.

Useful lives are assessed annually and revisions to the useful life are made as required.

AECL has unrecognized intangible intellectual property assets since internally generated intangible assets are not recognized in the financial statements.

j) Revenue Recognition

Revenue is derived from sales of services and products, and royalties. Revenue is recognized when a transaction or event has occurred, and when AECL is expected to obtain future economic benefits. Revenue from transactions with performance obligations is recognized when, or as, AECL satisfies a performance obligation by providing the promised goods or services to a payor. Revenues from transactions with performance obligations occur when there is an enforceable promise to transfer goods or services directly to a payor in return for promised consideration. AECL satisfies its performance obligation and recognizes revenue over a period of time when control of the benefits associated with the goods or services passes to the payor over a period of time. If a performance obligation is not satisfied over a period of time, AECL satisfies the performance obligation at a point in time. The performance obligation is satisfied when the payor obtains control of the benefits associated with the promised good or service. Where consideration is received from a payor prior to the provision of goods or services, these amounts are initially included in unearned revenue provided the definition of a liability is met. They are subsequently recognized as revenue as performance obligations are met.

The revenues disclosed are recurring in nature unless otherwise noted.

Services

Service contracts generally consist of a performance obligation that is satisfied over a period of time. These revenues are recognized over a period of time by measuring the progress toward completed satisfaction of the performance obligation.

Sales of goods

Sales of products generally consist of one performance obligation that is satisfied at a point in time. These revenues are recognized when or as the goods are delivered to the customer.

Royalties

Revenue from licencing of intellectual property includes a continuing performance obligation that is satisfied over time since AECL has a continuing obligation to provide access to the intellectual property over the term of the arrangement. In addition, the payor simultaneously receives and consumes the benefits provided by the intellectual property throughout the term of the license agreement. These revenues are recognized on a straight-line basis over the term of the license agreement.

k) Parliamentary Appropriations

AECL receives Parliamentary appropriations for operating expenditures and tangible capital assets. These Parliamentary appropriations are free of any stipulations limiting their use, and are recorded as funding from the Government of Canada in the Statement of Operations, up to the authorized amount, where eligibility criteria have been met.

l) Contingent Liabilities

Contingent liabilities are potential liabilities which may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the obligation can be made by AECL, an estimated liability is accrued and an expense recorded. If the likelihood is not determinable, or an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

m) Standards, Sections and Guidelines

The following standards have been issued by the PSAB effective April 1, 2023 and were adopted prospectively by AECL on April 1, 2023. Their adoption did not have a significant impact on the financial statements and no adjustment was required to the comparative information:

PS 3400 Revenue: This new Section establishes standards on how to account for and report on revenue.

PSG-8 Purchased intangibles: This new Section establishes guidelines on how to account for and report on purchased intangibles.

The following standards and sections have been issued by the PSAB:

The Conceptual Framework for Financial Reporting in the Public Sector: The Conceptual Framework replaces Financial Statement Concepts, Section PS 1000, and Financial Statement Objectives, Section PS 1100.

The Conceptual Framework applies to fiscal years beginning on or after April 1, 2026.

PS 1202 Financial statement presentation: This new Section sets out general and specific requirements for the presentation of information in general purpose financial statements. The financial statement presentation principles are based on the concepts in the Conceptual Framework. The main changes are to the statement of financial position, adding a new statement of net financial assets or net financial liabilities, and adding a new statement of changes in net assets or net liabilities.

This Section applies to fiscal years beginning on or after April 1, 2026.

AECL is currently evaluating the impact of adopting these standards on its financial statements.

3. Investments

	March 31, 2024			
(thousands of Canadian dollars)	**Long-term Disposal of Waste Fund**	**Investments Held in Trust**	**Other Investments**	**Total**
	$	$	$	$
Short-term investments	**18,000**	**6,014**	**127,702**	**151,716**
Canadian government bonds*	**–**	**57,084**	**53,233**	**110,317**
Corporate bonds	**6,456**	**13,973**	**45,219**	**65,648**
Canadian equities**	**2,760**	**–**	**–**	**2,760**
Global equities**	**8,081**	**–**	**–**	**8,081**
	35,297	**77,071**	**226,154**	**338,522**

	March 31, 2023			
(thousands of Canadian dollars)	**Long-term Disposal of Waste Fund**	**Investments Held in Trust**	**Other Investments**	**Total**
	$	$	$	$
Short-term investments	32,734	–	92,428	125,162
Canadian government bonds*	–	59,114	–	59,114
Corporate bonds	–	14,685	–	14,685
	32,734	73,799	92,428	198,961

** Canadian government bonds include federal, provincial and municipal bonds.*
*** All Canadian and global equities are quoted in an active market.*

Short-term investments have maturities ranging from April 2024 to May 2024 and include accounts with withdrawal notice, guaranteed investment certificates and Government of Canada treasury bills. Bonds have maturities ranging from February 2025 to June 2031, with yields ranging from 0.5% to 5.475%. Equities are invested in pooled funds holding a diversified portfolio.

(a) Long-term Disposal of Waste Fund

AECL is required to invest cash in a fund to cover the costs related to the future disposal of radioactive waste arising from ongoing operations at its sites. This fund is intended to cover the future disposal costs associated with low- and intermediate-level radioactive waste generated starting in 2015.

(b) Investments Held in Trust

The *Nuclear Fuel Waste Act* requires Canadian nuclear utilities to form a waste management organization, the Nuclear Waste Management Organization (NWMO), to provide recommendations to the Government of Canada on the long-term management of nuclear fuel waste and to implement the approach selected. The legislation also requires that each nuclear fuel waste owner establish a trust fund to finance the implementation of the approach proposed by the NWMO. The liability for AECL's nuclear fuel waste is recorded in the Decommissioning and waste management provision (Note 8).

Each individual trust fund is held in order to meet the requirements of the *Nuclear Fuel Waste Act* and only the NWMO may withdraw monies from it in accordance with the provisions of the *Nuclear Fuel Waste Act*, Section II. As required by the *Nuclear Fuel Waste Act*, AECL's initial deposit to its Trust Fund was $10 million on November 25, 2002. Subsequent annual deposits have been made as required, and will continue until the full lifecycle costs of managing the nuclear fuel waste over the long-term are set aside.

AECL's trust fund has been incorporated in these financial statements. Interest earned on trust assets accrues to the Trust Fund. Interest earned on the fixed income instruments is largely fixed, whereas the fair values of the instruments vary according to the prevailing market rate of interest.

(c) Other Investments

Other investments are held for operating activities and to fund historic liabilities and business priorities in science and technology and related capital expenditures.

4. Trade and Other Receivables

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Trade receivables	**16,330**	14,336
Unbilled revenue	**16,845**	11,404
Consumption taxes receivable	**14,317**	15,152
	47,492	40,892

AECL maintains allowances for specific potential credit losses, if required. Outstanding trade receivables are collected in accordance with the terms of the sales contracts.

AECL's exposure to credit risks related to Trade and other receivables, including unbilled revenue, is disclosed in Note 17.

5. Inventories Held for Resale

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Mechanical seals and raw materials	**2,916**	2,481
Heavy water inventory	**37,731**	58,265
	40,647	60,746

The cost of inventory for mechanical seals and raw materials recognized as an expense and included in Cost of sales was $0.1 million (2023 – $0.1 million).

The cost of inventory for heavy water recognized as an expense and included in Cost of sales was $20.5 million (2023 – $33.0 million).

6. Accounts Payable and Accrued Liabilities

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Trade payables	**4,159**	1,488
Other payables and accrued expenses	**10,800**	19,820
Accrued payroll liabilities	**2,694**	2,410
Amounts due to related parties	**825**	443
Provisions	**165**	165
Customer advances and obligations	**4,203**	3,068
	22,846	27,394

Amounts due to related parties represent royalty revenues payable to the Government. Provisions are short-term in nature and are not discounted and include estimated costs related to lawsuits and legal claims and disputes with suppliers.

7. Employee Future Benefits

a) Pension Plan

As described in Note 2(e), AECL's employees participate in the PSPP.

The President of the Treasury Board of Canada sets the required employer contributions based on a multiple of the employees' required contribution. The contributions made by AECL to the PSPP are 4.63 times (2023 – 5.29 times) the employees' contribution on salaries in excess of $202,000 (2023 – $196,200). For salaries below $202,000, AECL's contribution rate is approximately 1.0 times the employees' contributions.

The Government of Canada holds a statutory obligation for the payment of benefits relating to the PSPP. Pension benefits generally accrue up to a maximum period of 35 years at an annual rate of two per cent of pensionable service, times the average of the best five consecutive years of earnings. The benefits are coordinated with Canada/Québec Pension Plan benefits and they are indexed to inflation.

Total contributions made on account of current service are as follows:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Payments by employees	**945**	867
Payments by employer	**2,058**	1,775

b) Other Employee Future Benefits

AECL provides certain voluntary termination compensation (VTC) and other post-employment benefits as described in Note 2(e). The defined benefit obligation is not funded, as funding is provided when benefits are paid. Accordingly, there are no plan assets and the defined plan deficit is equal to the defined benefit obligation.

The VTC is payable in instances of future voluntary resignations and retirements. Consistent with Government of Canada expectations of federal agencies and Crown corporations, AECL began eliminating this benefit in fiscal 2012-13.

The VTC included in the 2024 Employee future benefits liability is $4.4 million (2023 – $4.7 million). This balance includes the amounts for employees who have chosen to defer payment to the time of the termination of their employment.

The measurement date of the Employee future benefits liability is March 31, 2024, and the latest actuarial valuation of these benefits was performed at that date. The weighted average duration of the defined benefit obligation at the end of the reporting period is 6.9 years (2023 – 7.2 years). The amortization period for post-employment benefits is 7 years. The amortization period for other long-term benefits is 11 years.

The following summarizes the activity in the post-employment and other long-term benefit plans:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Accrued benefit obligation, beginning of year	**13,736**	14,907
Benefits earned	**3**	3
Interest on Accrued benefit obligation	**389**	334
Benefits paid	**(1,505)**	(1,768)
Actuarial loss	**304**	440
Other gains	**–**	(180)
Accrued benefit obligation, end of year	**12,927**	13,736
Less: Unamortized actuarial gain	**1,198**	856
Employee future benefits liability	**11,729**	12,880

The following summarizes expenses arising from AECL's post-employment and other long-term benefit plans recognized in Operating expenses in the Statement of Operations:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Benefit and interest expense		
Benefits earned	**3**	3
Amortization of actuarial gain recognized	**(38)**	(90)
Total benefit income	**(35)**	(87)
Interest on Accrued benefit obligation	**389**	334
Total benefit and interest expense	**354**	247

The significant actuarial assumptions adopted in measuring AECL's Employee future benefits are summarized as follows:

	March 31	
	2024	2023
	%	%
Discount rate at year-end	**3.45**	3.05
Rate of increase in salaries	**3.00**	3.00
Health care cost trend	**4.00 - 5.60**	4.00 - 6.00

The mortality rates are those used by the Canadian Pensioners' Mortality for 2014. The disabled mortality rates are those used for the valuation of the benefit liabilities of the schedule 1 insurance fund of the Workplace Safety and Insurance Board of Ontario as of December 31, 2022.

The Employee future benefits liability and costs are subject to measurement uncertainty due to the use of actuarial assumptions. The impact of these factors on the remeasurement of the Employee future benefits liability can be significant and volatile at times. Detailed sensitivity analysis disclosures have not been provided as the impacts of the sensitivity analyses performed did not result in material changes to the recognized balances

8. Decommissioning and Waste Management Provision

AECL has an obligation to decommission its nuclear facilities and other assets in order to address its liabilities, reduce risk, protect the environment and meet applicable regulatory requirements. These facilities include prototype reactors, heavy water plants, nuclear research and development laboratories, waste management and other facilities. Due to the variety of facilities, the decommissioning process may differ in each case. In some situations, decommissioning activities are carried out in stages, with intervals of several decades between them, to allow radioactivity to decay before moving on to the next stage. These activities include surveillance and monitoring, decontamination, demolition and the management of the associated waste. A portion of the liabilities relate to obligations that existed prior to the creation of AECL in 1952.

The Decommissioning and waste management provision is as follows:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Carrying amount – Beginning of year	**8,723,480**	9,304,857
Liabilities settled	**(595,264)**	(522,266)
Unwinding of discount	**267,465**	218,348
Effect of change in discount rate	**(383,756)**	(994,968)
Revision in estimate and timing of expenditures	**658,238**	715,390
Estimates affecting Property, plant and equipment and future disposal costs for waste from ongoing operations	**1,969**	2,119
Carrying amount – End of year	**8,672,132**	8,723,480

The undiscounted future expenditures, adjusted for inflation, for the planned projects comprising the liability are $17,546.7 million (March 31, 2023 – $17,024.4 million). The provision is re-valued at the discount rate in effect at each Statement of Financial Position date. The provision is discounted using a 30-year rate from the Bank of Canada zero-coupon bond yield curve.

Key assumptions used in determining the provision:

	March 31	
	2024	2023
Discount period	**161 years**	162 years
Discount rate	**3.29%**	3.01%
Short-term inflation rate	**2.21%**	2.21%
Long-term inflation rate	**2.00%**	2.00%

The provision is highly sensitive to the interest rate used to discount the future expenditures. The following table outlines the sensitivity of a 1% change in the discount rate used to estimate the provision:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
1% increase	**(1,213,782)**	**(1,280,721)**
1% decrease	**1,657,585**	**1,771,232**

The provision is also sensitive to the inflation rate used to calculate future expenditures. The following table outlines the sensitivity of a 1% change in the inflation rate used to estimate the provision:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
1% increase	**1,518,407**	1,736,046
1% decrease	**(1,153,671)**	(1,283,872)

9. Contaminated Sites Liability

AECL has responsibility for the implementation of the Government of Canada's commitments with respect to the Port Hope Area Initiative and other historic low-level waste liabilities. The nature of the Port Hope Area Initiative liability is the cleanup and safe long-term management of historic low-level radioactive waste in the Ontario municipalities of Port Hope and Clarington. This waste consists mainly of past process residues containing uranium and radium, and associated contaminated soils, the result of activities of a former federal Crown corporation and its private sector predecessors. One project to address this liability, the Port Granby Project, has now transitioned into long-term monitoring and maintenance which is expected to continue for 100 years. The other large project, the Port Hope Project, is forecasted to be complete in 2030-31, with long-term monitoring and maintenance expected to continue for 100 years after implementation.

AECL also has responsibility for the Low-Level Radioactive Waste Management Office which includes all activities to address and manage historic low-level waste at sites in Canada for which the Government has assumed responsibility (excluding the Port Hope Area Initiative). Historic low-level radioactive waste is material contaminated with radioactivity resulting from the processing and shipment of uranium and radium. This cleanup is forecast to be complete by 2031-32.

The Contaminated sites liability is as follows:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Carrying amount – Beginning of year	**1,333,856**	1,531,318
Liabilities settled	**(353,570)**	(231,217)
Unwinding of discount	**40,907**	33,714
Effect of change in discount rate	**(21,214)**	(35,348)
Revision in estimate and timing of expenditures	**172,149**	35,389
Carrying amount – End of year	**1,172,128**	1,333,856

The liability for the Port Hope Area Initiative and the Low-Level Radioactive Waste Management Office is discounted using present value techniques. The liability is discounted using a 4-year rate from the Bank of Canada zero-coupon yield curve. The estimated total undiscounted expenditures are $1,331.6 million (March 31, 2023 – $1,502.9 million).

Key assumptions used in determining the provision:

	March 31	
	2024	2023
Discount period	**46 years**	47 years
Discount rate	**3.50%**	2.92%
Short-term inflation rate	**2.21%**	2.21%
Long-term inflation rate	**2.00%**	2.00%

The liability is sensitive to the interest rate used to discount the future expenditures. The following table outlines the sensitivity of a 1% change in the discount rate used to estimate the liability:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
1% increase	**(36,915)**	(47,939)
1% decrease	**40,160**	52,344

The liability is also sensitive to the inflation rate used to calculate future expenditures. The following table outlines the sensitivity of a 1% change in the inflation rate used to estimate the liability:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
1% increase	**40,321**	65,800
1% decrease	**(37,752)**	(61,327)

10. Tangible Capital Assets

(thousands of Canadian dollars)	Construction in progress	Land and land improvements	Buildings	Reactors, Machinery and Equipment	Total
	$	$	$	$	$
Cost at March 31, 2023	**343,180**	**154,471**	**607,248**	**521,110**	**1,626,009**
Additions and transfers	175,189	13,269	102,619	40,520	331,597
Disposals and transfers	(153,850)	–	(2,965)	(12,179)	(168,994)
Write-downs	(434)	–	–	–	(434)
Other charges	–	–	(1,804)	–	(1,804)
Cost at March 31, 2024	**364,085**	**167,740**	**705,098**	**549,451**	**1,786,375**
Accumulated amortization at March 31, 2023	–	**63,439**	**263,058**	**325,975**	**652,472**
Increase in amortization	–	5,333	17,718	26,808	49,859
Disposals and transfers	–	–	(1,999)	(10,962)	(12,961)
Accumulated amortization at March 31, 2024	–	**68,772**	**278,777**	**341,821**	**689,370**
Net carrying amount at March 31, 2023	**343,180**	**91,032**	**344,190**	**195,135**	**973,537**
Net carrying amount at March 31, 2024	**364,085**	**98,968**	**426,321**	**207,630**	**1,097,004**

	Construction in progress	Land and land improvements	Buildings	Reactors, Machinery and Equipment	Total
(thousands of Canadian dollars)					
	$	$	$	$	$
Cost at March 31, 2022	215,455	153,164	597,914	515,098	1,481,631
Additions and transfers	169,127	1,453	11,366	26,387	208,333
Disposals and transfers	(39,131)	(146)	(2,032)	(20,375)	(61,684)
Write-downs	(2,271)	–	–	–	(2,271)
Cost at March 31, 2023	343,180	154,471	607,248	521,110	1,626,009
Accumulated amortization at March 31, 2022	–	58,003	248,122	318,723	624,848
Increase in amortization	–	5,487	16,119	26,307	47,913
Disposals and transfers	–	(51)	(1,222)	(19,055)	(20,328)
Other charges	–	–	39	–	39
Accumulated amortization at March 31, 2023	–	63,439	263,058	325,975	652,472
Net carrying amount at March 31, 2022	215,455	95,161	349,792	196,375	856,783
Net carrying amount at March 31, 2023	343,180	91,032	344,190	195,135	973,537

Write-downs of $0.4 million were recorded in 2024 (2023 – $2.3 million).

The amortization and write-downs of Tangible capital assets are recognized in Operating expenses in the Statement of Operations.

11. Commitments

a) Operating Leases:

Non-cancellable office space operating lease rental is payable as follows:

	Leases
(thousands of Canadian dollars)	
	$
2024-2025	104
2025-2026	111
2026-2027	112
2027-2028	112
2028-2029	9
	448

During the year ended March 31, 2024, an amount of $0.3 million (2023 – $0.2 million) was recognized for leases as an Operating expense in the Statement of Operations.

b) Operating and Capital Commitments:

The nature of AECL's activities can result in multiyear contracts and obligations whereby AECL is committed to make future payments. As at March 31, 2024, AECL has contractual arrangements with third party suppliers, including contracts that allow for termination with penalties, approximating $583.3 million. Most of these commitments are held by CNL in accordance with the Government-owned, Contractor-operated model. Included in this amount are contracts related to the purchase of Tangible capital assets of approximately $29.2 million. The details of the Government-owned, Contractor-operated model are discussed in Note 15.

12. Contingent Liabilities

AECL is engaged in various legal proceedings and claims that have arisen in the ordinary course of business. Where the potential liability is likely and able to be estimated, management has recorded its best estimate of the potential liability in Accounts payable and accrued liabilities (Note 6).

13. Funding

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Parliamentary appropriations for operating, capital and statutory expenditures		
Amount received during the year for operating, capital and statutory expenditures	**1,505,220**	922,700
Amount receivable at the end of the year	**–**	160,500
Amount receivable from a previous year	**(160,500)**	–
Total Parliamentary appropriations recognized	**1,344,720**	1,083,200

During the year, the above funding was received to support AECL and CNL planned activities. This funding was used in the following manner:

- Support the activities of the nuclear laboratories, including ongoing science and technology activities at the Chalk River site, capital infrastructure renewal, as well as the ongoing operations of the site in order to meet regulatory, health, safety and environmental needs and requirements.
- Decommissioning and waste management activities primarily at the Chalk River and Whiteshell sites and environmental remediation programs primarily in Port Hope.

The amounts approved for operating and capital expenditures for the year ending March 31, 2024 totalled $1,547.3 million.

14. Commercial Revenue

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Services	**54,193**	62,146
Sales of goods	**55,136**	74,078
Royalties	**2,428**	1,073
	111,757	137,297

15. Contractual Arrangement

Since 2015, AECL has been delivering its mandate through a Government-owned, Contractor-operated model whereby CNL operates and manages AECL's sites. Under this model, the assets, sites and facilities continue to be owned by AECL, but are being managed and operated by a private-sector company. As such, AECL makes payments to CNL and its parent company, Canadian National Energy Alliance ("Contractual amounts paid or payable"), as per the terms of the contractual arrangement. This contract will expire in September of 2025.

The following contractual expenditures were incurred:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Contractual amounts paid or payable	**1,415,588**	1,219,166
Less: Costs charged to Decommissioning and waste management provision and Contaminated sites liability	**(945,803)**	(750,687)
Less: Costs charged to Construction in progress	**(175,189)**	(169,127)
Less: Costs classified as Cost of sales	**(57,192)**	(52,191)
Contractual expenses	**237,404**	247,161

Contractual amounts paid or payable include fees paid to Canadian National Energy Alliance, in accordance with the long-term contractual arrangement between AECL, Canadian National Energy Alliance and CNL.

16. Additional Information by Type of Expense

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Payroll expenses	**13,475**	12,250
General and administrative expenses	**3,202**	2,842
Site and program operating costs	**44,948**	44,924
Amortization of tangible capital assets (Note 10)	**49,859**	47,913
Realized losses on Investments held in trust	**1,168**	1,932
Contractual amounts paid or payable less costs charged to Construction in progress (Notes 10 and 15) and less liabilities settled for Decommissioning and waste management provision and Contaminated sites liability (Notes 8, 9 and 15)	**294,595**	299,352
Finance expenses	**308,372**	252,062
Loss (gain) loss on revision in estimate and timing of expenditures on Decommissioning and waste management provision (Note 8)	**274,482**	(279,578)
Loss on revision in estimate and timing of expenditures on Contaminated sites liability (Note 9)	**150,935**	41
	1,141,036	381,738

17. Financial Instruments

AECL has exposure to the following risks from its use of financial instruments: credit risk, market risk, regulatory risk and liquidity risk.

Investment policies and regular monitoring of assets ensure there is no concentration of risk. The policies require a diversified portfolio, and asset allocations are reviewed quarterly.

The Board of Directors ensures that AECL has identified its major risks and ensures that management effectively monitors and mitigates them.

a) Credit Risk

Credit risk is the risk of financial loss to AECL if a customer or counterparty to a financial instrument fails to meet its contractual obligations. Such risks arise principally from certain financial assets held by AECL consisting of cash, investments and trade and other receivables. The maximum exposure to credit risk of AECL at March 31, 2024 is the carrying value of Cash, short-term investments, fixed income instruments and Trade and other receivables.

AECL manages its credit risk surrounding its Trade and other receivables of $47.5 million (2023 - $40.9 million) by dealing solely with reputable customers and evaluating customer creditworthiness before credit is extended. The risk is reduced by monitoring at the appropriate levels of management. The credit risk for Cash, short-term investments and fixed income instruments is minimized by ensuring cash instruments are held with well-established financial institutions, and through AECL's investment policy that limits investments to high credit quality. All the investments are managed by professional investment managers. All bond investments are rated at an A level or higher using Standard & Poors as at March 31, 2024.

Details of trade receivables are as follows:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Current	**8,031**	12,566
1 to 30 days past due	**7,129**	875
31 to 60 days past due	**311**	456
61 to 90 days past due	**311**	121
More than 90 days past due	**548**	318
	16,330	14,336

With respect to accounts receivable past due, based on credit history, there are no indications that customers will not be able to meet their obligations. No receivables are currently impaired.

b) Market Risk

Market risk is the risk that changes in market prices, such as those caused by changes in currency, interest rates and price, will affect AECL's income or the value of its holdings of financial instruments. The objective of market risk management is to control market risk exposures within acceptable parameters while optimizing the return on risk.

Currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. AECL's financial statements are presented in Canadian dollars, but a portion of its business is conducted in other currencies, with the exposure to foreign currency transactions primarily related to the U.S. dollar. AECL is also exposed to currency risk through its equity investments. The objective of AECL's foreign exchange risk management activities is to minimize transaction exposure and the resulting volatility of AECL's earnings and commitments. As of March 31, 2024 and March 31, 2023, had the exchange rate (CAN$/US$) been 5% higher or lower, the impact on the Statement of Operations for the year would have been insignificant.

Interest rate risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in the market interest rates. The objective of AECL's interest rate risk management activities is to minimize the volatility of AECL's earnings and expenses. AECL's exposure to interest rate risk is limited to changes in interest rates associated with its investments in bonds and discount rates associated with the Decommissioning and waste management provision and Contaminated sites liability (Notes 8 and 9).

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices (other than those arising from interest rate risk or currency risk), whether those changes are caused by factors specific to the individual financial instrument or its issuer, or factors affecting all similar financial instruments traded in the market. AECL is exposed to price risk through its investment in equity instruments. AECL manages price risk through asset allocation as outlined in its investment policy. The value of each investment is influenced by the performance of the security's issuer and general economic, political, tax and market conditions. The impact of this on the Statement of Operations would not be material.

c) Regulatory Risk

Regulatory risk is the risk that changes in government policy may have an adverse impact on AECL's financial position. AECL's sites are operated in a highly regulated environment. Changes in government policy may have an adverse impact on AECL's financial position. AECL's objective in managing regulatory risk is to actively monitor and implement changes on a timely basis to enable operations. In 2024, AECL's regulatory risk management objectives were unchanged from those in 2023.

d) Liquidity Risk

Liquidity risk is the risk that AECL will not be able to meet its financial obligations as they become due. AECL is economically dependent on Parliamentary appropriations that are received from the Government of Canada.

AECL manages liquidity risk by cross-functional participation in project and business reviews, frequent communication with its shareholder to manage ongoing cash requirements and secure appropriate funding, and maintaining a portfolio of highly liquid investments or instruments readily convertible into cash with high-quality counterparties. The liquidity available in AECL's investments ensure that AECL is able to meet its obligations and commitments.

Details of accounts payables are as follows:

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Current	**1,796**	999
1 to 30 days past due	**528**	489
31 to 60 days past due	**1,807**	–
61 to 90 days past due	**–**	–
More than 90 days past due	**28**	–
	4,159	1,488

All other financial liabilities, including Due to Canadian Nuclear Laboratories, are due within the year and are settled as part of the normal course of funding to Canadian Nuclear Laboratories throughout the year.

e) Fair Value of Financial Instruments

Accounting standard guidance establishes a framework for measuring fair value and provides disclosure about fair value measurements. That framework provides a fair value hierarchy that gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements).

The carrying amounts of Cash, short-term investments, Trade and other receivables, and Accounts payable and accrued liabilities approximate fair value because of the short-term nature of these items.

The following table analyzes financial instruments measured at fair value by valuation method. AECL uses the following hierarchy to classify fair value measurements:

Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2: Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices).

Level 3: Inputs for the asset or liability that are not based on observable market data (unobservable inputs).

Changes in valuation methods may result in transfers into or out of levels 1, 2, and 3. For the reporting periods ended March 31, 2024 and March 31, 2023, there were no transfers between levels.

	March 31, 2024			
(thousands of Canadian dollars)	**Level 1**	**Level 2**	**Level 3**	**Total**
	$	**$**	**$**	**$**
Assets measured at fair value				
Short-term investments	**81,413**	**–**	**–**	**81,413**
Bonds	**101,819**	**74,146**	**–**	**175,965**
Equities	**–**	**10,841**	**–**	**10,841**
	183,232	**84,987**	**–**	**268,219**

	March 31, 2023			
(thousands of Canadian dollars)	Level 1	Level 2	Level 3	Total
	$	$	$	$
Assets measured at fair value				
Bonds	41,248	32,551	–	73,799
	41,248	32,551	–	73,799

18. Related Party Transactions

AECL is related, in terms of common ownership, to all Government of Canada departments, agencies and Crown corporations. AECL enters into transactions with government entities in the normal course of business and on normal trade terms applicable to all individuals and enterprises. The transactions are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

In addition to the transactions disclosed in Notes 6, 7 and 13, AECL, in the normal course of business, also entered into various transactions with the Government, its agencies and other Crown corporations.

AECL also has transactions with its key management personnel. Key management personnel are those persons having authority and responsibility for planning, directing and controlling the activities of AECL, including AECL's directors and executive officers. The table below summarizes the amounts paid or payable to key management personnel on a comparative basis.

	March 31	
(thousands of Canadian dollars)	**2024**	2023
	$	$
Salaries and other short-term benefits	**4,397**	3,612
Post-employment benefits	**1,134**	1,031
	5,531	4,643

With the implementation of the Government-owned, Contractor-operated model in 2015, AECL transitioned from being a large Crown corporation to a small Crown corporation. As a result, AECL has, with the help of external compensation consultants, developed a compensation philosophy to align with its new role. The objective is to attract and retain the skills and expertise needed to fulfill its mandate and deliver value for money for Canada, including seeking international experts with experience in similar Government-owned, Contractor-operated models in the United Kingdom and the United States.

AECL's compensation philosophy is to align its total compensation with a comparator group, while recognizing that specific differentiation may be needed for hard-to-hire and/or specialized skills. It considers factors such as appropriate market comparators, the geographical location of AECL employees and the internationally limited availability of the specialized personnel needed to provide effective oversight of this complex model and the activities that are required to deliver on AECL's mandate. As part of its approach to compensation, AECL will periodically review its compensation philosophy, including the appropriateness of its comparator group and employee compensation relative to market median.

19. Comparative Figures

Certain of the March 31, 2023 comparative figures have been reclassified to conform to the financial statement presentation adopted in the 2023-24 fiscal year.

Corporate Governance

The corporate governance structure of AECL is similar to that of other corporations incorporated pursuant to the *Canada Business Corporations Act* with the following important exceptions:

i. AECL is an agent and a parent Crown corporation and is subject to the provisions of Part X of the *Financial Administration Act* of Canada;

ii. The sole shareholder of AECL is the Government of Canada as represented by the Minister of Energy and Natural Resources; and,

iii. AECL's Board of Directors, the Board Chair and the President and Chief Executive Officer are appointed by the Government of Canada by Order-in-Council.

AECL's President and CEO was appointed by the Governor-in-Council to serve a term of three years, starting in February 2021, and since then has been extended to 2027. The President and CEO leads AECL in achieving its mandate. All direct reports to the President and CEO are appointed by the Board of Directors through the Human Resources and Governance Committee on the recommendation of the President and CEO. Each of these direct reports is accountable for specific areas of business and operations.

Board of Directors / Officers

AECL is governed by a Board of Directors, which provides strategic direction and advice to the President and CEO.

The Board, through its Chair, receives direction from AECL's single shareholder, the Government of Canada, as represented by the Minister of Energy and Natural Resources. It is accountable to Parliament through the Minister of Energy and Natural Resources.

AECL's Board has two committees, the Audit Committee and the Human Resources and Governance Committee, each having specific charters that set out their responsibilities. The Board consists of seven Directors (the Chair, appointed Board members and the President and CEO). Biographies of Board members are presented in the following pages.

James Burpee, Chair

Mr. Burpee has been serving as Chair of the Board of Directors since July 2019, and previously served as a director and Chair of the Board's Human Resources and Governance Committee from 2017 to 2019. He is currently serving a term ending in July 2029.

Mr. Burpee brings almost four decades of experience as a senior strategist in the electricity industry, having worked in a variety of senior management roles for Ontario Hydro and Ontario Power Generation. Mr. Burpee has also served as Chief Executive Officer at Bridge Renewable Energy Technologies Inc., a company which marketed Biomass Gasification Electricity Systems primarily in the developing world. Most recently, Mr. Burpee served as President and Chief Executive Officer of the Canadian Electricity Association.

Mr. Burpee also sat on the Board of the Energy Council of Canada and the Canadian Electricity Association, including one year as Chairperson.

Mr. Burpee holds a Bachelor of Applied Science in Mechanical Engineering from the University of Toronto and is a member of Professional Engineers Ontario and the Institute for Corporate Directors and holds the ICD.D designation. Mr. Burpee is also a Fellow of the Canadian Academy of Engineering.

AECL Committees: Audit, Human Resources & Governance

Fred Dermarkar, President and CEO

Mr. Dermarkar was appointed AECL's President and CEO in 2021 for a term of three years and subsequently reappointed to 2027.

Prior to joining AECL, Mr. Dermarkar was President and CEO of the CANDU Owners Group, where he led the not-for-profit organization to advance collaboration between CANDU nuclear reactor operators worldwide.

Mr. Dermarkar has been working in the Canadian nuclear industry for close to 40 years. Throughout his career, he has occupied a variety of key technical and senior leadership positions at Ontario Power Generation in support of the design, commissioning, operation and refurbishment of its CANDU reactors.

Mr. Dermarkar has received the Canadian Nuclear Association's Ian McRae Award in recognition of his substantive engineering contributions, leadership and positive influence on the Canadian nuclear industry and the advancement of nuclear energy in Canada, and the Nuclear Excellence Award from the World Association of Nuclear Operators (WANO) in recognition of his contributions to Ontario Power Generation's overall post-Fukushima response.

As President and CEO of AECL, Mr. Dermarkar is leading the organization in its oversight role, seeing that the priorities of government are delivered safely and efficiently under the Government-owned, Contractor-operated model.

Mr. Dermarkar holds a bachelor's degree in mechanical engineering from the University of Toronto and is a registered professional engineer in the Province of Ontario.

Martha Tory, Board Member

Ms. Tory has been serving on the AECL Board of Directors since 2016 and is currently serving a term ending in 2028.

Ms. Tory retired in 2015 from Ernst & Young LLP where she was an audit partner with responsibility for clients in a variety of industries. She is currently involved as a Board member with a number of organizations: her current positions include being a Board member and Chair of the Audit Committee of University of Toronto Press and Soulpepper Theatre.

Ms. Tory is a Chartered Professional Accountant and a Fellow of the Institute of Chartered Professional Accountants of Ontario. She holds the ICD.D designation from the Institute of Corporate Directors and a Bachelor of Commerce from the University of Toronto, Trinity College.

AECL committees: Audit (Chair), Human Resources & Governance

Carmen Abela, Board Member

Ms. Abela has been serving on the AECL Board of Directors since 2017 and is currently serving a term ending in 2028. Ms. Abela is the founder and Managing Director of WindReach Consulting Services Inc., an Ottawa-based consultancy specializing in public sector accountability. For over twenty-five years, Carmen has been advising senior government leaders on public sector oversight and operational excellence. Her areas of specialty include governance, risk management and internal audit.

She is deeply committed to building public trust, which she does through her professional practice and her board work. Beyond serving on the AECL Board of Directors, she is the Chair of the Board for the Royal Ottawa Hospital Foundation where she also chairs the Strategy and Governance Committee. She is an elected Public Director of the Board for Colleges and Institutes Canada (CICan) where she is also a member of the Audit Committee. She is a former member of the Board for Immigrant Women Services Ottawa (IWSO) as well as the past Chair of the National Board for the Institute of Internal Auditors Canada. Carmen is a Chartered Director (C.Dir.), a Certified Internal Auditor (CIA) and holds an Honours Bachelor of Arts Degree from McGill as well as a Master of Arts Degree in Public Administration from Carleton University.

AECL Committees: Audit, Human Resources and Governance (Chair)

Kamilia Sofia, Board Member

Dr. Sofia has been serving on the AECL Board of Directors since 2019 and is currently serving a term ending in 2027.

Dr. Sofia has been a strategic leader for 30 years, with technical and management experience locally and internationally. Dr. Sofia has held CEO level positions internationally in the last ten years with global organizations in multiple industries: high technology, aerospace, nuclear, and oil & gas, including CEO of Methanex Egypt, Executive Vice President of Rolls Royce Nuclear, CEO Services at Dubai Aerospace Enterprise, and Vice President of Strategy at CAE Inc. She has been a Director and Audit committee member of NorthStar Earth & Space, an information services platform that works to ensure the sustainability of the environment on earth and in space, since 2018. Dr. Sofia is also a Corporate Director of Infinity Q.

Dr. Sofia received her Ph.D. degree in Nuclear Physics from McGill University and has also completed the Directors Education Program from the Institute of Corporate Directors at McGill University. In 2005, she was voted as one of Canada's top 100 women from the Women's Executive Network.

AECL Committees: Audit, Human Resources & Governance

Virendra Jha, Board Member

Dr. Jha has been serving on the AECL Board of Directors since 2019 and is currently serving a term ending in 2027.

Dr. Jha has over 42 years of experience in the Canadian Space Program ranging from in-depth engineering work to senior management positions in both the private and the public sectors, including that of Vice- President and acting President of the Canadian Space Agency.

As Vice-President responsible for science, technology and programs at the Canadian Space Agency, Dr. Jha provided strategic direction, vision and leadership to all core technical programs of the Canadian Space Agency. Dr. Jha published and presented more than twenty papers on space related subjects and has served as a Board member for five technology related not for profit organizations.

Dr. Jha received his B. Tech. degree in Mechanical Engineering from the Indian Institute of Technology Delhi India, his Master's degree in Mechanical engineering from McMaster University, and his Ph.D. degree in Mechanical Engineering from Concordia University. He also has a Chartered Director Degree from McMaster University.

Dr. Jha has received many awards in recognition of his contribution to space activities in Canada and internationally, including the Order of Canada.

AECL Committees: Audit, Human Resources & Governance

Dana Soonias, Board Member

Mr. Soonias was appointed to AECL's Board of Directors in 2023, for a term of four years.

Mr. Soonias is a member of Red Pheasant First Nation. Over the past 20 years, he has held senior positions with financial, Indigenous, and government institutions with lead roles in retail, finance, business, and economic development.

In previous roles, Dana was the Director of Economic Development and Employment Training Services at the Saskatoon Tribal Council, serving over 33,000 First Nations people, urban and rural, in and around the City of Saskatoon. He was also the CEO of Wanuskewin Heritage Park Authority.

Mr. Soonias has served on various boards and committees across the country, including as Past Chair of the National Board of AFOA Canada, First Nations Financial Management Board, National Aboriginal Capital Corporations Association, Saskatchewan Indian Equity Foundation, STC Industrial Contracting and several other profit and non-profit organizations.

Currently the Senior Indigenous Advisor, Ministry of Energy and Resources for the Province of Saskatchewan, he works on engagement and participation in the energy, mining and forestry sectors between Indigenous communities and the provincial government.

Mr. Soonias holds a Certified Aboriginal Financial Manager designation through the Aboriginal Financial Officers Association Canada. He has also received an Institute of Corporate Directors designation from the Rotman School of Management at the University of Toronto.

AECL Committees: Audit, Human Resources & Governance

Director Attendance at Board Committee Meetings, 2023-24

Director	Audit (9 meetings)	Human Resources and Governance (5 meetings)	Board of Directors (14 meetings)
Carmen Abela	8/9	5/5	12/14
Jim Burpee	9/9	5/5	14/14
Fred Dermarkar	n/a	n/a	12/14
Virendra Jha	8/9	5/5	12/14
Kamilia Sofia	9/9	5/5	13/14
Dana Soonias	6/6	3/3	12/12
Martha Tory	9/9	5/5	14/14

Notes:

- Dana Soonias appointed on June 22, 2023
- Dana Soonias appointed to Audit & Human Resources and Governance Committee on September 14, 2023
- Fred Dermarkar is not a member of either committee.

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