2024 Environmental, Social, Governance, Indigenous (ESG-I) Report

Atomic Energy of Canada Limited

AECL
EACL

Materials and chemistry

Researching advanced fuels

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

Contents

About this Report

Atomic Energy of Canada Limited's (AECL) 2024 ESG-I Report provides an overview of our progress, ambitions, and commitments toward sustainability, nuclear innovation, climate resilience, and Indigenous reconciliation. The data in this ESG-I Report covers our performance in Canada from April 1, 2023, to March 31, 2024.

This Report has been prepared in line with the Government of Canada's expectations regarding climate-related financial disclosures in alignment with the Task Force on Climate Related Disclosures (TCFD) framework, which is now fully incorporated into the International Sustainability Standards Board (ISSB) International Financial Reporting Standards (IFRS) S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures. This information can be found in the Report in our Climate Resilience section and in our TCFD Index.

Information covers essential activities that pertain to the Sustainability Accounting Standards Board (SASB) Electric Utilities & Power Generators accounting metrics and disclosure topics. This information can be found in the Appendices section of this Report in our SASB Table, which uses the (Version 2023-12) of Standards published by the ISSB, which assumed responsibility for the SASB Standards in August 2022.

To align with government reporting requirements, the Global Reporting Initiative (GRI) Standards data reflects the reporting period from January 1, 2023, to December 31, 2023, and can be found in the GRI Index in the Appendices section. These data are marked with an asterisk (*). In addition, we've prepared this Report with consideration of the Sustainable Development Goals (SDGs) adopted by the United Nations – see our UN SDG Table for more details.

This Report also occasionally refers to activities beyond this reporting period to provide a clearer and more current snapshot of our activities as of the time of this Report. References to "AECL", "we", "our" or "Corporation" refer to Atomic Energy of Canada Limited. All dollar amounts are in Canadian dollars. This Report has been reviewed and approved for publication by our executive leadership team and Board of Directors, including AECL's ESG Committee. It is available in both English and French.

Developing safe nuclear fuels for the future

AECL’s Commitment to Reconciliation

With gratitude, AECL acknowledges that it operates on the territories that have, since time immemorial, been the traditional lands of Indigenous peoples in Canada. AECL’s sites were established without consulting Indigenous Nations. Today, we are committed to advancing reconciliation with First Nation, Métis, and Inuit peoples through a renewed relationship based on recognition of rights, mutual understanding and respect, and meaningful engagement, collaboration, and partnership.

Ariel view of
Chalk River

Who We Are

For over 70 years AECL has played an important role in Canada's nuclear sector. Since our formation as a Crown corporation in 1952 we have led nuclear science research and innovation to create safe and reliable energy systems and health outcomes for Canada and the world.

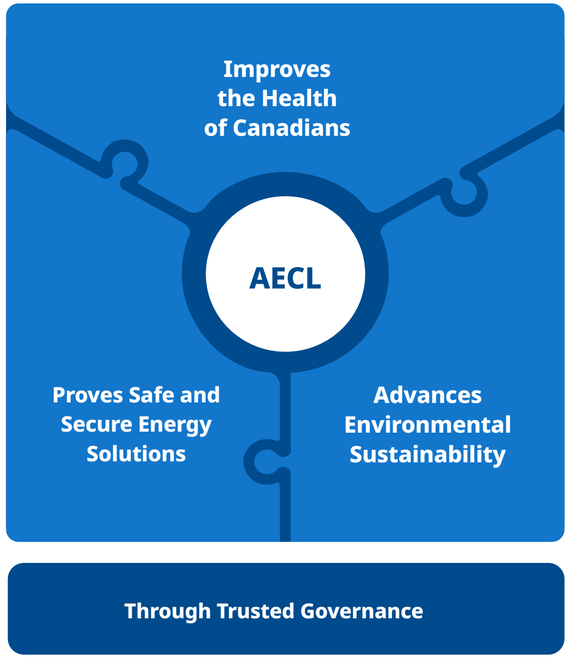
AECL connects federal climate, science, social, environmental, and economic priorities to our operations and those of our partners and plays a critical convening role as a thought leader in the nuclear space, bringing together governments, academia, industry, global partners, and more. With AECL oversight, CNL has worked to place itself at the forefront of global efforts in exciting and valuable nuclear science and technology advancements.

By investing in and promoting nuclear science, AECL enables Canada to take a leadership role in global efforts to reduce carbon emissions and combat climate change, contributing to a better quality of life not only for Canadians but for people around the world.

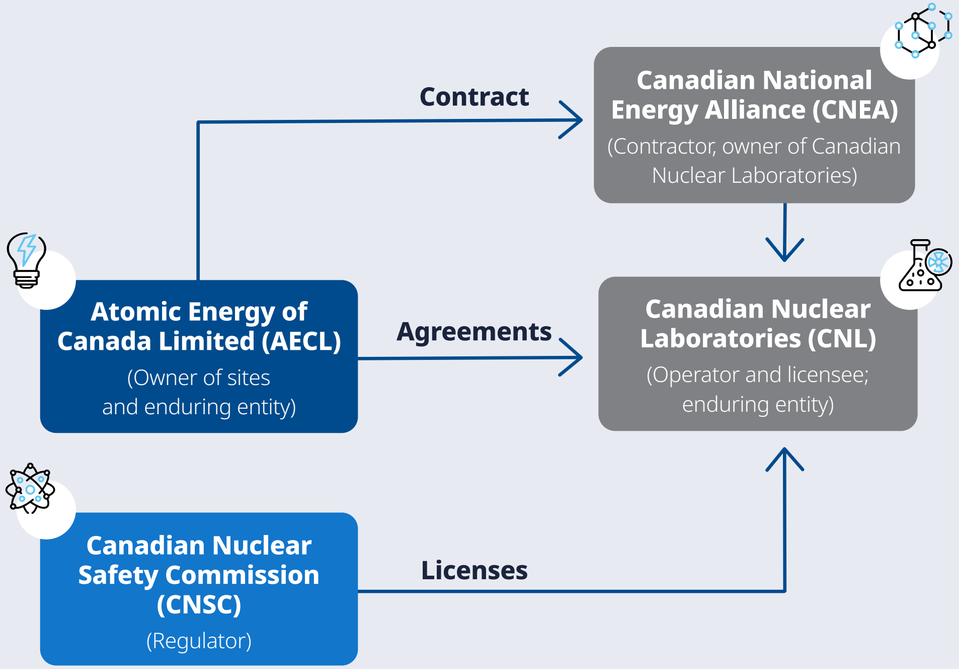
Today, AECL is focused on oversight in two key areas:

- Operation of our sites (laboratories and environmental remediation missions) under a Government-Owned, Contractor-Operated (GoCo) model with our site operator, Canadian Nuclear Laboratories (CNL).
- Oversight of the CANada Deuterium Uranium (CANDU) intellectual property, with its commercial licensee AtkinsRéalis.

AECL enables nuclear technology innovation and deployment that:



Government-Owned, Contractor-Operated (GoCo) model



Helping Canada Remain a Leader in Nuclear Science and Technology

During the COP28 Climate Conference in Dubai in December 2023, Canada, alongside 21 countries, pledged to triple nuclear energy capacity by 2050. Achieving this goal will require a major investment in generating capacity, across a range of non-emitting sources, along with advancements in nuclear technologies from large reactors to Small Modular Reactors (SMRs). In addition, electrification demand, coupled with the need to achieve net-zero goals, are driving investment and policy decisions about what the future of energy will look like, and the role that nuclear will play in that future.

As Canada looks for sustainable and predictable solutions to decarbonize the economy, nuclear energy has emerged as a safe and reliable option that can help support the achievement of Canada's emissions reductions targets set for 2030, 2050, and beyond.

Moreover, nuclear technology also has a critical role to play in improving the health and safety of our planet and of our people. Advancements in nuclear medicine are being pursued to further revolutionize the diagnosis and treatment of diseases such as cancer.

This includes supporting the research and development of new and promising nuclear health technologies, including emerging radiotherapies, diagnostics, and radiotheranostics such as Targeted Alpha Therapy. SMRs — smaller, simpler and safer than other alternative energy options — have the potential to provide non-greenhouse gas emitting energy to hard-to-abate industrial sectors and remote communities or be used in existing electrified areas to help meet increased electricity demand.

As a Tier-1 nuclear nation with over 70 years of technology leadership, Canada is well positioned to maintain its status as a leader in nuclear applications to help meet these ambitions. AECL will continue to play a key role in helping Canada remain a leader by utilizing existing nuclear technologies such as the CANDU reactor and advancing new technologies such as SMRs, Advanced Reactors (ARs), clean hydrogen, and fusion. We will do this through our Federal Nuclear Science and Technology (FNST) Work Plan, where we serve the collective interests of 14 federal government departments and agencies in the areas of health, nuclear safety and security, energy, and the environment.

Our Mandate

AECL's mandate is to enable nuclear science and technology, drive optimal value for Canada from AECL's CANDU intellectual property, and to protect the environment by fulfilling the Government of Canada's radioactive waste and decommissioning responsibilities.

AECL's Mission

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

AECL's Vision

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

Advanced fuels Small Modular Reactor using molten salt

Looking at the opportunity for large-scale nuclear in Canada and abroad, the future is bright. AECL looks forward to playing a key role in helping Canada realize this opportunity to meet its energy goals.

Letter from the Chair of the Board

As the Chair of the Board for AECL, it is with great pride that I present our annual Environmental, Social, Governance, Indigenous (ESG-I) report. This report is not just a reflection of our past year's efforts but a testament to our commitment to sustainability, social responsibility, and effective governance, with a strong focus on Indigenous engagement and reconciliation.

Canada, and indeed the world, faces a pivotal moment, with an urgent need for clean, safe, and reliable energy. We are answering the challenge through our contributions to innovation and technology development, and with the vital services that the Chalk River Laboratories provide to the current nuclear reactor fleet, and the Government of Canada to fulfill its core responsibilities related to nuclear regulations, research, and clean-up and management of federal radioactive waste.

Our environmental initiatives this year were focused on reducing our own carbon emissions and those of the operations we oversee at Canadian Nuclear Laboratories: enabling existing CANDU technology, leading waste management and decommission efforts, and researching new nuclear technologies such as advanced reactors and clean fuels to meet the energy demands of tomorrow.

From a social perspective, we continued to support the exploration and acceleration of using nuclear technology for health advancements and focused on fostering a diverse and inclusive workplace.

Our Board of Directors and management team remained committed to upholding the highest standards of integrity and professionalism, ensuring that AECL remains a trusted and respected ESG-I leader in the nuclear industry.

We intensified our efforts to advance Indigenous engagement through enhancing our capacity to engage with Indigenous communities, additional formal agreements, recognizing and incorporating traditional Indigenous knowledge, ceremony, and cultural and stewardship practices into our waste management efforts, and more joint planning and operations with Indigenous partners, all built on a foundation of trust and respect.

As we look to the future, we are excited about the opportunities and challenges that lie ahead in helping Canada meet its Net Zero commitments and need for affordable and reliable energy. We are committed to continuing our research and development efforts to bring about innovative solutions that contribute to a cleaner, safer, and more sustainable world.

James Burpee
Chair of the Board

Our ESG-I efforts this year reflect our dedication to a future where clean energy, scientific innovation, ethical practices, and community empowerment are not just ideals, but realities we live by every day.

Letter from the President and Chief Executive Officer

I am pleased to present AECL's ESG-I report. At AECL, we understand that our operations have a significant impact on the world around us. Through our work in ensuring the safe cleanup of legacy sites, the operation of existing CANDU technology, and advancing research on the nuclear technology of tomorrow, we see the enormous positive impact that our work can have.

Environmental stewardship

This year, we made significant strides in reducing our carbon footprint, exceeding our 2025 target ahead of schedule. We secured a multi year arrangement with the Federal Nuclear Science and Technology (FNST) Work Plan, which supports federal priorities in the areas of health, the environment, safety and security, and clean energy to accelerate Canada's ability to drive nuclear and technology advancements.

And through our continued legacy, as the birthplace of CANDU technology, we helped power approximately 15% of electricity in Canada, avoiding 3,000 mega tonnes of CO_2 emissions (as compared to the use of coal) in the process.

Social responsibility

Not only can nuclear technology help power the lives of Canadians and others, but it can also be used to help save them as well. Our efforts advanced the manufacturing and production of Actinium-225, a highly sought after medical isotope that holds incredible potential in the fight against cancer both in Canada and globally. This is in addition to our critical role in providing low carbon energy through our support to the CANDU fleet of power reactors.

Governance and ethics

Governance efforts focused on delivering on our mandate from the Canadian government in areas such as radioactive waste and decommissioning, overseeing nuclear legacy liabilities, and supporting nuclear science and technology. We also led internal and external initiatives designed to ensure public safety, promote transparency on our supply chains, and enhance cybersecurity knowledge.

Indigenous engagement

Our existing Indigenous Engagement Strategy supports the government's reconciliation agenda, and this year we continued to build relationships with Indigenous Nations and communities as part of this Strategy. We expanded our Indigenous engagement capacity by hiring two new employees dedicated to this area, and welcomed a new Board member Dana Soonias, a member of Red Pheasant First Nation, to help us ensure an Indigenous perspective in our decision-making.

Looking ahead

In the coming year, we will continue to set targets to further our ESG-I objectives and will work to co-develop, alongside Indigenous Nations, our new Reconciliation Action Plan. We are committed to continuous improvement and innovation in our sustainability efforts and will ensure that our strategies align with the Greening Government Strategy. Together, we are making a difference, and I am confident that our collective efforts will lead to a more sustainable future for all Canadians.

Warm regards,

Fred Dermarkar
President and CEO

Environmental, Social, Governance, Indigenous (ESG-I) Strategy

Chalk River Laboratories

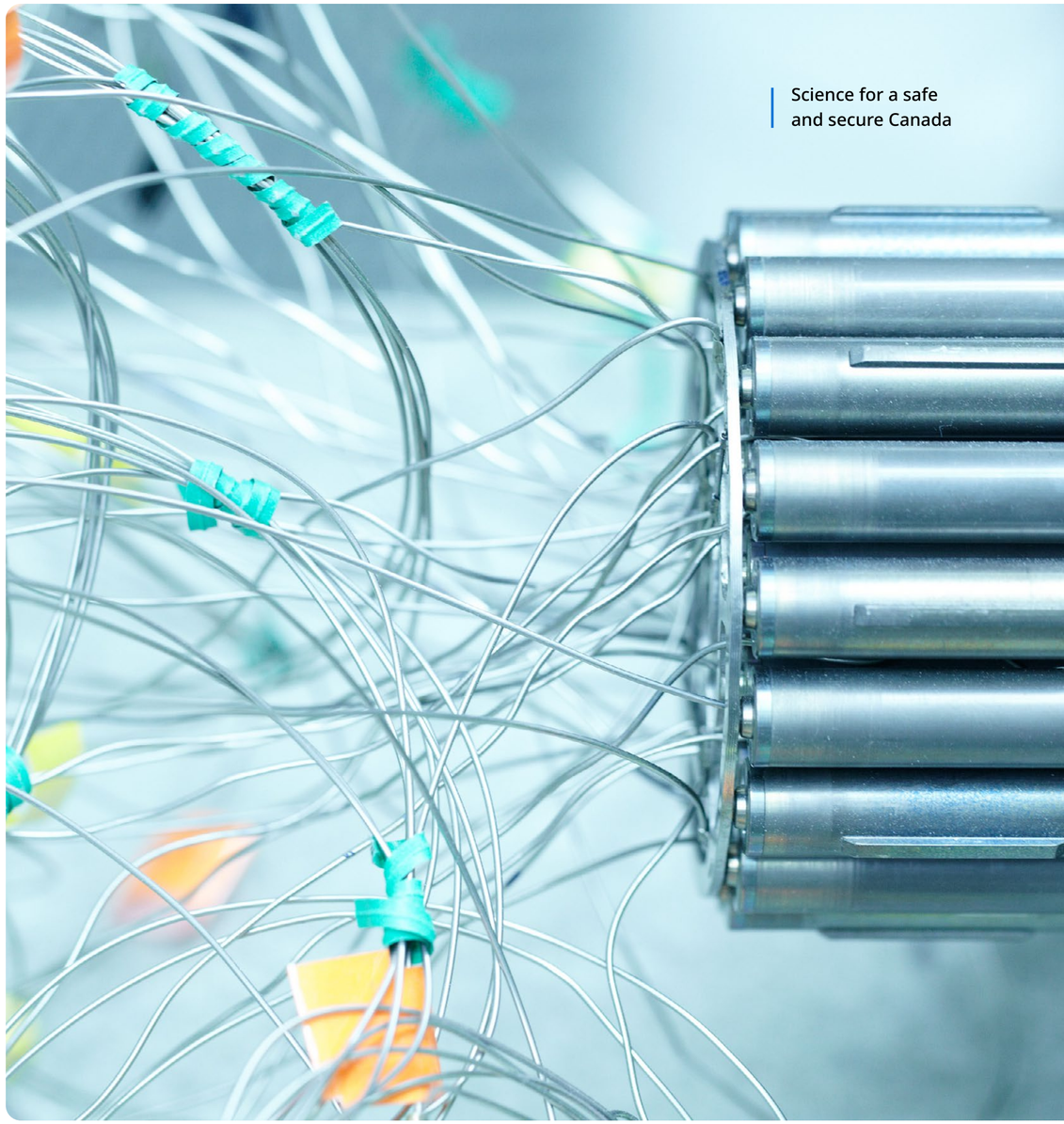
AECL's ESG-I strategy guides our ambitions and commitments to integrate ESG-I into our organization internally and to leverage AECL's opportunities to support a more sustainable future for Canada and the world.

We have an important role in helping Canada achieve its objectives in environmental sustainability, climate resilience, and social impact. Our ESG-I strategy is at the very heart of our business, and is driven by our seven "strategic differentiators," which enable broader business achievements, and is supported by our eight "baseline expectations," identified through the ESG-I materiality assessment we conducted in 2022, which support our operational achievements. Ensuring that we operate as an ESG-I informed company, and driving important results that benefit all Canadians is what drives us.

Indigenous engagement and reconciliation are integral to advancing AECL's mandates, with initiatives crossing into all E, S, and G areas. Our innovation and environmental stewardship missions depend on strong relationships with Indigenous Nations and their communities. Most importantly, the exchange of knowledge and information, Indigenous involvement, and ongoing cultural awareness training make our work better. In addition, strong Indigenous engagement – built on relationships, not just project-driven interactions – is critical for ensuring that current work and future projects meet and exceed regulatory requirements.

The work we do through these strategic differentiators and baseline expectations contributes towards achieving eight of the 17 United Nation's SDGs, including advancing affordable and clean energy, good health and well being, and decent work and economic growth. For further information on how our work maps to the SDGs through our alignment with the Federal Government's Greening Government Strategy please refer to our UN SDG Table in the Appendix.

Our contractor, CNL, will build on the sustainability objectives set out in Vision 2030 and reflect it in its newly finalized 10-Year Plan, reflecting the ambitions of AECL's ESG-I strategy and the Government of Canada's Greening Government Strategy (GGS).



AECL's Environmental, Social, Governance, Indigenous (ESG-I) Strategy

Click each bullet to visit that section of the document

Click this button to return to table

	Environmental Advancing environmental sustainability and climate resilience	**Social** Improving quality of life for Canadians	**Governance** Accelerating innovation through trusted governance	**Indigenous Engagement and Reconciliation** Our commitment to collaborating with Indigenous peoples to build lasting relationships and advance our mandates.
United Nations Sustainable Development Goals (UN SDGs)				
Strategic Differentiators *Our strategic differentiators indicate areas where AECL is uniquely positioned to influence and lead a sustainable, climate-resilient future.*	• Decarbonization • Science and Technology • Radioactive Waste Management and Decommissioning	• Nuclear Medicine • Community Engagement and Development		• Working towards a Reconciliation Action Plan • Strengthening relationships with Indigenous Nations • Promoting Indigenous Procurement • Integrating Indigenous Knowledge in AECL's Governance and Operating Practices
Baseline Expectations *Integral to AECL's ability to manage risk, meet expectations of vested parties, and achieve meaningful change.*	• Climate resilience • Environmental Management • Sustainable Procurement	• Health and Safety • Diversity, Equity, and Inclusion • Employee Attraction	• Governance Structure • Oversight of CNL • Enterprise Risk Management • Cybersecurity	

ESG-I Highlights

Atomic Energy of Canada Limited is committed to creating a sustainable future for Canadians by integrating ESG-I principles into the core of our business strategy and operations. In 2023 we invested in major initiatives to advance environmental sustainability and climate resilience, (E), improve quality of life for Canadians, (S), accelerate innovation through trusted governance, (G), and strengthen relationships with Indigenous peoples (I). More information on these highlights can be found throughout the Report and in our SDG Table.

E

220,000 metric tonnes

of radioactive waste safely moved to a Long-Term Waste Management Facility.

51% reduction

in Scope 1 and 2 greenhouse gas emissions compared to 2005, exceeding our 2025 target of 40% ahead of schedule.

~ 15% of electricity

in Canada powered by AECL legacy CANDU technology, avoiding ~ 70 megatonnes of carbon dioxide equivalent ($MtCO_2e$) annually, equating to removing 21 million cars off the road.

S

Investing $1.3 billion

over 10 years (2016-2026) to revitalize and modernize the Chalk River Laboratories site to enable AECL's research and innovation mandate.

Advanced the manufacturing and production of Actinium-225

a highly sought-after medical isotope that holds incredible potential as a tool in the fight against cancer.

Developed and launched inaugural Accessibility Plan

towards a barrier free-Canada, designed to improve accessibility for all employees and ensure that the information we produce is accessible to all Canadians.

G

Enhanced safety preparedness

by CNL's privacy and data security teams for cyber and physical attacks on critical infrastructure in a mock incident response exercise in June 2023.

Ensuring transparency

through regular reporting to the government and the public on our activities, performance, and financial status to help build trust and provide insights into our operations.

Embedded ESG-I accountability

for all members of the executive team, by linking a percentage of their remuneration to the achievement of ESG-I goals.

I

Hired two new Indigenous Relations team members

dedicated to helping AECL build longer-term, relationship-based partnerships with Indigenous peoples.

Strengthened AECL's procurement procedures and templates

to actively encourage employees to seek out Indigenous-owned businesses in procurement activities.

Worked with Indigenous Partners

to implement year 1 of the Long-Term Relationship Agreement between AECL, CNL, and the Algonquins of Pikwàkanagàn First Nation.

Advancing Environmental Sustainability and Climate Resilience

Working with hot cells

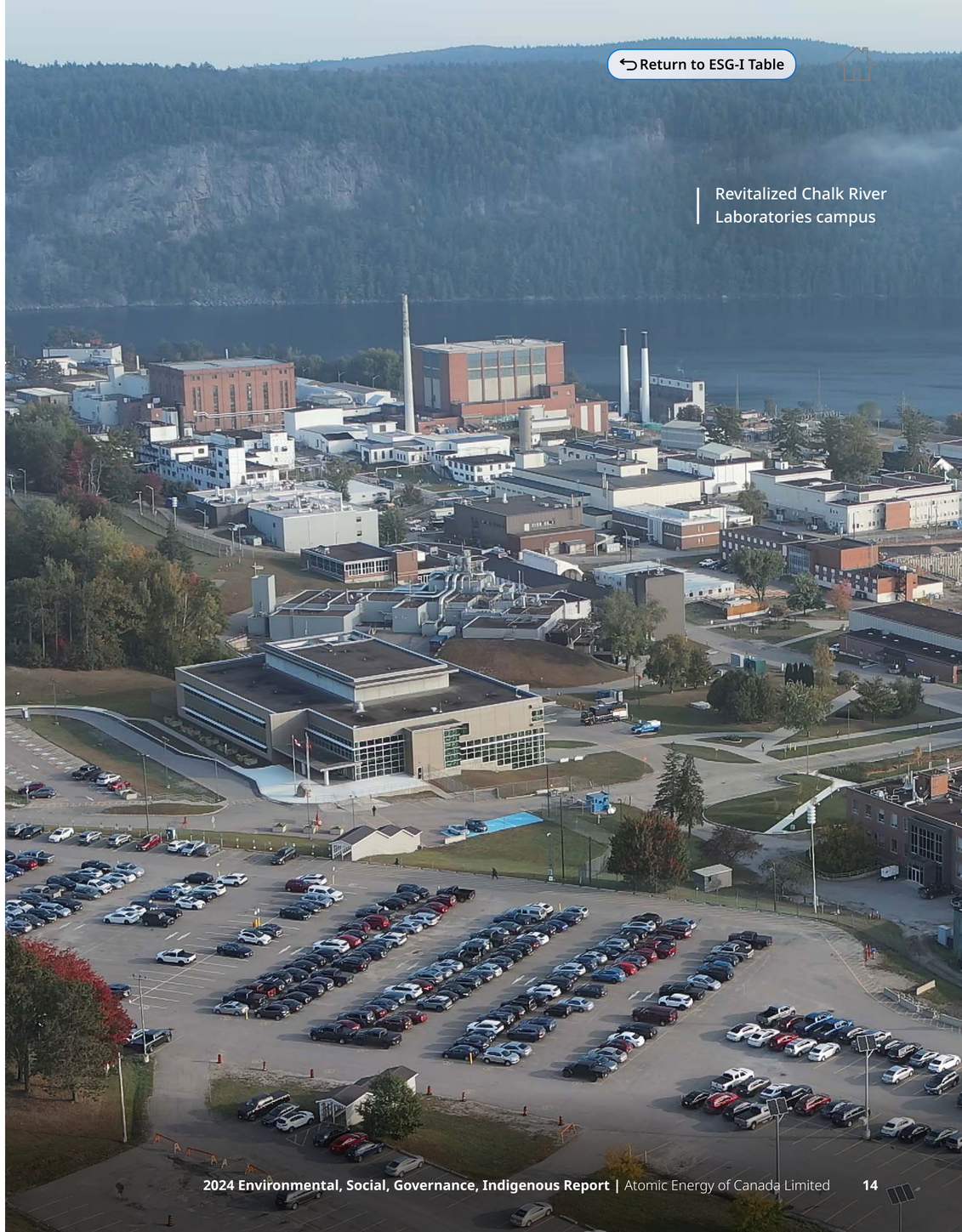
Nuclear energy is a secure, reliable, and non-emitting source of power that will play a crucial role in the energy needs of Canada and the world. Unlike fossil fuel power plants, nuclear reactors emit zero greenhouse gases during operation, supporting the transition to a cleaner energy future. Nuclear power plants also help support renewable integration by complementing the intermittent nature of variable renewable sources.

Advances in nuclear technology, such as Small Modular Reactors (SMRs), promise to enhance safety, reduce waste, and improve the economics of nuclear power. These innovations will make nuclear energy an even more attractive option for expanding sustainable and resilient energy systems.

It's important to note that while nuclear energy offers these potential benefits for sustainability and climate resilience, it also poses challenges such as nuclear waste disposal and potential for accidents. AECL works to ensure that Canada's nuclear activities are conducted safely and securely, minimizing risks to the public and the environment.

This includes the oversight of decommissioning and waste management activities, and through our management and oversight of the Federal Nuclear Science and Technology (FNST) Work Plan, where we help the Federal government support environmental stewardship and radioactive waste management, emergency response, and safety and security, among other activities.

Return to ESG-I Table



Revitalized Chalk River Laboratories campus

Pickering Nuclear Generating Station

The following sections provide an overview of some of the work we completed or progressed to advance environmental sustainability and climate resilience.

Decarbonization

The decarbonization of Canada's economy is a critical federal and international priority as a way to help protect the environment, mitigate climate change, enhance energy security, and improve public health. Nuclear energy enables decarbonization by providing a low-carbon, reliable, and high-density source of electricity that can complement and support the integration of renewable energy sources, thereby reducing overall greenhouse gas emissions and facilitating the transition to a more sustainable energy system.

Here are some highlights of how we're helping to advance decarbonization:

Supporting the Continued Safe Operation of CANada Deuterium Uranium (CANDU) Technology

As part of our commitment to the sustainability and safety of nuclear energy, AECL continues to support the safe operation of existing CANDU reactor technology, a cornerstone of Canada's energy infrastructure. This year, we made substantial contributions to the life extensions and refurbishments of these existing CANDU reactors through CNL's expert technical commercial services for all operating CANDU reactors in Canada.

These efforts are critical in maintaining the reactors' operational integrity and extending their service life, allowing them to continue to support Canada's transition to a reliable and low-carbon energy grid.

We're also looking to spur the next generation of CANDU reactors and have entered a Memorandum of Understanding (MOU) with AtkinsRéalis, signifying a collaborative effort to accelerate the development and deployment of CANDU technology. The MOU represents AECL's commitment to enable CANDU to remain at the cutting edge of the current nuclear technology landscape and contribute to Canada's decarbonization objectives. We are excited to play a key role in AtkinsRéalis' development of the next generation of CANDU design (the CANDU® MONARK™) to meet the needs of today's market, which will build on the safety and reliability of existing CANDU technology originally developed by AECL.

Return to ESG-I Table

Positioning Canada to Enable Small Modular Reactor (SMR) Advancement

Canada is strategically positioning itself as a leader in the development and deployment of SMRs and Advanced Reactors (ARs), leveraging the nation's robust nuclear science and technology capabilities. This year, AECL hosted the successful Pan-Canadian SMR and AR Research and Development Workshop, which focused on identifying opportunities and addressing barriers associated with the deployment and operation of SMR and AR technologies. The workshop served as a catalyst for multi-sectoral collaboration, successfully bringing together industry experts, government bodies, and academic institutions to collaboratively discuss Canada's nuclear future in SMRs and ARs. This forum also invited industry experts to participate in upcoming networks that will be formed to continue advancing the dialogue.

Under AECL's FNST Work Plan, approximately $238.1 million across 99 projects has been invested on AR and SMR research since 2015. These projects build the scientific knowledge to support decision-making and develop the cutting-edge expertise and capabilities that can be leveraged by stakeholders to advance the deployment and operations of ARs and SMRs in Canada and internationally.

To further initiate collaboration for SMR advancement, AECL is fostering a stronger connection between academia and the nuclear industry by enabling universities to play a more significant role in supporting SMR development. While creating and enriching opportunities in academia, this initiative also creates a bridge to attract skilled professionals to the nuclear industry and propel the SMR sector forward.

AECL has started a comprehensive review of its intellectual property (IP) related to small reactor technologies, assessing their current market relevance and potential for commercialization. This assessment is just one example of actions AECL is taking to not only advance nuclear technology, but also to ensure Canada's nuclear capabilities are aligned with market demands and objectives.

In May 2023, the start-up company Global First Power (GFP) announced that a location at Chalk River Laboratories was their preferred site for their pioneering Micro-Modular™ Reactor (MMR®) demonstration project. AECL had offered their sites to all vendors through an open-call invitation as a hosting site. GFP's *proposed* MMR project will aim to demonstrate clean energy technology that could support the transition away from fossil fuels and contribute to the achievement of Canada's climate objectives. The MMR's energy output is particularly suitable for powering remote communities and industrial operations off the grid. GFP's project progress will be reported in future reports.

CNL's Canadian Nuclear Research Initiative (CNRI) program enables collaborative AR research projects with third-party proponents in Canada. The goal of the program is to accelerate the deployment of safe, secure, clean, and cost effective ARs in Canada. Annually, CNRI will issue a call for proposals and CNL will enter into joint research and development (R&D) projects based on the results of a review of these proposals. CNRI seeks to make CNL's technical capabilities and expert knowledge available and accessible to the AR community to equip them with the technical support required to progress towards AR deployment in Canada.

These efforts demonstrate AECL's approach to enabling the advancement of SMRs, marking a new era of cleaner, safer, and economically viable energy solutions.

Hydrogen Isotopes Technology Laboratory

Partnering to Accelerate Fusion Technologies

Recognizing the transformative potential of fusion energy as a sustainable power source, CNL has embarked on a series of strategic partnerships to expedite the advancement of fusion technologies. Under AECL's mission to enable nuclear science and technology, and to further advance clean energy solutions for Canada, CNL has forged separate agreements with Kyoto Fusioneering Ltd., the United Kingdom Atomic Energy Authority (UKAEA), and Stellarex, Inc., each a leader in fusion research and development. These collaborations are intended to jointly explore and capture opportunities that will accelerate the development of fusion technology as forward-thinking energy solutions.

Under AECL's FNST Work Plan, CNL has developed a fusion roadmap, released in June 2024, which outlines a clear and strategic path forward to transition fusion from experimental research to a practical, commercial energy source. The roadmap aims to serve as a guiding framework for Canada's fusion research and development efforts, ensuring alignment with global progress, and positioning Canada as a key player in the international fusion landscape. Owing to its expertise in tritium developed through CANDU technology, CNL is uniquely positioned worldwide to develop technology solutions to address fusion fuel cycle challenges.

Enabling Hydrogen Safety

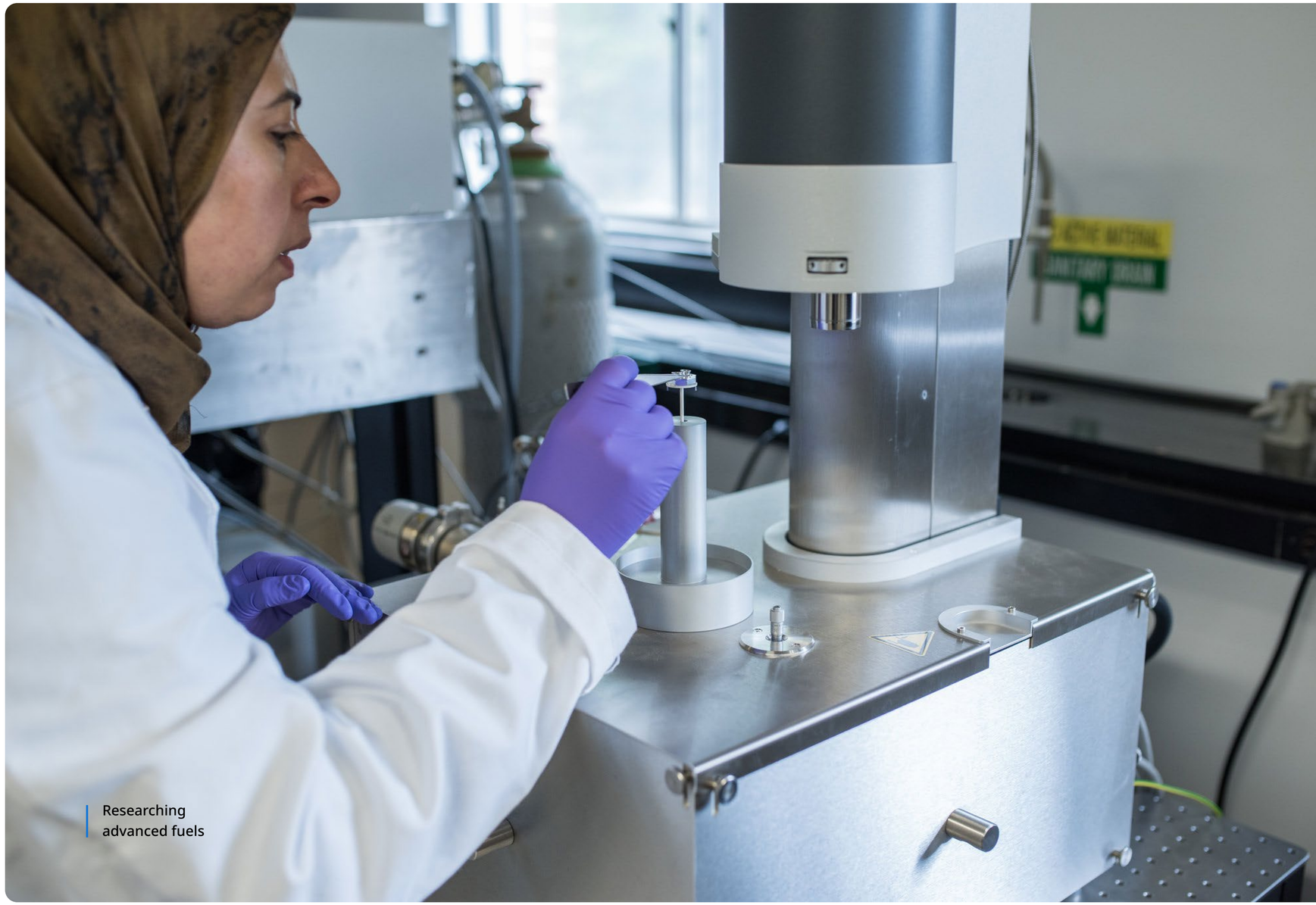
As Canada continues to progress towards achieving net-zero emissions by 2050, the safe integration of hydrogen technology into the energy mix is paramount. AECL and CNL are bringing together experts from academia, industry, and government to create ecosystems to advance the deployment of hydrogen and hydrogen safety by leveraging our decades of experience in hydrogen isotope handling and creating the Canadian Hydrogen Safety Centre, which is establishing a network of capabilities across Canada to consolidate expertise for finding solutions to hydrogen infrastructure challenges that will be faced by this emerging industry.

This year, significant progress was made toward the launch of the Canadian Hydrogen Safety Program, which aims to enhance global comprehension of the challenges and safety considerations associated with hydrogen technology. This program is set to play a crucial role in the responsible adoption and management of hydrogen systems, ensuring that safety remains at the forefront of the clean energy transition. Complementing this effort, CNL has successfully completed the Hydrogen Hazard Assessment and Risk Management for Rail Applications project for Transport Canada. This first-of-its-kind study explored the safe use of hydrogen as a fuel for the freight rail sector in Canada, a critical step towards decarbonizing a key transportation industry. The project provided acceptable margins of safety, marking a notable step in understanding of the potential hazards and safe applications of hydrogen.

Advancing Clean Fuels

While increasing the supply of low-carbon electricity, including nuclear generation and renewable energy options, will be critical to reaching Canada's net zero target, synthetic liquid fuels provide an immediate opportunity to make a meaningful reduction. These clean fuels are "drop in" ready, providing an attractive opportunity for infrastructure investors. Converting cellulosic biomass, such as forest residues, to synthetic diesel or Sustainable Aviation Fuel, is an attractive and promising method to produce fuel.

In 2023, CNL established a partnership with several Canadian organizations with the objective to look for projects to advance under Canada's Clean Fuels Fund (CFF) and Energy Innovation Program (EIP).



Researching advanced fuels

Decarbonizing AECL's Operations

In addition to supporting Canada's broader decarbonization goals through nuclear innovation, we are committed to reducing our own greenhouse gas (GHG) emissions to meet the Government of Canada's goal towards net-zero by 2050. We are working with CNL to achieve our ambitious target to have net-zero emissions in our operations by 2040, which includes an interim target to achieve a 40% reduction in GHG emissions by 2025, compared to our 2005 baseline.

This year, we reduced our Scope 1 CO_2e emissions by just over 34% compared with our 2005 baseline and by almost 7% compared with 2022. These reductions are primarily attributed to the ongoing decommissioning and demolition of buildings on campus, the reduction of natural gas used in heating our buildings, tighter envelopes in our new buildings, and a decrease in heating degree days in 2022-23. We also benefitted from the steady introduction of low and zero emission vehicles into our fleet.

We have reduced our Scope 2 CO_2e emissions by approximately 91% as compared with our 2005 baseline and by approximately 4% compared with our 2022 performance. The decarbonization of the Ontario electricity grid has contributed substantially to CNL's Scope 2 performance. At the same time, we have also reduced our electricity use by 27% compared with the baseline. At our Chalk River campus, on-site electricity efficiency is attributed to the use of building automation, energy meters, energy modelling and LED lighting. At many of our other sites, we continued to reduce electricity through the use of LED lighting retrofits and temperature control systems.

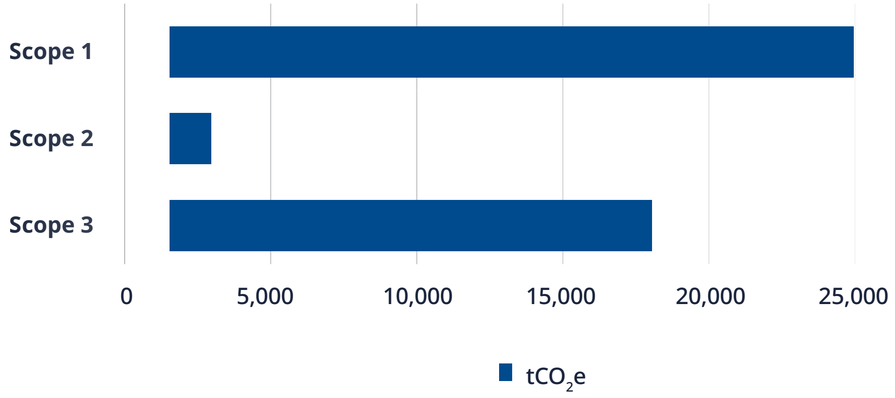
We continue to develop our Scope 3 emissions reporting by capturing upstream and downstream leased assets, employee commuting, and business travel in preparation for the Canadian Sustainability Standard's Board (CSSB) Canadian Sustainability Disclosure Standard (CSDS) 2.

Electric car charging station

Scope 1, Scope 2, and Scope 3 GHG emissions trend in tonnes of carbon dioxide equivalent (tCO_2e) (2022-2023)

	2022	2023
Total GHG emissions	36,599	44,684
Scope 1	26,850	25,063
Scope 2	1,449	1,389
Scope 3 (Upstream and downstream leased assets, employee commuting and business travel categories)	8,300	18,232

GHG Emissions Breakdown



Return to ESG-I Table

Under AECL's oversight, CNL is implementing numerous energy efficiency and emissions reductions initiatives at Chalk River Laboratories. In 2023-24, CNL continued to develop the Chalk River Laboratories carbon neutral strategy, and advanced it to a low carbon operations plan that will encompass all site activities.

To continue to progress toward our target, CNL developed an interim Green Fleet Strategy which identified initiatives such as centralizing operations, consolidating technology types, and focusing on hybrid technology and bio-fuels in the interim until the transition to fully electric vehicles can be made when and where feasible.

In addition to focusing on reducing fleet emissions, CNL continues to implement energy efficiency improvements to achieve the target of a 30% reduction in energy intensity at Chalk River Laboratories by 2035.

Activities in 2023-24 included:

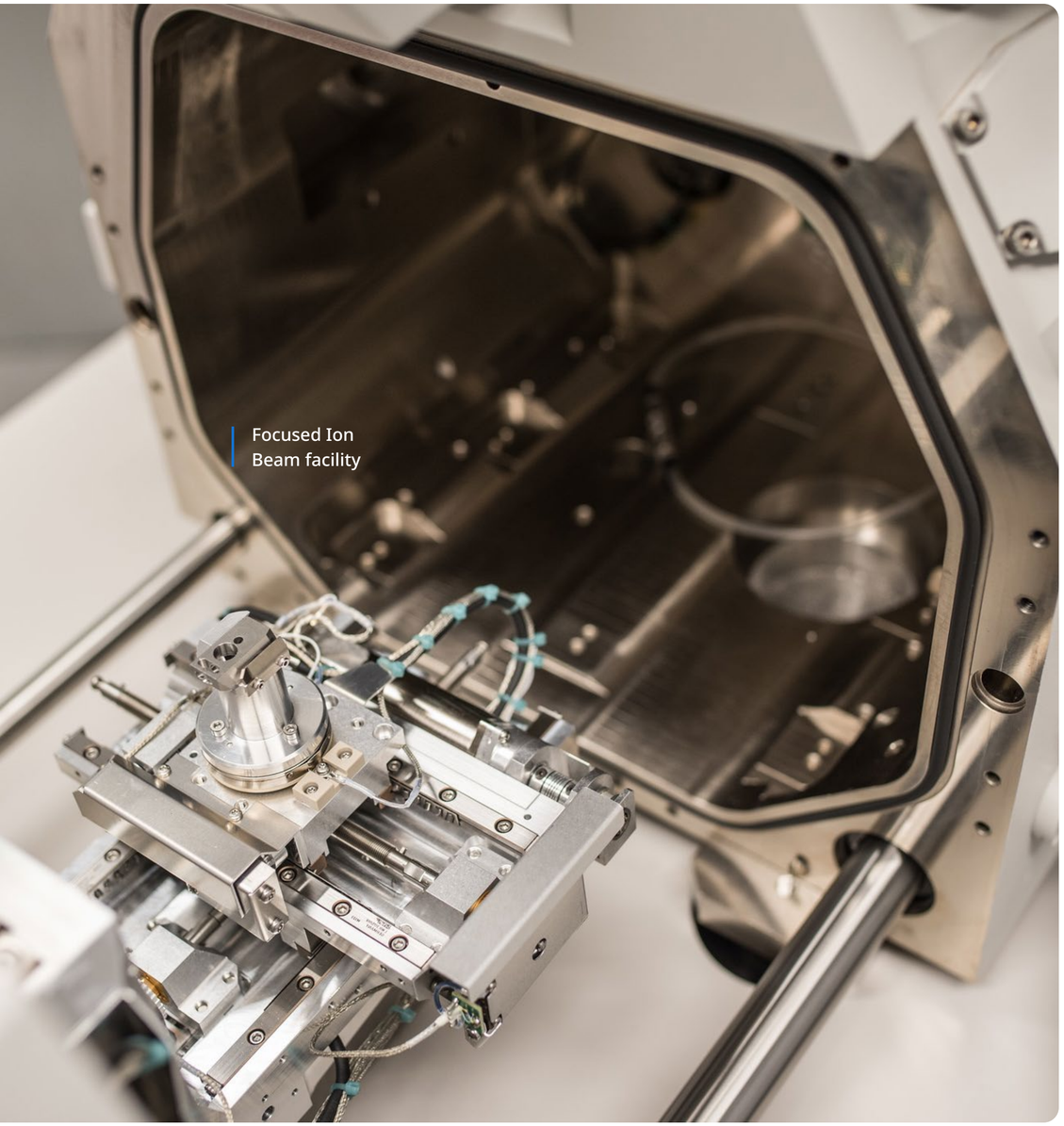
- Continued executing the Smart Building initiative, which integrates Building Automation Systems with autonomous default detection technology to improve management of assets and energy efficiency.
- Developed contracts to secure improvement with Energy Meters, energy modelling (RETScreen) to manage and monitor energy consumption, to support our goal of monitoring and managing energy use at all keeper buildings on the site using RETScreen Clean Energy Management Software, or an equivalent software, by 2025.
- Developed a Battery Energy Storage System, which encompasses a 1MW, 3MW-hr battery and micro grid system, with an anticipated completion date of November 2024.
- Refined the Energy Management Dashboard to include energy metrics that are aligned to the ISO 50001 Energy Management Systems Standard.

CNL is also working to lower fleet emissions through transitioning to zero-emissions or hybrid vehicles to achieve the following fleet target:

At least 75% of new light-duty unmodified fleet purchases will be zero-emission vehicles or hybrid vehicles, with the objective that light-duty fleet comprises at least 80% zero-emission vehicles by 2030. Priority is to be given to purchasing zero-emission vehicles.

Currently, CNL has six hybrid SUV's, one hybrid truck, two electric trucks, and one electric cube van, making 6% of the fleet at Chalk River Laboratories hybrid or electric.

Chalk River Laboratories



Focused Ion Beam facility

Science and Technology

AECL oversees the FNST Work Plan, which focuses on nuclear research and development that aligns with the Government's key priorities and fundamental duties in health, nuclear safety and security, energy, and environmental sectors, furthering innovation for the next generation of nuclear science and technology initiatives.

Here are some highlights of how we're helping to advance science and technology:

Advancing the Federal Nuclear Science and Technology (FNST) Work Plan

Activities at Chalk River Laboratories continue to contribute to critical nuclear science and technology advancements in a cost-effective manner. The FNST Work Plan performs nuclear-related science and technology to support core federal roles, responsibilities, and priorities, while maintaining necessary capabilities and expertise at CNL. This represents an annual investment of $76 million.

As a notable step in supporting Canada's nuclear science and technology sector, AECL has secured an additional 10 years of funding for the FNST Work Plan. The funding will allow AECL to continue to deliver on its mandate to enable nuclear science and technology to address some of the environmental and social challenges Canada and the world are facing, such as climate change and energy insecurity, thereby positioning Canada as a global leader in the nuclear field.

This year, AECL hosted over 800 attendees at the FNST Workshop, marking the highest attendance to date. The workshop brought together scientists, engineers, industry professionals, and policymakers to collaborate, share insights, and forge partnerships, all in dedication to the mutual goal of advancing nuclear science and technology. The workshop's noteworthy turnout reflects a growing interest and commitment to nuclear science and technology across various sectors, proving significant potential for Canadian nuclear advancement.

Nuclear science and technology activities performed at the Chalk River Laboratories continue to benefit both the Government of Canada and the broader nuclear industry by sustaining both current and future reactor fleets.

Driving Innovation and Collaboration

AECL is working with industry, academia, and government to enable the development of new technologies to advance large nuclear, SMRs, clean hydrogen, clean fuels, and fusion all with a view of building on the success of CANDU and its already realized, and potentially enhanced, contributions to climate objectives, energy security, and jobs. Positioned in the centre of Canada's nuclear industry, AECL is uniquely positioned to convene a diverse array of vested parties, from government entities and industry experts to academic researchers and private sector partners, to collectively comprehend and action the priorities of our mandate.

By enabling collaboration, AECL is instrumental in transforming complex nuclear science and technology objectives into tangible, impactful projects. This collaborative approach not only accelerates the pace of innovation but also ensures that the projects we deliver are grounded in the collective expertise and priorities of all vested parties. Through this approach, AECL is a valued leader in shaping an environment where groundbreaking ideas can result in meaningful advancements for Canada.

Revitalizing the Chalk River Laboratories into a World-Class Nuclear Science and Technology Campus

The Chalk River Laboratories are Canada's largest science and technology complex. More than 3,400 people work there, including many engineers, scientists, and technical staff. Under AECL's oversight, CNL is revitalizing the Chalk River Laboratories into a modern, world-class nuclear science and technology campus to support the fulfillment of Canada's nuclear objectives. Central to this revitalization is the construction of the Advanced Nuclear Materials Research Centre (ANMRC) and the Science Collaboration Centre.

Upon completion of its construction, the ANMRC will be a hub for cutting-edge research and development, focusing on advanced materials that will forge the next generation of nuclear technologies. This state-of-the-art facility will foster advancements that will have far-reaching implications for the industry's future. In 2023 several significant construction milestones were achieved, with physical construction work having commenced with mass excavation complete with backfill underway to support the foundation installation.

The Science Collaboration Centre will serve as the central planning and support space at Chalk River Laboratories, acting as a hub for collaboration and bringing together experts from academia, industry, and government to share knowledge, resources, and ideas. The Science Collaboration Centre is designed to facilitate synergies and partnerships that will drive scientific discovery and technological innovation.

The Clean Energy Demonstration, Innovation, and Research (CEDIR) initiative at Chalk River Laboratories seeks to advance the technical readiness of low-carbon energy systems. The Initiative has two phases:

1) CEDIR Labs, and 2) CEDIR Park. CEDIR Labs, focuses on modelling and lab scale experimentation of clean energy technologies for use within a nuclear-enabled hybrid energy system in collaboration with researchers and potential end users across Canada and internationally. This year, CNL performed a technical and environmental assessment of nuclear technologies, renewables, and high-efficiency energy systems to strategize the development of a nuclear-enabled hybrid energy system in a Canadian context. A mix of energy-generating alternatives requires the addition of short and long-term energy storage to balance the seasonal loads and enhance load-following capabilities. The project scope included optimization of the established Hybrid Energy System Optimization (HESO) model. This work advanced the technology readiness level of potential contributing low-carbon technologies, and demonstrated the value and transformation that the CEDIR initiative could create for the low-carbon economy. Going forward, as the second part of the Initiative, AECL and CNL will look to establish CEDIR Park, a demonstration park, hosted at Chalk River Laboratories. CEDIR Park will be an important step to advance the technological readiness of low-carbon hybrid energy systems, and demonstrate the benefits of a nuclear-renewable hybrid energy system.

Radioactive Waste Management and Decommissioning

Radioactive waste management and decommissioning is central to our mandate, serving as a crucial support for nuclear science and technology advancements. Our responsibility, aligned with our mission, is to safeguard the environment by addressing Canada's radioactive waste and decommissioning responsibilities and liabilities from legacy nuclear activities.

These legacy liabilities are the result of decades of significant contributions and advancements in nuclear science which have benefitted Canadians and the world, including the development of the CANDU technology and the production of medical isotopes which are used in the diagnosis and treatment of cancer and other diseases. We are dedicated to progressing key decommissioning, site restoration, and waste management projects in collaboration with Indigenous peoples and local communities. Our work has produced globally recognized waste management solutions, contributing to the effective clean-up and management of Canadian nuclear sites.

Successful nuclear innovations and advancements that provide benefit to Canadians are dependent on effective radioactive waste management and decommissioning strategies. As interest in nuclear technology continues to grow globally, waste management becomes more important than ever to guarantee a safe and environmentally sustainable future for nuclear systems.

Since 2015, 120 buildings, at all AECL sites, have been decommissioned, and we are planning to demolish 65% of obsolete buildings by 2035-36 as part of our efforts to replace these old buildings with new modern facilities that are more energy and resource efficient.

We are also working with CNL to advance key decommissioning and waste management projects at many AECL sites, including the Near Surface Disposal Facility (NSDF) Project, the Nuclear Power Demonstration Closure Project, the Port Hope Area Initiative Cleanup Project, and the Whiteshell Laboratories Closure Project. Under our oversight, CNL is managing some of the largest and most complex decommissioning and environmental remediation projects ever undertaken in Canada.

Notably this year, the CNSC approved the construction of the proposed NSDF Project at the Chalk River site. The NSDF would serve as an engineered containment facility to enable the permanent disposal of decommissioning waste from more than 100 legacy buildings and structures at the Chalk River Laboratories, as well as waste from 70 years of science and technology research, contaminated lands, and continuing operations. Since this regulatory approval was announced, applications have been filed for a judicial review of the CNSC's decision to approve construction of the NSDF. Throughout this process, CNL will continue to ensure the safe management of these historic waste liabilities and operational wastes now and for the long term.

Under AECL's oversight, CNL continued to execute key decommissioning activities, including:

- Continued to fulfill the commitments of the Port Hope Area Initiative with progress that included the safe remediation of 47 private properties and various industrial sites, with 220,000 metric tonnes of waste safely moved to the Long-Term Waste Management Facility for long-term storage.
- Passed the Canadian Nuclear Safety Commission's (CNSC)completeness check for the Environmental Impact Statement (EIS) for the Whiteshell Reactor – 1 Closure Project and progressed to the final technical review stage.

Environmental remediation and nuclear waste management

Return to ESG-I Table

Environmental monitoring

Environmental Management

AECL is committed to fulfilling our environmental responsibilities to all Canadians, striving to promote health and safety, combat climate change, and preserve the environment.

Our achievements in water and wastewater management, biodiversity, and non-radioactive waste management reinforce our commitment to ESG-I initiatives across our operations. The removal of legacy liabilities and waste management takes away hazards and eventually returns land to a more natural state, creating habitat and reducing hazards that may impact life on land.

Water and Wastewater Management

AECL acknowledges that our water use can affect the sustainability of nearby ecosystems and wellbeing of the communities where we operate. We are actively collaborating with CNL to improve water use and management practices.

This year water meters were installed at our operating sites to closely monitor and manage water consumption. Total water intake in 2023 was 16,523 million of litres, an increase of only 1.9% compared to 2022. Water at our sites is withdrawn for service water, process water, and fire water. In 2023, emergency preparedness activities, including extensive firefighter training and equipment testing, were primarily responsible for the increased water used by the site.

Chalk River Laboratories and Whiteshell Laboratories have the most material water usage and are the focus of water conservation measures.

- At Chalk River Laboratories, service water is supplied by the nearby Town of Deep River and pumped into a reservoir for plumbing and laboratory/experimental use across the Chalk River campus. Process water is drawn directly from the Ottawa River and used as cooling water. Fire water is also drawn directly from the Ottawa River to be kept in a holding tank that remains full and is only used for emergency purposes. Wastewater is treated, using an environmentally friendly biodigester, and discharged back into the Ottawa River.
- At Whiteshell Laboratories, water is drawn directly from the Winnipeg River. The water is utilized by the site for various fire suppression systems, site cooling in the summer, and a variety of cleaning and sanitary purposes. With the current decommissioning work being performed, the fire water system is also used for misting operations during demolitions. Treated wastewater is returned through a discharge outlet directly back to the Winnipeg River.

Over 60,000 analyses are performed annually to check for radionuclides, major ions, trace elements, and a broad range of organic compounds. CNL also leverages an efficient Environmental Data Management System and conducts several internal and external audits annually with the intention of ensuring the monitoring program can address evolving concerns, reduce extraneous monitoring, and support protection of the environment.

CNL maintains an extensive effluent (treated wastewater), groundwater, and environmental monitoring program for wastewater to track contaminants, understand the impact of our operations, and determine opportunities to reduce our environmental impact.

Chalk River Laboratories

Return to ESG-I Table

Improving Practices and Infrastructure Procedures at Chalk River

Specific to wastewater, CNL conducts various routine assessments to evaluate whether radiological or non-radiological contamination has occurred. In February 2024, a routine assessment at the Chalk River Laboratories' Sanitary Sewage Treatment Facility indicated that the micro-fauna that are part of the treatment process had been disrupted, resulting in effluent (treated wastewater) that was non-compliant with the Fisheries Act. All relevant regulatory agencies, along with local communities and Indigenous Nations were notified, and an investigation was initiated to locate the cause of the disruption, and to identify practices to best support the health of the microbiome of the wastewater treatment system. By June 2024, following three consecutive bi-weekly effluent tests, CNL confirmed that the facility was back to full compliance with the Fisheries Act.

CNL is implementing an action plan to mitigate against future incidents, including better oversight, improved sanitary drain practices, and infrastructure upgrades. The non-compliance did not involve radiological contaminants, nor was any environmental damage observed. AECL and CNL took some important lessons from this incident, namely improving communication earlier with Indigenous communities and ensuring that communications are clear and easily understood by a non-specialist audience.

Biodiversity

In June 2024, Canada announced its 2030 Nature Strategy, detailing the nation's approach to achieving the objectives set by the global Kunming-Montréal Global Biodiversity Framework, as decided at the UN Biodiversity Conference (COP15). Working closely with CNL, we are committed to doing our part to achieve international targets for preventing biodiversity loss and protecting nature through the implementation of land management strategies and the incorporation of Indigenous traditional knowledge, which is transmitted between generations through stories, songs, dances, carvings, paintings, and performances. We recognize that we have an active responsibility to protect and reduce our impact on the wildlife and habitats present within and around our site locations.

This year, CNL continued implementing the Sustainable Forest Management Plan developed for Chalk River Laboratories. The goal of the Forest Management Plan is to transform the forest at the Chalk River Laboratories site into a carbon sink over the next century. In 2023-24, CNL completed a preliminary Forest Carbon Analysis in alignment to the Forest Service Carbon Budget Modeling approach, which revealed that forested ecosystems at the Chalk River site currently store approximately 2.4 million tCO_2e. Collaboration with federal neighbors is a key component of the plan, such as with the Petawawa Research Forest, which has received a Recognition Award for the collaboration between the two entities.

Non-Radioactive (Conventional) Waste Management

AECL is committed to managing the non-radioactive (conventional) waste that results from our operations. CNL is continuing to progress towards our waste targets, which are aligned to the GGS:

- Diverting at least 75% of conventional waste from landfills by 2030.
- Diverting at least 75% of plastic waste from landfills by 2030.
- Diverting at least 90% of all construction and demolition waste from landfills by 2030.

In 2023, 77% of conventional waste was diverted from landfills, which indicates that CNL is well on track towards achieving these 2030 targets.

CNL's Integrated Waste Management Strategy, aligned with the GGS and informed by Indigenous and public consultations, guides our approach to managing waste at our operating sites.

CNL made many improvements to the integrated waste management approach in 2023-24, including:

- Developed project charters to explore different recycling routes.
- Established strategic contracts with external waste receivers. This initiative enabled CNL to segregate, reuse, and recycle most of the construction and demolition waste.
- Established concrete recycling capability in the concrete laydown area at the Chalk River site. This initiative enabled CNL to process and recycle concrete from construction and demolition projects across CNL. The crushed concrete has been used to grade back roads across Chalk River.
- Developed a soil management process and training to enable CNL projects to effectively manage soil as an asset, minimizing waste soil generation.

Sustainable Procurement

AECL is dedicated to fostering an ethical, sustainable, and transparent procurement process. Our Procurement Procedure governs our procurement activities and is structured to encourage not only ethical and sustainable conduct but also social responsibility amongst our employees and suppliers. This commitment helps us maintain the integrity of our operations and uphold our high standards.

AECL has made significant strides in updating our procurement procedures to further integrate ESG-I considerations in alignment with the Government of Canada's Greening Government Strategy. Building on last year's progress, where employees were encouraged to include ESG-I factors in competitive procurement processes, this year's update mandates the consideration of ESG-I in all procurement activities, including both competitive and direct awards. ESG-I considerations are now included by default, with any exceptions requiring approval from AECL's Lead Contracts Officer.

To support this initiative, employees are provided with a form that guides them in identifying and evaluating relevant ESG-I considerations for their scope of work, with criteria appropriately scaled for small, medium, and large businesses. This tool empowers employees to make informed decisions and ensures a meaningful impact in their procurement practices.

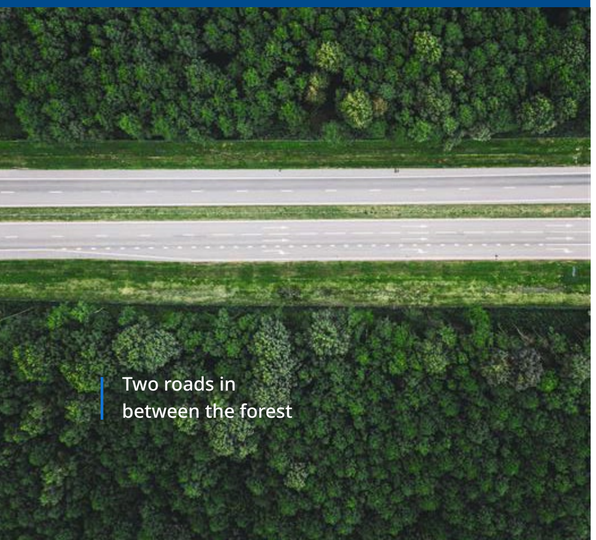
Additionally, exemptions from including ESG-I considerations must be authorized by AECL's Lead Contracts Officer on a case-by-case basis, applicable even in single-sourced procurement activities. Accessibility considerations have also been integrated into the procurement procedures. Accessibility must be considered in every procurement activity, with exemptions requiring authorization from the same authority. All competitive procurement processes are now published in accessible formats, emphasizing the importance of engaging relevant vested parties and communicating the need for responsible practices in the supply chain.

Chalk River Laboratories

Climate Resilience

AECL is committed to aligning with the Government of Canada's expectations for Crown corporations regarding climate-related financial disclosures.

In 2022 and 2023, we performed climate scenario analysis to identify the physical and transition risks that climate poses to our operations and business model. We are committed to enhancing our climate-related disclosures over time and to align with evolving shareholder and stakeholder expectations and sustainable standards regulatory requirements.



Two roads in between the forest

Climate Governance

AECL's commitment to managing climate-related risks and opportunities and instilling climate resilience throughout all operations is integrated within AECL's governance structure.

Board Governance

The AECL Board of Directors is responsible for overseeing AECL's strategic direction, planning, and key business choices, which includes the handling of climate-related risks and opportunities. Risks deemed critical by AECL's risk management protocols are escalated to the Board for review and discussion. This includes those pertaining to climate as identified following the guidelines of the Task Force on Climate-related Financial Disclosures (TCFD), which has been incorporated into the ISSB's IFRS S1 and S2.

The Board is actively engaged in reviewing AECL's alignment to the Government of Canada's expectations for Crown corporations regarding climate-related financial disclosures, the organization's annual reporting on climate resilience, and the climate-related risks and opportunities that have been identified.

The Board also oversees and approves broader processes and documents that consider climate-related issues, including AECL's risk framework, CNL's annual work plans, the contractor's performance plan, and AECL's employee incentive plan.

Executive Governance

Climate resilience, including the management of climate-related risks, opportunities, and objectives, is a priority managed at the executive level. AECL has developed an internal roadmap which outlines key activities, responsibilities, and timelines to enhance governance over climate-related risks. The roadmap includes a Responsible, Accountable, Consulted, and Informed (RACI) model that outlines climate-related responsibilities across the organization. Executive members have been assigned the responsibility of key activities that require executive ownership.

Operational Governance

As our contractor, CNL is equally dedicated to managing climate-related risks and enhancing the climate resiliency of AECL sites. Under the GoCo model, CNL is responsible for managing climate-related risks to AECL's assets, including its operational sites.

AECL's role is to monitor and guide CNL's processes, strategies, and actions concerning the management of these climate-related risks. AECL exercises its oversight through the approval of CNL's yearly operational plans, long-term strategies, and annual performance-based incentives, all of which encompass CNL's initiatives and results in managing climate-related risks.

ESG-I criteria, along with adherence to the Government of Canada's expectations for Crown corporations regarding climate-related financial disclosures, are integrated as performance metrics in the contractual agreement between AECL and CNL.

Strategy

AECL is uniquely positioned to capture our own climate-related opportunities, and to contribute to broader transition opportunities in Canada and globally.

As we contribute to the reduction of emissions at the national and global levels, AECL maintains a steadfast commitment to climate action and resilience, actively working to minimize the risks and effects associated with our operations. Based on the climate-scenario analysis exercise conducted in 2022 and 2023, AECL has identified and continues to assess climate-related risks, considering both physical and transition risks, and opportunities to our business.

Climate-related Physical Risks

Physical risks to AECL's sites are identified, managed, and updated through CNL and overseen through AECL's risk management processes and climate-resilience approach.

For physical risks, three climate scenarios were considered over three timeframes:

Climate scenarios:

1. Low: <2°C
2. Medium: 2 - 3°C
3. High: >4°C

Time frames:

1. Short term: 2030
2. Medium term: 2050
3. Long term: 2080

Forest fire with sun shining through trees

Below is a summary of the climate-related physical risks AECL may be exposed to. For a more detailed assessment of the risks and their impact to AECL, please see the Climate Strategy section of our 2023 ESG-I and Climate Resilience Report.

Physical Risk	Impacts and mitigation strategy
Flooding (fluvial and pluvial)	Flooding events have occurred at AECL's Chalk River Laboratories site, though none of the infrastructure has been damaged, nor have operations been impacted. CNL is managing flooding as a key material risk at AECL's sites and has measures in place to increase Chalk River Laboratories' preparedness for an extreme event that could lead to significant flooding sediment.
Increased Wildfires	Large fires have occurred adjacent to AECL's sites (including Chalk River Laboratories) in the past, however, no infrastructure has been damaged, nor have operations been impacted. Chalk River Laboratories' Forest Management Plan considers suitable habitats that mimic natural disturbance cycles of forests of the Great Lakes St. Lawrence, and can lower fire risk (e.g., planting mixed deciduous trees that are less flammable than coniferous trees). In addition, CNL has a fire response crew, and as part of their emergency response and preparedness planning, on-site staff at Chalk River Laboratories are tested and trained on fire safety.
Extreme temperatures – heat	All AECL sites experience moderate exposure to extreme heat under all climate scenarios, with some experiencing high exposure under a high-emission scenario. CNL has implemented mitigation strategies to minimize the health and safety risk to outdoor staff by updating their work and rest requirements.
Extreme Wind Speed	High wind-speed events (e.g., microbursts) have occurred at the Chalk River Laboratories site in the past. Tornadoes have also occurred in Ontario. AECL's high-risk facilities are built to withstand more severe and infrequent weather events. Regulations require AECL to consider severe weather events in new nuclear builds. Back-up generators are in place in the event that power is disrupted or lost.
Freeze Thaw	Extreme cold temperatures are projected to decrease, however, extreme fluctuations in temperatures are currently occurring at some sites, such as at Chalk River Laboratories. CNL has used temporary heating of decommissioned sites during periods of extreme cold.

Tradesperson in National Research Universal (NRU) reactor

Climate-related Transition Risks and Opportunities

Transition risks and opportunities are related to the transition to a lower-carbon economy, which may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. These risks and opportunities are identified and managed by AECL and integrated into our ESG-I strategy and planning. Last year, AECL's executive team engaged in a workshop to identify and assess AECL's climate-related transition risks and opportunities, based on the TCFD Implementation Guidance. Climate-related transition risks and opportunities are considered under scenarios that project a transition to a lower-carbon or net-zero economy and limited global warming. Transition risks and opportunities to AECL were considered under two climate scenarios: 1.8°C and >4.4°C.

We recognize that the transition to net-zero presents a wide-ranging multitude of risks and opportunities that may evolve over time. AECL will continue to build and reassess our analysis of climate-related risks and opportunities to our business. We plan to continue to deepen our understanding of climate-related risks and opportunities, including by further assessing the magnitude of transition risks and opportunities and their impact to AECL.

Climate Scenarios:

1.8°C global average temperature increase by 2100
Under Scenario 1, significant decarbonization is achieved and the economy transitions to net-zero.

>4.4°C global average temperature increase by 2100
GHG reduction targets are not met, and the transition to net-zero does not happen. Climate warming to exceed 4.0°C by 2100.

AECL identified the following climate-related transition risks and opportunities to the corporation under a net-zero scenario (1.8°C).

Transition Risks	Transition Opportunities
• Insufficient pace of regulatory change • Funding constraints • Resources / capacity management • Enhanced obligations and regulations around emissions reductions and climate disclosures • Access to capital becoming increasingly competitive • Change in social license to operate / reputational risk	• Leveraging AECL's expertise in a broader array of technologies to advance decarbonization • Opportunity for AECL to position Canada as a global leader in decarbonization • Opportunity to continue to be, and increase our outreach as, a trusted advisor to government • Increasing market demand for nuclear energy sources to power net-zero economy • Land management planning and improvement

Return to ESG-I Table

Climate-related Risk Management

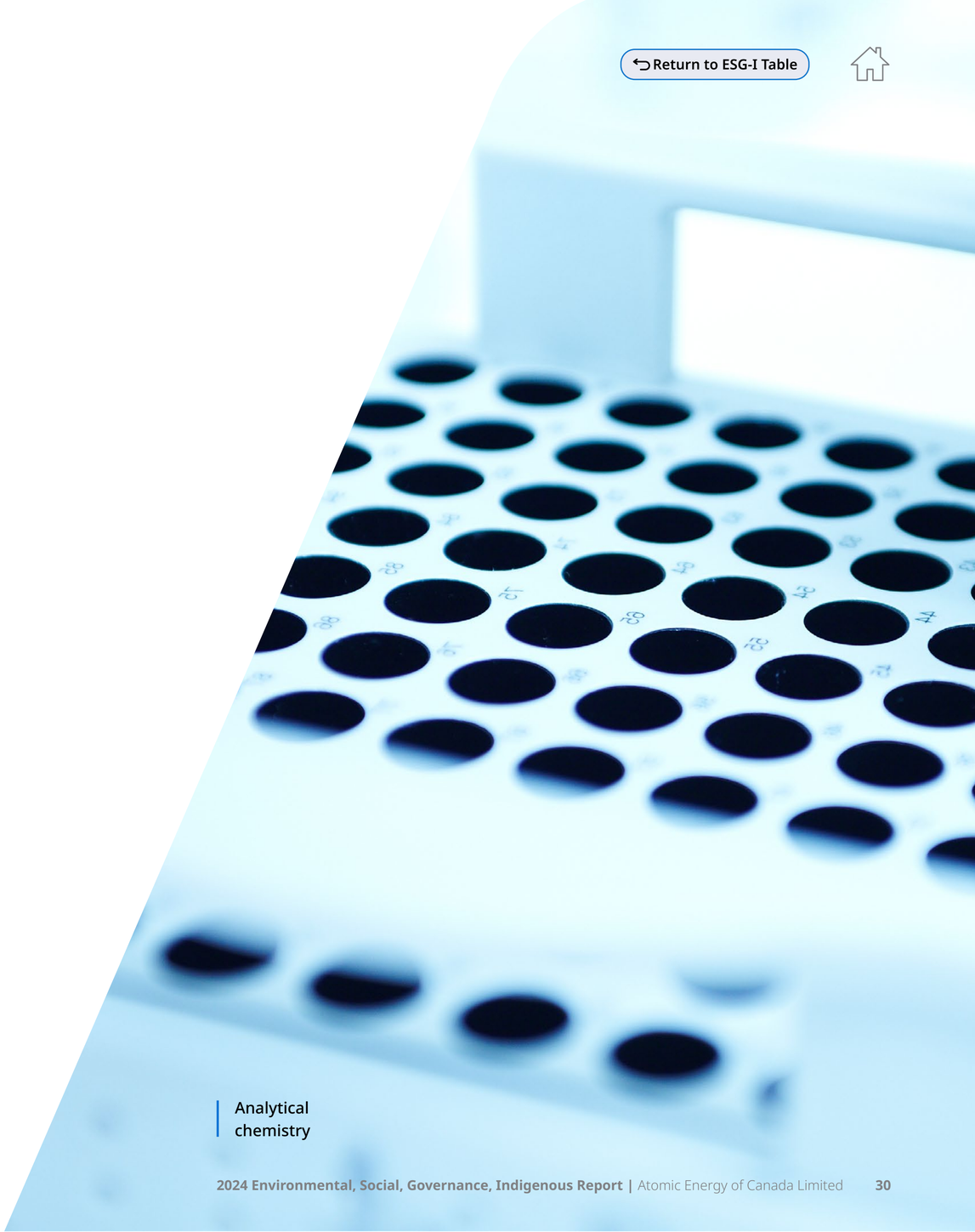
AECL is committed to taking a proactive, comprehensive approach to identifying, assessing, and mitigating climate-related risks. We are actively managing and preparing for such risks through established risk management procedures. This includes recognizing climate change as a significant risk within AECL's corporate risk register and incorporating considerations for extreme weather events into our emergency response plans. Under our oversight, CNL has implemented a climate resilience building standard and a life-cycle carbon analysis standard. These standards mandate that all significant infrastructure developments on AECL sites consider the carbon emissions associated with material selection, develop plans for climate resilience, outline the project's environmental footprint, and specify the mitigation strategies to be employed to manage the project's climate impact.

Under the GoCo model, AECL oversees CNL's management of climate-related risks. CNL has established a Hazard Identification Risk Assessment instrument which assess risks across our projects and operating sites, evaluating the impact of various risk factors, including climate change, by analyzing their frequency, changes, and potential consequences. CNL also performs environmental assessments to identify and manage environmental and climate-related risks. Under AECL's oversight, CNL's gating and sanctioning process incorporates assessments of climate resilience and analyses of life cycle costs and benefits.

AECL plans to continue building on efforts to further integrate climate-related risks and opportunities into enterprise risk management (ERM) processes, strategy, and financial planning. Looking ahead, AECL will seek opportunities to further assess the impact, including financial implications, of climate-related risks and opportunities.

Climate-related Metrics and Targets

AECL is making meaningful progress towards achieving climate-related objectives and targets set to decarbonize AECL's operations and enable a successful transition to net zero. For more information on our climate-related metrics and targets, please refer to the Decarbonization section on pages 19-20 of this report, and the TCFD Index in the Appendix section on page 60.



Analytical chemistry

Improving Quality of Life for Canadians

Health and environment
“Good Laboratory Practices”

AECL is committed to improving the health and safety of Canadians through our work in advancing nuclear innovation in the treatment of disease, by building authentic relationships with the members of the communities we operate in, and by overseeing the health and safety of the public and our workforce.

The success of our mandate and objectives is closely tied to our relationships with the communities where we operate. To this end, we've placed a priority to engage with the public, Indigenous Nations, and other vested parties to our operations to address concerns, share information, and involve them in decision-making processes related to Canada's nuclear legacy and future nuclear projects. These relationship building projects are essential to helping us advance our mandate.

We place the upmost importance on safety, with the health, safety, and well-being of our community members, employees, and contractors at the forefront of our concerns. We are fully aware of the risks inherent in our industry and, in keeping with national priorities, we pledge to place the safety and security of our nuclear facilities at the forefront of our efforts. We also recognize the importance of inclusivity in contributing to a positive work experience, and have undertaken numerous diversity, equity, and inclusion (DE&I) initiatives to help our employees feel embraced and to lead to an attractive workplace environment.

The high-temperature, high pressure (H5) Loop in Canadian Nuclear Laboratories' multidisciplinary materials science laboratory complex

Return to ESG-I Table

National Research Universal (NRU) reactor

Return to ESG-I Table

The following sections provide an overview of some of the work we completed or progressed to improve quality of life for Canadians.

Nuclear Medicine

Canada is a leading producer of medical isotopes, which are used in diagnostic imaging and cancer treatments. Nuclear reactors, such as those at AECL owned Chalk River Laboratories and the CANDU reactors built by AECL in the past and now owned and operated by major utilities, play a crucial role in the production of these isotopes, improving healthcare outcomes for Canadians and people around the world. Other methods of isotopes production that do not use nuclear reactors (e.g. accelerator based or decay based methods) are another significant role Canada plays in production of medical isotopes at research facilities and hospitals across the country. CNL, through research, partnerships, and the management of intellectual property and existing assets, has advanced the deployment of nuclear technology in new Alpha therapies for cancer treatments.

Here are some highlights of how we're helping to advance nuclear medicine:

Improving the Health of Canadians and People Around the Globe

Starting in 2016, AECL is investing $1.3 billion over 10 years to revitalize and modernize the Chalk River Laboratories site and transform it into a world-class, state of-the-art nuclear science and technology campus. The Chalk River Laboratories have played an instrumental role in improving global health for decades, with isotopes produced at the facility contributing to more than one billion medical treatments worldwide since it started producing isotopes in the late 1940s.

This year, the National Research Universal (NRU) reactor at Chalk River Laboratories was recognized by the 2023 World Council on Isotopes for its outstanding contributions to isotope production, previously accounting for over 80% of the world's supply of the Molybdenum-99 isotope, an essential component in medical diagnostics and treatment. This legacy of excellence has helped position AECL, CNL, and Canada as key players in the international nuclear medicine community, providing life-saving isotopes that are critical for many diagnostic and medical procedures.

Further solidifying its commitment to quality and safety in health-related nuclear research and production, CNL has achieved the Good Laboratory Practice (GLP) accreditation. This accreditation demonstrates CNL's adherence to rigorous standards in conducting non-clinical environmental health and safety studies, ensuring the reliability and safety of its research outputs. AECL and CNL, based on decades of experience, are at the forefront of the production and uses of deuterium and deuterium-based products. Work in these areas is enabled by the vast and unique capabilities at CNL and the Chalk River Laboratories.

We are continuing to pursue advancements in nuclear medicine to further revolutionize the diagnosis and treatment of disease. This includes supporting the research and development of new and promising nuclear health technologies, including emerging radiotherapies, diagnostics, and radiotheranostics such as Targeted Alpha Therapy.

Return to ESG-I Table

Accelerating the Production of Actinium-225

The launch of Actineer, a joint venture between ITM Isotope Technologies Munich SE (ITM) and CNL, marks a significant leap forward in the manufacturing and production of Actinium-225, a rare and highly sought-after medical isotope that holds incredible potential as a tool in the fight against cancer. The project was first started under the Federal Nuclear Science and Technology (FNST) Work Plan to develop a thorium generator for lab scale production of Actinium-225 as ITM was a primary recipient for the thorium generated Acinimium-225.

There are only a few locations globally with thorium generators to produce this material in research-scale quantities. CNL's Chalk River Laboratories is one of them. Through its generators, CNL can make a significant amount of pure Actinium-225 which it uses in its research and shares with other collaborators across Canada and around the world.

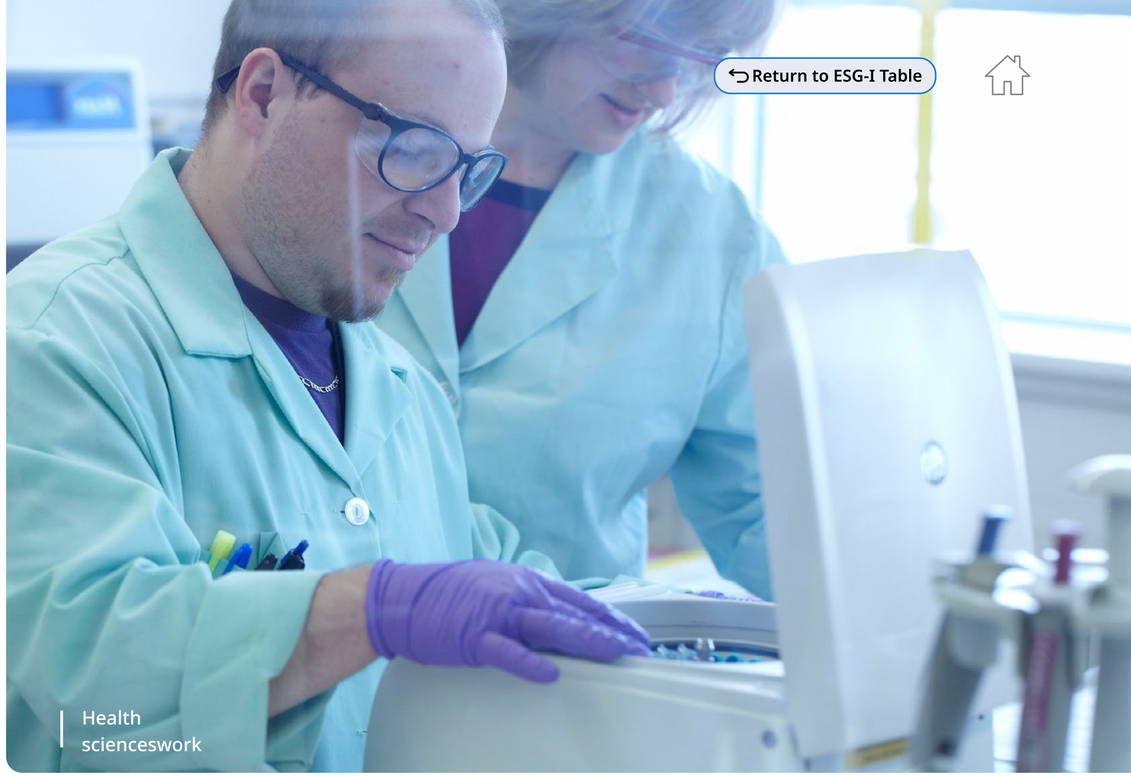
From there, partnerships with academia and industry on Targeted Alpha Therapy expanded and demonstrated our leadership in medical isotopes. Actinium-225 has shown great potential in targeted alpha therapy, a form of precision cancer treatment that has the potential to target and destroy cancer cells with minimal impact on surrounding healthy tissue.

The collaboration between ITM and CNL through Actineer is set to accelerate the commercial availability of this groundbreaking isotope, ensuring a reliable supply for clinical research and, eventually, patient treatment. Through Actineer, ITM, and CNL are driving the production of Actinium-225 to new heights, using Canadian material and knowledge, and leveraging ITM's processing capacity and global sales network, with the potential to transform cancer therapy and improve patient outcomes worldwide. In addition, we continue to take significant steps towards producing larger quantities of Actinium-225 supplies through an agreement with the Sylvia Fedoruk Canadian Centre for Nuclear Innovation.

Together, these partnerships will significantly increase the annual global supply of Actinium-225. Moreover, CNL's research in low-dose radiation increases understanding of impacts on human health to improve radiation safety and worker protection in the nuclear industry and beyond.

Advancing Nuclear Medicine Through Collaboration

AECL recognizes the critical role of collaboration in fostering research and innovation within nuclear medicine. Under AECL's oversight, CNL has formed a strategic partnership with TRIUMF, Canada's particle accelerator centre, enhancing the nation's capabilities in isotope production and the development of radiopharmaceuticals. The partnership brings together both TRIUMF's particle accelerator capabilities and CNL's expertise in nuclear materials and radiobiology to advance the medical and health applications of nuclear innovation.



Health scienceswork

The successful execution of the Canadian Nuclear Research Initiative Health (CNRI-H) program is another testament to AECL and CNL's dedication to collaborative research. The program has been instrumental in advancing projects that address key challenges in health and environmental sciences, including the production of medical isotopes. Furthermore, CNL's research in understanding the effects of radon exposure contributes valuable insights into environmental health risks and enhances the collective knowledge necessary for effective risk management across the industry.

In addition, as of March 2024, a total of seven Memoranda of Understanding had been signed between partner universities, AECL, and CNL as part of CNL's Academic Partnership Program, with the universities included exploring collaborative research to advance nuclear medicine applications.

Canadian Nuclear Laboratories' open house

Community Engagement and Development

AECL and CNL's commitment to engagement is vital to the role we play in supporting the communities where we operate. Understanding the significance of our presence and decisions on these areas, we are dedicated to fostering opportunities that positively influence local communities through our operations. This commitment is exemplified by AECL's active engagement with local communities at all stages of our projects, from construction to decommissioning.

Here are some highlights of how we're helping to enable community engagement and development:

Supporting Community Development

Our activities offer economic advantages to the small communities where we operate, such as Chalk River, Port Hope, and Port Granby. CNL employs approximately 3,500 local individuals in these areas. As one of the largest employers in many of the communities where we operate, it is important to AECL that CNL work to extend economic and procurement opportunities to local companies and businesses. Each year, CNL conducts events to support small, local, and Indigenous businesses to help nurture economic prosperity by working with sustainability-minded suppliers and incorporating socially responsible standards into procurement policies.

AECL and CNL have built a culture of community engagement and giving, most notably through CNL charitable initiatives that raised a total of $189,000 for 41 charities and organizations that contribute to the health and well-being of our local communities, such as children's charities, violence prevention centres, local food banks, and sports clubs.

Engagement and Collaboration with Local Communities

AECL is engaging with the communities of Port Hope and Port Granby to support the Water Works West project in Port Hope and the development of the Port Granby nature reserve. These initiatives not only address environmental restoration and conservation of previous nuclear sites, but also enhance community well-being through access to natural spaces.

AECL's approach to community involvement also extends through our contractor, CNL. The establishment of the Environmental Stewardship Council, which is comprised of internal and external vested parties, is a testament to CNL's dedication to open dialogue and shared decision-making with community members, providing a platform for discussing environmental initiatives and concerns.

Additionally, the Port Hope Public Engagement office serves as a cornerstone for ongoing communication, offering a dedicated space for information exchange and collaboration on projects that impact the local area. Through these shared efforts, AECL and CNL demonstrate our commitment to working collaboratively with local communities, ensuring that nuclear science and technology advancements provide shared benefits.

Health and Safety

A deep-seated commitment to safety and security is a core principle within our organization, and we cultivate a strong culture of safety where a proactive attitude and a high regard for workplace safety are essential values for everyone.

Each member of our team, including both employees and our contractor CNL, is responsible for upholding stringent health and safety protocols and is a vital contributor to reinforcing our solid safety culture.

Here are some highlights of how we're helping to promote health and safety initiatives:

Public Health and Safety

The safeguarding and preservation of public safety stand as critical concerns for AECL and the Government of Canada while pursuing nuclear initiatives. We are fully aware of the risks inherent in our industry and, in keeping with national priorities, we pledge to place the safety and security of our nuclear facilities at the forefront of our efforts.

Guided by the FNST Work Plan, we are devoted to the safe, secure, and ethical development and use of nuclear technologies in Canada. Our commitment extends to bolstering both national and international nuclear security, advancing nuclear readiness, and enhancing our emergency response capabilities.

Our facilities are equipped with rigorous emergency preparedness strategies and tools. In line with the previous year, we take pride in upholding a track record of zero incidents affecting public safety this year. As mentioned earlier in the Report, the Chalk River Effluent Incident, while although not affecting public safety, provided us with a learning opportunity to improve our incident communication strategy in the continued interest of public health.

Employee Health and Safety

Our Employee Health and Safety Policy reflects our steadfast commitment to maintaining and enhancing the health and safety of all our staff, addressing both their physical and mental well-being. In recognition of the inherent hazards of the nuclear sector, our Health and Safety Policy incorporates specific nuclear safety measures to safeguard our employees comprehensively.

The AECL Code of Conduct, along with our Occupational Safety and Health Procedure, tailor emergency protocols for each site, include a strict zero-tolerance approach to harassment and violence, and establish clear guidelines for reporting and addressing any workplace incidents.

Fuel and fuel channel safety

Remote tooling development

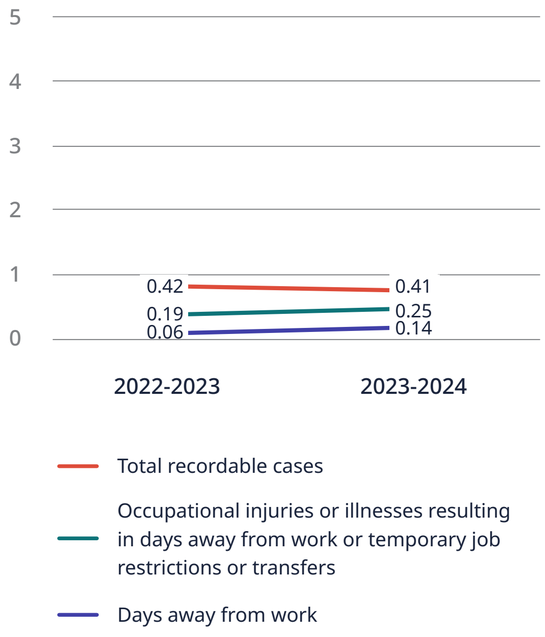
Return to ESG-I Table

Contractor Health and Safety

Ensuring the well-being of our contractor, CNL, is just as vital as safeguarding the health and safety of our employees. To gain insight into its employees' perspectives and feedback on CNL's safety performance, CNL conducts an annual Safety Perception, Climate and Chemistry survey. This year, 1,711 staff completed the survey, representing 43% of employees. Following the close of the survey, an analysis of the data was shared with CNL and AECL executive teams to guide the development of priorities and initiatives to ensure a safe and healthy environment for all. Moreover, CNL introduced its Safety Excellence Initiative, which prioritizes psychological health and safety.

With AECL's supervision, CNL's Health, Safety, Security, and Environmental management system is instrumental in preventing injuries and incidents. AECL assesses CNL's health and safety performance based on health and safety metrics, including total recordable cases, occupational injuries or illnesses resulting in days away from work or temporary job restrictions or transfers, and days away from work.

Annual Recordable Injury Rates



Return to ESG-I Table

Diversity, Equity, and Inclusion (DE&I)

At AECL, DE&I transcends mere policy; it represents the dynamic approach we employ to assemble our team, embracing a rich blend of backgrounds, experiences, and talents. Our commitment to fostering a psychologically safe and inclusive work environment is rooted in our organizational values. This environment encourages a wider array of viewpoints and insights, which in turn fortifies our collective strength and positions us toward greater corporate accomplishments.

Here are some highlights of how we're helping to promote diversity, equity, and inclusion at AECL:

Diversity & Inclusion Strategy

DE&I at AECL is guided by our Diversity & Inclusion Strategy, first established in 2019. This strategy encompasses three overarching goals and an initial action plan designed to achieve them. In 2023, after successfully completing these actions, the DE&I Working Group was established and a new list of actions was developed based on feedback from the organization-wide cultural competency assessment survey. These new actions form AECL's DE&I Roadmap, an evergreen document that reflects our ongoing dedication to fostering an inclusive workplace.

Colleagues talking to each other in office hall

Here are several initiatives that were completed in 2023-2024 to demonstrate and enhance our commitment to DE&I:

Goals	Accomplishments
Workplace Inclusion Promote a culture that encourages collaboration, flexibility, and fairness to enable individuals to contribute to their highest potential.	• Established an AECL employee-led, executive sponsored, DE&I working group. • Completed an organization-wide cultural competency assessment survey and created an action plan based on key items highlighted by employees to build an inclusive organizational culture. • Strengthened leadership commitment and accountability for diversity and inclusion by capturing a diversity objective in every executive's performance management plan. • Initiated an organization-wide pay equity review and job content validation process. • Added a Land Acknowledgement statement to all job postings which will soon transition into a statement on AECL's commitment to reconciliation. • Reviewed AECL's Leave Procedure with a DE&I lens, which led to more inclusive language, increased the carry-over period for vacation leave, and highlighted the diverse needs of AECL employees; this included enabling flexibility for employees to celebrate their own cultural holidays and traditions. • Advanced workplace gender equity by providing access to free menstrual products at AECL offices. • Onboarded a new Abilities Management provider specializing in providing employees with the support they need to recover from illness and/or injury promptly and in providing accommodations expertise to AECL.
Workplace Diversity Attract, retain, and develop a talented and diverse workforce.	• Currently, self-identification shows that our workforce is made up of 54% women, 8% visible minorities, and 4% Indigenous Peoples, which is in line with 2021 energy industry standards of 27% women, 20% visible minorities, and 5% Indigenous Peoples, and like prior year results. • Streamlined and enhanced AECL's recruitment processes to be inclusive, transparent, and to remove potential barriers for candidates. • Fostered diversity at the leadership level, as two executive team positions (nuclear operations oversight and human resources) were filled by women in 2023-24. • Continued membership and involvement in Women in Nuclear (WiN) Canada events and activities. • Continued participation in and commitment to the Equality in Energy Transition Initiative's Equal by 30.
Employee Capability Enable employees' knowledge and understanding of what is meant by diversity and inclusion.	• Enriched internal communication of diversity and environmental, social, and governance issues through regular highlights at weekly all-staff alignment meetings. • Launched an anonymous reporting tool, providing an internal reporting mechanism in support of confidential workplace violence, harassment, and disclosures. • Developed and led employee DE&I awareness training. • Drafted a DE&I Roadmap, highlighting actions that need to be taken at AECL to ensure DE&I is embedded in everything that is done across the organization. • Educated employees on the use of pronouns and introducing the use of pronouns in Teams and Outlook.

Fuel development

AECL is continuing to make meaningful progress in our DE&I initiatives, and the following highlights are built upon the strong foundations we have created within the corporation.

Accessibility

At AECL, we are dedicated to being accessible and welcoming to everyone by removing accessibility barriers. This includes making sure that our organization is accessible for all employees and contractors and that the information we produce is accessible to all Canadians. Our Accessibility Plan spans from 2023-2025 and was developed by AECL's Accessibility Committee with input from people with disabilities.

AECL published its first Accessibility Progress Report in 2023-2024, highlighting progress in many areas. This included the drafting of an accommodation's procedure for both internal AECL employees and external candidates, reviewing AECL's recruitment process with an external third party with the goal of removing barriers for job applicants, and making AECL's website and social media more accessible.

In line with our commitment to accessibility, AECL has taken significant strides to ensure that all procurement documentation issued as part of competitive Requests for Proposals is accessible to all potential vendors. Every document is available in accessible format, fostering an equitable and inclusive environment in our procurement processes. Learn more about the AECL's commitments to accessibility in our Accessibility Plan.

Employee Attraction

AECL forecasts a growth in its full-time employee complement to, amongst other things, enable proper oversight of our growing Science & Technology program (especially related to commercial opportunities), increased international outreach and cooperation, greatly expanded Indigenous engagement responsibilities, and new drivers for the CANDU business line. And with operations in remote locations, attracting and retaining highly-qualified personnel is a key focus. Efforts in this area include focusing on talent management, career advancement opportunities, succession planning, and regular total reward reviews for AECL to remain competitive among similar employers nationally and internationally.

Accelerating Innovation Through Trusted Governance

Discussing environmental remediation

AECL has an important mandate from the Canadian government to manage the country's radioactive waste and decommissioning responsibilities, oversee nuclear legacy liabilities, and support nuclear science and technology. This mandate provides a framework for us to operate within, ensuring that our activities align with national priorities and regulations.

Trusted governance requires transparency and accountability. AECL provides regular reports to the government and the public on its activities, performance, and financial status. This openness helps build trust and ensures that our operations are subject to scrutiny and continuous improvement. AECL's governance includes a focus on long-term objectives, such as the safe management of nuclear waste and the decommissioning of legacy sites. By planning for the future, AECL can invest in innovative technologies that will address these challenges over the long term.

By implementing these governance practices, AECL creates an environment that supports innovation while ensuring that its activities are conducted responsibly, safely, and in the public interest. This trusted governance model helps AECL to advance Canada's nuclear science and technology capabilities and contribute to the country's economic and environmental goals.

The following sections provide an overview of some of the work we completed or progressed to improve quality of life for Canadians.

Board Governance

The AECL Board of Directors is tasked with guiding the strategic direction of our organization, which encompasses oversight of ESG-I initiatives as well as climate-related concerns. As a Crown corporation, AECL is owned by the Government of Canada, which is its sole shareholder. Operating as a Schedule III Crown corporation, AECL adheres to the governance provisions set forth in the Financial Administration Act (FAA), which includes the processes for appointing Board members and the Chief Executive Officer.

The Government of Canada, through an Order in Council, appoints the members of AECL's Board of Directors. The Board's duties and focal points for the year are outlined in the Board Charter and its annual work plan, with the Board typically convening over 12 times each fiscal year.

It is the Board's duty to supervise the execution of AECL's mandate. AECL is proud to have a diverse Board, with Directors representing several professions and areas of expertise, and including women, visible minorities, and Indigenous representation.

The Board has two established committees: The Audit Committee and the Human Resources & Governance Committee (HRGC). Both committees have Charters that are regularly reviewed, updated, and approved by the Board on an annual basis. The Audit Committee and HRGC both consist of all Board members, except for the President & CEO. All Board members are independent members, except for the President & CEO.

ESG-I Governance

In our plan to weave ESG-I principles into the fabric of AECL's governance, we have formed an ESG-I Committee dedicated to addressing ESG-I concerns and to the ongoing development, oversight, and enhancement of our ESG-I Strategy. The committee comprises AECL staff from various departments, including executive members, ensuring a multifaceted representation. Notably, all members of the executive team have a percentage of their remuneration tied to the achievement of ESG-I goals, and we are actively seeking ways to further embed ESG-I considerations into the Board's governance framework.

The ESG-I Committee has the duty of presenting ESG-I related updates to the Board. Our Governance Structure, as detailed in the Board Charter, explicitly assigns the Board with the responsibility of supervising the organization's ESG-I endeavors, from strategizing to execution, as well as the communication of ESG-I information.

Our pledge to fully incorporate ESG-I initiatives into our corporate governance involves consistent updates on our ESG-I Strategy to both the management Executive Committee and the Board of Directors. Additionally, ESG-I issues are integrated into AECL's ERM Register, which falls under the scrutiny of the Audit Committee. This register, which is revised quarterly, includes environmental considerations, Indigenous reconciliation efforts, and governance issues. All identified risks are evaluated and prioritized, with the most critical ones being reported to the Board. The Board is charged with the oversight, examination, and endorsement or acknowledgment of AECL's Risk Management Framework, the Risk-Based Audit Plan of Internal Audit, and the Annual Incentive Plan for AECL employees. Moreover, the Board supervises the Annual Plan of Work and Budget for CNL, as well as the Performance Evaluation Measurement Plan for the Canadian National Energy Alliance (CNEA).

Materials and chemistry

ESG-I Committee

Health sciences/development of new cancer treatments

Return to ESG-I Table

Oversight of Canadian Nuclear Laboratories (CNL)

AECL's governance role includes the supervision of CNL's operations. Under the Government-Owned, Contractor-Operated (GoCo) arrangement, AECL offers strategic direction and endorses CNL's long-term objectives. CNL's performance is assessed against the activities detailed in these objectives, which are comprised of defined milestones and deliverables within ESG-I focus areas.

Within the GoCo model, AECL retains ownership of the sites, infrastructure, assets, intellectual property, and the obligations for environmental cleanup and radioactive waste management. CNL handles the daily site operations, serves as the workforce's employer, and manages all required licenses and permits. This setup enables AECL to leverage their private sector expertise to secure optimal results for the decommissioning and waste management projects and to elevate the Chalk River Laboratories to a premier nuclear research facility, all while minimizing costs and risks for Canadians.

In addition, AECL has a separate model, outside of the GoCo construct, for another important element of its oversight function: management of the CANDU intellectual property. As noted in this plan, AECL is working with its licensee AtkinsRéalis under a recently announced Memorandum of Understanding to position CANDU for opportunities in the context of new investments in large nuclear reactors.

The current GoCo contract is set to expire midway through 2025-26. AECL has launched procurement activities related to the next iteration of the GoCo contract, which includes extensive industry engagement and is expected to conclude in alignment with the end date of the current GoCo contract (September 2025).

AECL oversees all CNL activities:

- We set priorities for CNL.
- We approve their long-term plan.
- We provide guidance for and approve their annual plan and budgets.
- We use internationally recognized tools to track performance based on activities set out in the plans.
- We review their performance and perform audits.
- We can reduce incentive fee if performance is not adequate.

Enterprise Risk Management (ERM)

AECL's commitment to openness and responsibility is embodied in our ERM framework and is carried out as part of our mandate in managing the Federal Nuclear Science and Technology (FNST) Work Plan, specifically in the area of National Security and Emergency Preparedness. We oversee science and technology activities that support the Government of Canada's national and international security and policy objectives in the areas of nuclear non-proliferation and counter-terrorism and to respond in the event of a nuclear emergency, including all preparedness and response responsibilities. Our thorough risk management protocols permeate every level of the organization, ensuring that strategic goals are met, governance is robust, costs are optimized, business decisions are enhanced, and safety and security are upheld throughout.

ESG-I and climate-related risks, including physical and cyber security threats, climate change impacts, environmental hazards, and governance issues, are systematically addressed through our ERM processes. We are actively progressing towards the formal integration of further ESG-I and climate-related risks into AECL's risk inventory.

Cybersecurity

AECL is actively improving nuclear security measures, readiness, and emergency response capabilities to counter the constantly changing landscape of cybersecurity risks. Our responsibilities in monitoring and handling cybersecurity provide us with the chance to secure not only our assets but also those of nuclear operators. We are steadfast in our dedication to perpetually enhancing cybersecurity defenses to shield Canada's vital nuclear infrastructure against cyber threats.

With oversight from AECL, and in alignment with the requirements within the Canadian Standards Association (CSA) Standard N290.7-14 for the protection of nuclear cyber assets and information, CNL's Nuclear Cyber Security Section (NCSS) delivers cyber security services and solutions and ensures the confidentiality, availability, and integrity of CNL's systems, information, data, and intellectual property.

Cyber security highlights in 2023-24 included:

- CNL's privacy and data security teams enhanced their preparedness for cyber and physical attacks on critical infrastructure in a mock incident response exercise in June 2023.
- CNL created five new cyber security positions to increase our capacity in this rapidly evolving field.
- Introduced new cybersecurity training courses as mandatory training for all employees to raise employee awareness and ability to identify cyber risks.

Man checking control system

Indigenous Engagement and Reconciliation

Chalk River

Indigenous engagement and reconciliation are integral to AECL's mandates. Our innovation and environmental stewardship missions depend on strong relationships with Indigenous Nations and their communities. Most importantly, the exchange of knowledge and information, Indigenous involvement, and ongoing cultural awareness training make our work better.

In addition, strong Indigenous engagement – built on relationships, not just project-driven interactions – is critical for ensuring that current work and future projects meet and exceed regulatory requirements.

The following sections provide an overview of some of the work we completed or progressed to advance Indigenous engagement and reconciliation.

As a federal Crown corporation, it is AECL's responsibility to support the Government of Canada's broader reconciliation objectives, including the commitment to implement the *United Nations Declaration on the Rights of Indigenous Peoples Act.*

In an effort to build internal capacity to support our reconciliation journey, two additional employees were hired in 2023-24. These roles are dedicated to supporting our commitments related to engagement and reconciliation with Indigenous peoples. These new team members will play a crucial role in facilitating meaningful engagement and relationship-building and identifying opportunities for Indigenous knowledge to be incorporated into AECL's governance and operating practices.

In addition, 2023 saw Dana Soonias, a member of Red Pheasant First Nation, appointed to the AECL Board of Directors for a term of four years. An experienced finance and economic development leader who is currently the Senior Indigenous Advisor, Ministry of Energy and Resources for the Province of Saskatchewan, he will work closely with our team as a member of various committees to help advance engagement and Indigenous participation across AECL's mandate.

Consistent with government priorities, AECL made the following four commitments:

1. Listen, understand, improve, and take meaningful actions to advance reconciliation with Indigenous Nations and communities on whose lands we operate.
2. Learn about Indigenous history, culture, traditions, and world views.
3. Integrate Indigenous knowledge and values into AECL's policies, procedures, practices, and projects so that they become embedded in all that we do.
4. Find ways to empower Indigenous Nations, communities and organizations to enable collaboration, capacity-building and economic development.

Algonquins of Ontario honour Atomic Energy of Canada Limited and Canadian Nuclear Laboratories with name for site entrance building at Chalk River Campus

Return to ESG-I Table

Working towards a Reconciliation Action Plan

AECL has in place an Indigenous Engagement Strategy that outlines our commitment to supporting the government's reconciliation agenda. Working closely with CNL, we are building relationships with Indigenous Nations on the lands on which we operate, developing and implementing Nation-specific MOUs and agreements to increase capacity, knowledge sharing, and involvement in the work we do. Furthermore, AECL and CNL are developing longer-term relationship agreements that will enable stronger partnerships and collaboration and inform AECL's Reconciliation Action Plan, a process expected to commence with Indigenous partners in 2024-25.

Strengthening relationships with Indigenous Nations

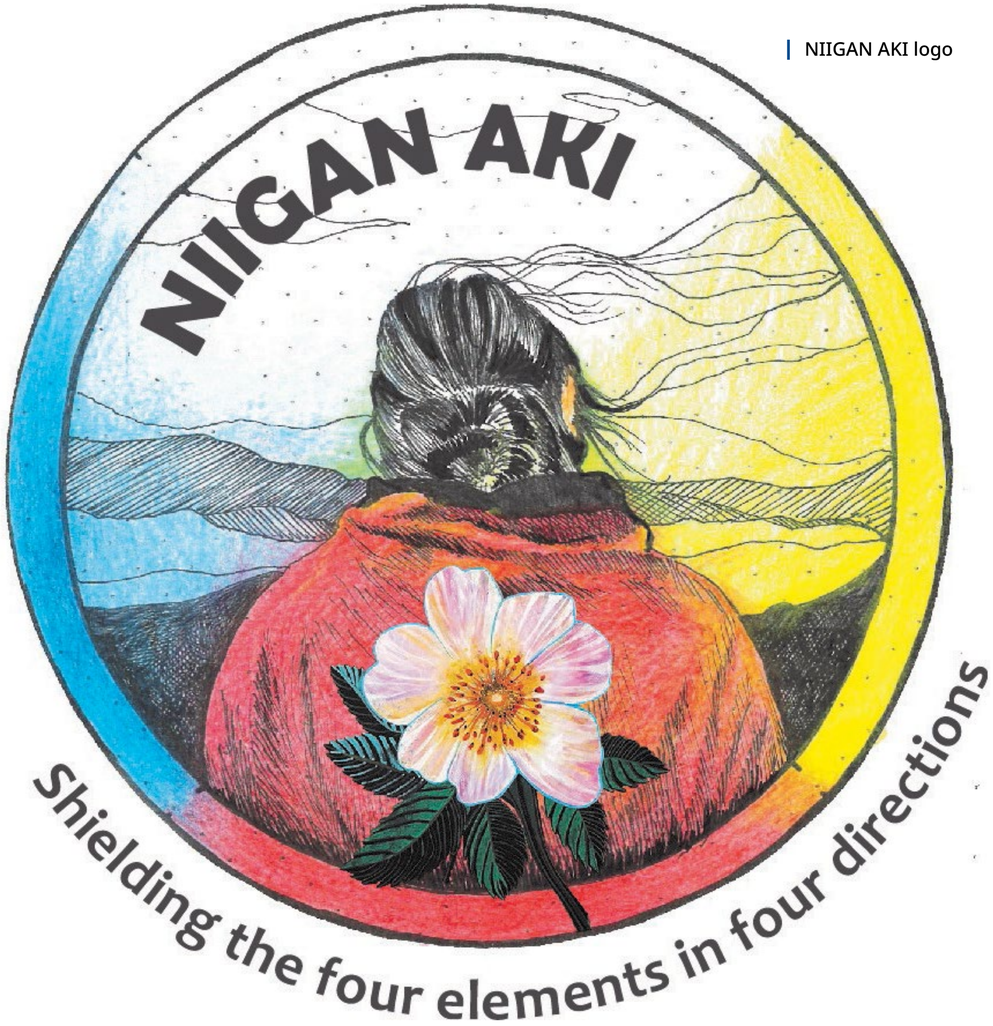
In the spring of 2023, AECL and CNL signed a long-term relationship agreement with the Algonquins of Pikwàkanagàn First Nation (AOPFN), which established the Neyagada Wabandangaki Guardian Program, an AOPFN-led environmental monitoring program; various working groups to increase AOPFN involvement in waste management, communications, and employment and procurement; and AOPFN's consent to the NSDF project at Chalk River Laboratories.

Similarly, through an agreement signed in late 2022, AECL and CNL supported the development of Sagkeeng First Nation's Guardian Program. Named Niigan Aki, meaning 'Land First', the community-led program empowers Sagkeeng to monitor and steward its lands and waters and improve understanding of the Whiteshell Laboratories site, located in Sagkeeng's unceded traditional territory.

Last year also saw the introduction of AOPFN-led Cultural Awareness Training to AECL team members, which included an overview of Algonquin culture, beliefs, and traditions; the impacts of historical and ongoing colonization; and the strength, resilience and revitalization of the community. It also included reflection on our individual and collective roles in reconciliation and the journey to renewed relationships.

Promoting Indigenous Procurement

AECL is committed to fostering economic and development opportunities for Indigenous communities through its procurement practices. This year, new language has been incorporated into AECL's procurement procedures and templates to actively encourage employees to seek out Indigenous-owned businesses in procurement activities. In addition, AECL is in the process of developing an Indigenous Procurement Set-Aside policy in consultation with Indigenous partners. While these initiatives are only a few steps on our journey to reconciliation, they mark important progress toward AECL's ongoing commitment to meaningful engagement with Indigenous peoples and the achievement of shared priorities and mutual benefits.



NIIGAN AKI logo

Bridge over Chalk River

Return to ESG-I Table

Integrating Indigenous Knowledge in AECL's Governance

As stewards of the environment, AECL recognizes that our nuclear science and research activities have created radioactive materials and waste, and we are committed to addressing this responsibly. We are dedicated to working in partnership with Indigenous Nations and communities to recognize and incorporate traditional knowledge, ceremony, and various cultural and stewardship practices. We have much to learn from each other as we work towards our common objective of environmental protection.

AECL engages with various Indigenous Nations on waste disposal projects proposed by CNL, fuel consolidation and waste transportation, small modular reactors, site remediation and future use, and land disposal considerations.

This includes, for example, engagement and consultations with Indigenous peoples in the Northwest Territories regarding remediation plans for the Northern Transportation Route, and active discussions on an MOU with Mississauga First Nations regarding the creation and management of a nature reserve surrounding the Port Granby project in Clarington and Port Hope, Ontario.

Under the Federal Nuclear Science and Technology (FNST) Work Plan, CNL is working closely with the Clearwater River Dënë First Nation on a project that integrates traditional knowledge with scientific research. In close consultation with the Clearwater Dënë First Nation, a team conducts a large-scale sampling campaign in Saskatchewan's uranium-rich regions.

The aim of the research is to better understand the fate, transport and biological uptake of polonium-210 (Po-210) and lead-210 (Pb-210) – naturally occurring radioisotopes associated with the uranium-238 decay series that exist at very low levels in the natural environment, including aquatic foodwebs. Community feedback drove the preparation of the sampling plan, and lake systems were chosen based on their traditional value expressed by locals. The partnership included employing staff members and four students (aged 13-15) from the local Clearwater River Dënë School to assist in the week-long sampling campaign.

Appendix

Abbreviations

Abbreviation	Meaning
AECL	Atomic Energy of Canada Limited
ANMRC	Advanced Nuclear Materials Research Centre
AOPFN	Algonquins of Pikwàkanagàn First Nation
AR	Advanced reactor
CANDU	Canadian deuterium uranium
CEDIR	Clean Energy Demonstration, Innovation, and Research
CEO	Chief Executive Officer
CFF	Clean Fuels Fund
CNEA	Canadian National Energy Alliance
CNL	Canadian Nuclear Laboratories
CNRI	Canadian Nuclear Research Initiative
CNRI-H	Canadian Nuclear Research Initiative Health
CNSC	Canadian Nuclear Safety Commission
CO_2	Carbon dioxide
CSA	Canadian Standards Association
CSDS	Canadian Sustainability Disclosure Standards
CSSB	Canadian Sustainability Standards Board

Abbreviation	Meaning
DA	Days away from work
DART	Days away from work or temporary job restrictions or transfers
DE&I	Diversity, equity, and inclusion
EIP	Energy Innovation Program
EIS	Environmental Impact Statement
ERM	Enterprise risk management
ESG-I	Environmental, social, and governance
FAA	Financial Administration Act
FNST	Federal Nuclear Science and Technology
GFP	Global First Power
GGS	Greening Government Strategy
GHG	Greenhouse gas
GLP	Good Laboratory Practice
GoCo	Government-owned, contractor-operated
GRI	Global Reporting Initiative
HESO	Hybrid Energy System Optimization
HRGC	Human Resources & Governance Committee

Abbreviation	Meaning
IFRS	International Financial Reporting Standards
IPSASB	International Public Sector Accounting Standards Board
ISSB	International Sustainability Standards Board
ITM	ITM Isotope Technologies Munich SE
MMR®	Micro-Modular™ Reactor
MOU	Memorandum of understanding
MW	Megawatt
MW-hr	Megawatt-hour
NCSS	Nuclear Cyber Security Section
NMFR	Near miss frequency rate
NRU	National Research Universal
NSDF	Near Surface Disposal Facility
OSH	Occupational Safety and Health
Pb-210	Lead-210
Po-210	Polonium-210
PSAB	(Canada's) Public Sector Accounting Board
RACI	Responsible, Accountable, Consulted, and Informed

Abbreviation	Meaning
R&D	Research and development
SASB	Sustainability Accounting Standards Board
SDG	Sustainable Development Goal
SMR	Small modular reactor
TCFD	Task Force on Climate-related Disclosures
tCO_2e	Tonnes of carbon dioxide equivalent
TRC	Total recordable cases
TRIR	Total recordable incident rate
TRIUMF	TRI University Meson Facility (now known as TRIUMF)
UKAEA	United Kingdom Atomic Energy Authority
UN	United Nations
WiN	Women in Nuclear

Reporting Framework Standards Alignment

As AECL continues to improve our ESG-I performance and disclosures, we keep informed of the rapidly evolving regulatory landscape of ESG reporting and disclosure requirements, to better align our reporting with the current requirements that fit our stakeholders' needs.

This includes monitoring and assessing the applicability and impact of the Canadian Sustainability Standard's Board (CSSB) Canadian Sustainability Disclosure Standards (CSDS) 1 and 2 on AECL's current and future sustainability reporting strategy.

As a federal Crown corporation, we also continuously monitor the developments in sustainability reporting and disclosure standards specific to the public sector, through the International Public Sector Accounting Standards Board (IPSASB) and Canada's Public Sector Accounting Board (PSAB). Progressing in the completeness of our alignment with these standards builds the foundation for AECL to continually improve its ability to adapt and respond to heightened stakeholder expectations, and the changing physical and market environments.

In 2024, we continue to further align our reporting with the Sustainability Accounting Standards Board (SASB) principles and recommendations, and with the Task Force on Climate-related Financial Disclosures (TCFD), while continuing to leverage Global Reporting Initiative (GRI) metrics for additional specific disclosures complementary to SASB or TCFD.

Global Reporting Initiative

Our ESG reporting continues to follow GRI metrics for additional specific disclosures complementary to SASB or TCFD, for metrics we deem to be most relevant to our multi-stakeholders. Our approach in selecting GRI metrics achieves alignment with our ESG strategy and our on-going management of each 'strategic differentiators' and 'baseline expectations'. As we continue to mature in our ESG journey, we aim to review and refine these metrics, to reflect updates in the regulatory landscape.

Sustainability Accounting Standards Board

AECL continues to report with reference to the voluntary SASB framework, as outlined under the International Sustainability Standards Board (ISSB) of the IFRS Foundation, for this ESG reporting period. Through a robust analysis of our business model and stakeholder needs, we have determined the industry standard and disclosure topics that are most relevant to our business and have disclosed metrics which we identified as likely to be useful to our stakeholders. As such, this report discloses metrics from the SASB industry standard "Electric Utilities & Power Generators", as this is the SASB industry standard most closely aligned with our industry sector.

SASB metrics disclosed in this year's report were prioritized based on relevance to our business model. We understand enhancing our alignment with SASB and ISSB reporting is an important step in our ESG maturity, and AECL is committed to continuing our improvement of data collection and analysis across the organization, to support increasing transparency and standardization of our reporting for our stakeholders.

Task Force on Climate-related Financial Disclosures

AECL is committed to full alignment with the TCFD recommendations, which also forms the foundations for the newly issued IFRS S2: Climate-related Disclosures by ISSB (i.e. both are structured around four key themes: governance, strategy, risk management, and metrics and targets. In FY2022, we published our inaugural TCFD Climate Resilience report, capturing our progress from 2022, and integrated our TCFD report in our FY2023 ESG and Climate Resilience Report. This aligns with the Government of Canada's requirement for all Crown corporations to adopt TCFD standards as part of corporate reporting, with Crown corporations holding more than $1 billion in assets required to start reporting on their climate-related financial risks by March 2023. AECL continues to consolidate our TCFD reporting with our ESG reporting in the current year, through integration of Climate Resilience under the "E" of "ESG", as part of our progression in reporting maturity.

Global Reporting Initiative (GRI) Index

GRI Disclosure	Disclosure
GRI 2 – General Disclosures	
2-1 Organizational details	3, 5, 63
2-2 Entities included in the organization's sustainability reporting	5
2-3 Reporting period, frequency and contact point	3 Jeremy Latta, Director Communications and Director of Government Reporting
2-7 Employees	**a.** Total number of employees: 58 **Number by Gender** Female: 31, Male: 27 **Number by Region:** Chalk River Laboratories: 26, Ottawa: 28, Port Hope: 0 , Whiteshell Laboratories: 3 Remote: 1
2-9 Governance structure and composition	42-44
2-10 Nomination and selection of the highest governance body	42
2-11 Chair of the highest governance body	42
2-12 Role of the highest governance body in overseeing the management of impacts	42-43, 45
2-13 Delegation of responsibility for managing impacts	42-45
2-14 Role of the highest governance body in sustainability reporting	43
2-15 Conflicts of interest	**a.** Critical concerns are overseen by the Board through Board meetings which occur quarterly. AECL's disclosure officer reports quarterly to the Board on matters relating to compliance with the company's Code of Conduct, including conflicts of interest, and the Public Servants Disclosures Protection Act. **b.** All Board members are covered by the Conflict of Interest Act (Canada) which is extensive and contains obligations relating to the disclosure and avoidance of conflicts of interest. In addition, Board members are subject to AECL's Code of Conduct which also addresses the topic.

GRI Disclosure	Disclosure
2-16 Communication of critical concerns	**a.** Critical concerns are typically communicated via Board meetings which occur quarterly. In addition, there are set recurring annual Board meetings to address items on an off-quarter cycle basis as needed. **b.** No critical concerns were communicated during the reporting period.
2-17 Collective knowledge of the highest governance body	**a.** The Board receives education and training periodically as a member of AECL and on its own. The Board has received significant reports on the progress of engagement with Indigenous peoples, as well as training provided internally and from external providers.
2-18 Evaluation of the performance of the highest governance body	**a.** The Government of Canada does not undertake any formal or prescribed evaluation of the Board and its appointed members. However, consistent with good governance practices, the Board and its Committees undertake an annual self assessment of their respective performance with opportunities for open feedback. This assessment is for the benefit of the Board and its functioning. **b.** The evaluation is not independent as it is a self evaluation, but does allow for independent comments about the participation and performance of Board members. **c.** The outcome of the evaluation is discussed among the Chair and each Board member, and then overall results are discussed by the Board.
GRI 3 – Material Topics 2021	
3-1 Process to determine material topics	10-11
3-2 List of material topics	10-11
3-3 Management of material topics	10-11
GRI 204: Procurement Practices 2016	
204-1 Proportion of spending on local suppliers	**a.** 56%* **b.** Local is defined as within a 200 km radius of Chalk River Laboratories, Whiteshell Laboratories, and Port Hope sites. **c.** “Significant locations of operations” are defined as major sites based on size of operations and higher employee counts

GRI Disclosure	Disclosure
GRI 302: Energy 2016	
302-1 Energy consumption within the organization	**a.** Non-renewable fuel consumed: 423,973 GJ* **b.** n/a **c.** i. Electricity consumption: 256,662 GJ*
302-3 Energy intensity	Energy intensity: 20,690 MJ/m^2 across the entire organization, based on energy consumption within the organization only (not outside of it). 2,955 MJ/m^2 at Chalk River Laboratories (85% of total building energy use), based on energy consumption within the organization only (not outside of it). A ratio of MJ/m^2 was determined by dividing total energy consumption by floor space, with the energy consumption focused on that used within the buildings for heating, cooling, lighting, and processes.
GRI 303: Water and Effluents 2018	
303-1 Interactions with water as a shared resource	24-25
303-2 Management of water discharge-related impacts	24-25
GRI 306: Waste 2020	
306-1 Waste generation and significant waste-related impacts	23-26
306-2 Management of significant waste-related impacts	23-26
306-3 Waste generated	**a.** Total weight of waste generated: 14,224 metric tons* (Note our waste metrics are limited to non-hazardous/conventional waste at this time) Total weight of non-hazardous waste generated: 14,224 metric tons* Total weight of hazardous waste generated: 15,753 metric tons* **b.** The waste data for the sites were obtained through direct measurement reports from external service providers, as well as internal waste data forms and logs from site subject matter experts, which are tracked by a waste data tracking system.
306-4 Waste diverted from disposal	**a.** Total weight of waste diverted from disposal: 10,887 metric tons* (Note our waste metrics are limited to non-hazardous/conventional waste at this time) **b.** Total weight of hazardous weight diverted from disposal: 3,247 metric tons* **c.** Total weight of non-hazardous waste diverted from disposal: 10,887 metric tons*
306-5 Waste directed to disposal	**a.** Total weight of waste directed to disposal: 3,337 metric tons* (Note our waste metrics are limited to non-hazardous/conventional waste at this time) **b.** Hazardous waste directed to disposal: 15,721 metric tons* **c.** Non-hazardous waste directed to disposal: 3,337 metric tons*

GRI Disclosure	Disclosure
GRI 401: Employment 2016	
401-1 New employee hires and employee turnover	**a.** Total number: 17 **Number by Age Group** Under 30: 2 30-50: 10 Over 50: 5 **Number by Gender** Female: 8 Male: 9 **Number by Region** Chalk River Laboratories: 3 Ottawa: 14
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	**a.** AECL employees are covered under Treasury Board benefits through the Public Service Health Care Plan. These benefits are not controlled by AECL.
401-3 Parental leave	**a.** All regular full-time and part-time employees are eligible for maternity and/or parental leave. Term employees are also eligible for maternity and/or parental leave. Therefore, all employees (58) are eligible. **b.** Total Number: 0 **By Gender** Female: 0 Male: 0
GRI 403: Occupational Health and Safety 2018	
403-1 Occupational health and safety management system	**a.** The OSH Program is a legal requirement which AECL complies with (its requirements are set out in Canada Labour Code). It includes our OSH Procedure, Preventing Injuries and Illness, Hazard Prevention, Workers' Health and Safety Centre, and Mental Health Action Plan. **b.** AECL's OSH Program covers all locations and employees. Activities include training, Workers' Health and Safety Centre meetings and inspections, creating and updating procedures. Reporting requirements include Employer's Annual Hazardous Occurrence Report (injury reporting, and in future will include occurrences of harassment and violence in workplace), and Safety & Health Committee Report (commentary on meetings, issues raised, inspections).
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	**a.** Our approach is covered in the AECL Employee Health & Safety Policy, OSH Procedure, Workplace Harassment & Violence Prevention Policy.
GRI 404: Training and Education 2016	
404-2 Programs for upgrading employee skills and transition assistance programs	40

GRI Disclosure	Disclosure
GRI 405: Diversity and Equal Opportunity 2016	
405-1 Diversity of governance bodies and employees	**a.** Governance bodies i) Gender: Female 50%, Male 50% ii) Age Group: 100% Over 50 iii) Minority/Vulnerable Groups: 50% **b.** Employees i) Gender: Female: 53%; Male: 47% ii) Age group: Under 30: 5%; 30-50: 55%; Over 50: 40% iii) Other Indicators of Diversity: 17%
GRI 418: Customer Privacy 2016	
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	**a., b.** Zero **c.** n/a

Sustainability Accounting Standards Board (SASB) Performance Table: Industry Standard “Electric Utilities & Power Generators”

Accounting Metric	Category	Unit of Measure	Code	Disclosure
SASB Topic: Greenhouse Gas Emissions & Energy Resource Planning				
(1) Gross global Scope 1 emissions, %age covered under (2) Emissions-limiting regulations, and (3) Emissions-reporting regulations	Quantitative	Metric tons (t) CO_2e Percentage (%)	IF-EU-110a.1	(1) Total of 28,506 tCO_2e* across all sites (2) n/a (3) n/a
Discussion of long- and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	IF-EU-110a.3	AECL’s commitment to enabling a net-zero transition in Canada encompasses both AECL’s ability to accelerate the advancement of decarbonization technologies, and our responsibility to decarbonize our own operations. AECL has a target to be net-zero emissions by 2040, which includes our interim target to achieve a 40% reduction in Scope 1 and 2 GHG emissions by 2025, compared to the 2005 baseline. After 2025, we are targeting an additional 20 % reduction every five years in effort to achieve at least a 90 % reduction in Scope 1 and Scope 2 GHG emissions by 2040. GHG reduction efforts are focused on Chalk River Laboratories, as all other current AECL sites will be non-material by 2040. Under AECL’s oversight, CNL is developing a consolidated carbon neutral strategy to guide the approach needed to achieve net zero at the Chalk River Laboratories. The strategy includes plans to implement significant conservation measures, require net-zero design for new construction and major retrofits, construct and leverage on-site SMRs for clean energy sources, and decommission inefficient facilities. Emissions that cannot be reduced by internal energy efficiency improvements and emissions reductions initiatives will be offset to achieve our net-zero targets. At the end of 2023, we had achieved a reduction in Scope 1 GHG emissions by just over 34% and Scope 2 GHG emissions by approximately 91%* relative to 2005 levels.

Accounting Metric	Category	Unit of Measure	Code	Disclosure
SASB Topic: Air Quality				
Air emissions of the following pollutants: (1) NOx (excluding N2O) (2) SOx (3) Particulate matter (PM10), (4) lead (Pb), and (5) mercury (Hg); %age of each in or near areas of dense population	Quantitative	Metric tons (t) %age (%)	IF-EU-120a.1	(1) NOx: 52.40 metric tons* (2) SOx: Not reportable (3) PM10: 17.66 metric tons* (4) Pb: 0.00 metric tons* (5) Hg: Not reportable
SASB Topic: Water Management				
(1) Total water withdrawn, (2) Total water consumed, %age of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic meters (m^3), %age (%)	IF-EU-140a.1	(1) Water withdrawn: 16,524 m^3* (2) Water consumed: 55.3 m^3*
Number of incidents of non-compliance associated with water quality permits, standards and regulations	Quantitative	Number	IF-EU-140a.2	2 incidents*
Description of water management risks and discussion of strategies and practices to mitigate those risks	Description and Analysis	n/a	IF-EU-140a.3	Through the oversight of CNL, we are working to optimize the use of water and wastewater management practices. Based on 2020-2021 water consumption data at the Chalk River Laboratories site, we will continue to work towards establishing a future reduction target. This year water meters were installed at our operating sites to closely monitor and manage water consumption.
SASB Topic: Workforce Health & Safety				
(1) Total recordable incident rate (TRIR), (2) Fatality rate, and (3) Near miss frequency rate (NMFR)	Quantitative	Rate	IF-EU-320a.1	(1) TRIR: 0.41* (2) Fatality Rate: 0% (3) NMFR: 1.54 *
SASB Topic: Nuclear Safety & Emergency Management				
Description of efforts to manage nuclear safety and emergency preparedness	Discussion and Analysis	n/a	IF-EU-540a.2	We recognize the risks of our work, and in line with federal priorities, are committed to managing our nuclear sites with public safety and security taking precedence. AECL is responsible for managing the Federal Nuclear Science and Technology Work Plan on behalf of the federal government, and CNL has also developed two nuclear detection and forensics projects, leveraging work from this program with Defence Research and Development Canada.

Task Force on Climate-Related Financial Disclosures (TCFD) Index

TCFD Recommended Disclosures		Page #
Governance	Describe the Board's oversight of climate-related risks and opportunities.	27
	Describe management's role in assessing and managing climate-related risks and opportunities.	27
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	27-29
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	27-29
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C, 1.5°C or lower scenario.	27-29
Risk Management	Describe the organization's processes for identifying and assessing climate-related risks.	30
	Describe the organization's processes for managing climate-related risks.	30
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	30
Metrics and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	19, 30
	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions and the related risks.	19, 30
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	19, 30

United Nations Sustainable Development Goals (UN SDGs) Table

UN SDG	How we advanced the SDGs in 2023-24
	• Continued oversight of work to revitalize and modernize the Chalk River Laboratories site and transform it into a world-class, state of-the-art nuclear science and technology campus that will continue to play an instrumental role in improving global health. • Supported the research and development of new and promising nuclear health technologies, including emerging radiotherapies, diagnostics, and radiotheranostics such as Targeted Alpha Therapy.
	• Continued to support the safe operation of existing CANDU reactor technology, a cornerstone of Canada's energy infrastructure. • Entered a Memorandum of Understanding with AtkinsRéalis, signifying a collaborative effort to accelerate the development and deployment of CANDU technology. • Under AECL's Federal Nuclear Science and Technology Work Plan, invested approximately $238.1 million across 99 projects on Advanced Reactor (AR) and Small Modular Reactor (SMR) research since 2015. SMRs are small reactors aimed at new markets, tackling a critical and time-sensitive global need for safe, clean, economic energy. • With AECL oversight, Canadian Nuclear Laboratories (CNL) developed a fusion roadmap, released in June 2024, which outlines a clear and strategic path forward to transition fusion from experimental research to a practical, commercial energy source.
	• Worked to further efforts for an optimized CANDU model to position CANDU for the next generation of large nuclear reactors in Canada and abroad. 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. • Provided almost $100,000 in sponsorships for various events and conferences in the communities where we operate. • Incorporated new language into our procurement procedures and templates to actively encourage employees to seek out Indigenous-owned businesses in procurement activities.
	• Hosted the successful Pan-Canadian SMR and AR Research and Development Workshop, which focused on identifying opportunities and addressing barriers associated with the deployment and operation of SMR and AR technologies. • Announced a joint venture between CNL and ITM – Actineer – an example of successful innovation. • The Advanced Nuclear Materials Research Centre at Chalk River completed and operational, a keystone in the revitalization of the Chalk River campus and enabling nuclear material science necessary to support core Government of Canada responsibilities (including, in particular, for SMRs) and for the existing and future fleet of nuclear power reactors.

UN SDG	How we advanced the SDGs in 2023-24
	• Worked with CNL to achieve our ambitious target to have net-zero emissions in our operations by 2040, which includes an interim target to achieve a 40% reduction in greenhouse gas emissions by 2025, compared to our 2005 baseline. This ambition is aligned to the Government of Canada's Greening Government Strategy, a framework with targets for low-carbon, climate-resilient federal government operations. Contributed to these net-zero goals by reducing carbon emissions at our Chalk River Laboratories site to reach our goal of 40% relative to the 2005 baseline by 2025.
	• With CNL, continued implementing the Sustainable Forest Management Plan developed for Chalk River Laboratories, with a goal to transform the forest at the Chalk River Laboratories site into a carbon sink over the next century. • Worked with CNL to advance key decommissioning and waste management projects at many AECL sites, including the Near Surface Disposal Facility Project, the Nuclear Power Demonstration Closure Project, the Port Hope Area Initiative Cleanup Project, and the Whiteshell Laboratories Closure Project.
	• Indigenous engagement and reconciliation remained integral to advancing AECL and CNL mandates. • Maintained a strong working relationship with CNL and the Algonquins of Pikwàkanagàn First Nation (AOPFN) under our Long-Term Relationship Agreement, and strengthened relationships with Indigenous Nations to support activities at the Whiteshell Laboratories site.
	• With CNL, convened academia, industry, and government to create an ecosystem to advance the deployment of hydrogen and hydrogen safety by leveraging our decades of experience in hydrogen isotope handling and creating the Canadian Hydrogen Safety Centre. • Advanced Indigenous engagement and enhanced ability for Indigenous partners to engage with AECL through formal agreements and joint planning and operations, all built on a foundation of trust and respect.

AECL Offices

Head Office

Chalk River Laboratories
286 Plant Road, Stn 508A
Chalk River, Ontario
Canada K0J 1J0

Ottawa Office

270 Albert Street, Suite 1500
Ottawa, Ontario
Canada K1P 5G8

Whiteshell Laboratories

1 Ara Mooradian Way
Pinawa, Manitoba
Canada R0E 1J0

AECL
EACL

Phone Number: 1-888-220-2465
Email: communications@aecl.ca
Website: www.aecl.ca