Atomic Energy of Canada Limited

CORPORATE PLAN SUMMARY

2018-19 to 2022-23

AECL
EACL

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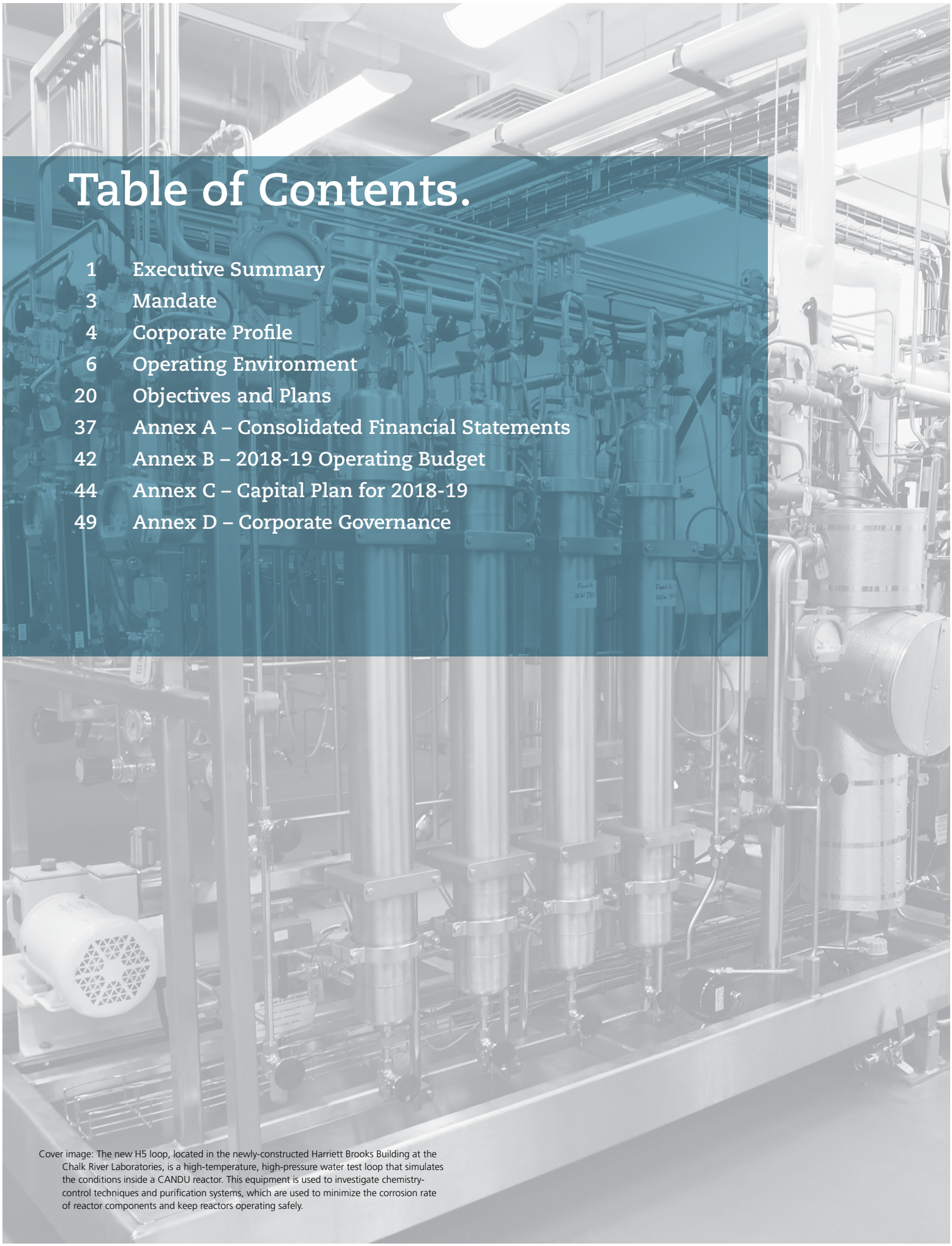


Cover image: The new H5 loop, located in the newly-constructed Harriett Brooks Building at the Chalk River Laboratories, is a high-temperature, high-pressure water test loop that simulates the conditions inside a CANDU reactor. This equipment is used to investigate chemistry-control techniques and purification systems, which are used to minimize the corrosion rate of reactor components and keep reactors operating safely.

Executive Summary

As a federal Crown corporation, AECL receives funding from the Government of Canada to enable nuclear science and technology and manage the Government of Canada's radioactive waste liabilities. Since 2015, AECL has been delivering its mandate through a Government-owned, Contractor-operated (GoCo) model, whereby a private-sector organization, Canadian Nuclear Laboratories (CNL), is responsible for managing and operating AECL's sites on its behalf.

This change in delivery model has brought about significant transformation in the short amount of time it has been in place. Since the implementation of the GoCo model, more than forty-five buildings have been demolished at the Chalk River site, commercial revenues have increased despite an anticipated reduction of revenues from isotope production, long-term plans for the revitalization of the Chalk River site have been developed and approved by AECL and CNL, and CNL's efforts to position itself as a key player in small modular reactors has placed it – and Canada – at the forefront of global efforts to advance this technology on the international scene.

A conceptual image of the revitalized Chalk River Laboratories campus

AECL's operating model allows it to leverage the expertise and experience of the private sector to advance work and drive priorities in two main areas:

1) Decommissioning and Waste Management

   The objective is to safely and responsibly address the environmental responsibilities and liabilities which have been created as a result of decades of nuclear science and technology activities at AECL sites. This requires the decontamination and decommissioning of redundant structures and buildings, the remediation of contaminated lands and the management and disposal of radioactive waste at AECL sites, primarily at the Chalk River Laboratories and the Whiteshell Laboratories in Manitoba. AECL is also responsible for the remediation and long-term management of sites contaminated with historic, low-level radioactive waste where the Government of Canada has accepted responsibility, most notably as part of the Port Hope Area Initiative. Responsible decommissioning and radioactive waste management is necessary in order to clean up AECL's sites, protect the environment, and make way for new buildings that will support the ongoing nuclear science and technology mission at the Chalk River site.

2) Nuclear Laboratories

The Chalk River Laboratories are Canada's largest science and technology complex and host to more than 2,800 employees including a large number of engineers, scientists and technical staff. The work undertaken at the laboratories supports Canada's federal roles, responsibilities and priorities in the areas of health, energy, the environment, safety and security. The laboratories also provide services to third parties on a commercial basis. The Chalk River site is currently undergoing an important renewal and modernization that will transform the site into a modern, world-class nuclear science and technology campus, thanks to an investment investment of $1.2 billion over ten years by the federal government, beginning in 2016.

AECL is also aligning to international best practices regarding decommissioning and waste management, with CNL making progress on the proposal to build a near surface disposal facility to enable the cleanup and remediation of contaminated land and buildings. This decommissioning work will allow the renewal and modernization of the Chalk River site. Notably, significant progress has already been made towards the design and construction of world-class science and technology and support facilities.

AECL's objectives under the GoCo model include: accelerating the decommissioning and radioactive waste management program and building a world-class nuclear laboratory at Chalk River that fulfills government requirements and grows commercial revenues, while reducing costs and risks to Canada. AECL's role is threefold: 1) to act as agent of Government; 2) to support the Government's development of nuclear policy; and 3) to set priorities for CNL, oversee the contract and assess CNL's performance. AECL brings best value to Canada by playing a challenge function with a view to advancing its priorities in the most effective and efficient manner, while maintaining safety, security and the protection of the environment.

This 2018-19 Corporate Plan Summary presents AECL's vision for continued transformation to meet these ultimate objectives, informed by long-term plans prepared by CNL and accepted by AECL.

Mandate

AECL is a federal Crown corporation that has a mandate to enable nuclear science and technology and fulfill the Government of Canada's radioactive waste and decommissioning responsibilities. This work is undertaken at eight main sites across Canada, with headquarters in Chalk River, Ontario. The Chalk River site is AECL's main laboratory campus and Canada's largest research and development complex. This science campus boasts multiple highly-specialized and unique laboratory facilities and testing equipment, which are used in nuclear science and technology activities for peaceful purposes. The unique capabilities at the Chalk River site are used to support the Government of Canada's priorities in nuclear science and technology, with applications in the areas of health, energy, the environment, safety and security. Science and technology services are also provided to third parties on a commercial basis.

AECL's Vision

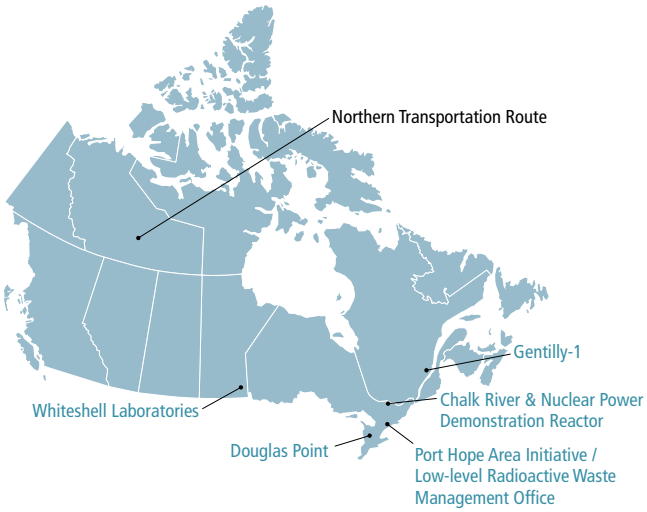
Realize value for Canadians by driving nuclear innovation, creating a state-of-the-art nuclear campus, and cleaning up legacy wastes

AECL's Mission

Driving nuclear opportunity for Canada

AECL also addresses the Government of Canada's radioactive waste and decommissioning responsibilities. Most of these responsibilities are the result of decades of nuclear research and development activities and medical isotope production at the Chalk River Laboratories, the Whiteshell Laboratories in Manitoba, as well as other sites belonging to AECL in Ontario and Quebec. AECL is responsible for the proper and safe cleanup, remediation and long-term management of the radioactive waste at its sites. AECL is also responsible for the cleanup and remediation of sites with historic, low-level radioactive waste contamination where the Government of Canada has assumed responsibility for their clean-up given that the original owner no longer exists and the current owner cannot be reasonably held responsible. AECL's responsibilities in this regard include the Port Hope Area Initiative, Canada's largest environmental remediation project in the municipalities of Port Hope and Clarington, in Ontario.

Sites under the responsibility of AECL across Canada



AECL receives funding from the Government of Canada to deliver on its mandate. As a federal Crown corporation, AECL reports to Parliament through the Minister of Natural Resources. The following acts govern AECL's activities:

- *Financial Administration Act*
- *Nuclear Energy Act*

AECL delivers its mandate through long-term contracts with the private-sector for the management and operation of its sites. This operating model, known as a Government-owned, Contractor-operated (GoCo) model, is described in more detail in the following section.

Corporate Profile

AECL has been at the forefront of innovations in nuclear science and technology since the 1950s. Canada's first sustained criticality (controlled nuclear chain reaction), the first outside of the United States, happened at the Chalk River Laboratories in Ontario. This important event paved the way for developments in nuclear science and innovation in Canada, and led to many scientific achievements. For instance, the Chalk River Laboratories were the birthplace of Canada's own CANDU reactor technology – a type of nuclear power reactor which today is used at 19 reactors in Canada and 30 (CANDU or CANDU-derivatives) around the world. It is also at the Chalk River Laboratories that breakthroughs in the application of medical isotopes for the detection and treatment of cancer were achieved. Work undertaken at the Chalk River Laboratories has led to numerous and important scientific achievements – including two Nobel Prize winners.

Over the years, AECL has played an important role in supporting public policy and in delivering programs for the Government of Canada. This includes the production of medical isotopes, the ongoing remediation of contaminated sites in the municipalities of Port Hope and Clarington in Ontario, the ongoing decommissioning and remediation of its own sites and facilities, as well as the provision of nuclear science and technology in the areas of energy, non-proliferation, emergency preparedness, counter-terrorism, health, and security. AECL's unique facilities have made it an attractive research destination for scientists across Canada and the world, leading to home-grown innovation and the development and retention of highly-qualified nuclear workers and scientists.

Nuclear energy is a low greenhouse gas emitting technology

Nuclear energy provides a reliable, baseload electricity that complements other clean and renewable energy sources.

In Canada, nuclear energy represents 15% of the electricity production, with approximately 30% in New Brunswick and over 60% in Ontario.

Nuclear energy's contribution to the stability and sustainability of the grid system, along with its contribution to low-carbon energy production, has been recognized internationally by the G-7, the International Energy Agency and the Intergovernmental Panel on Climate Change.

AECL's Operating Model

Between 2009 and 2015, AECL went through a significant restructuring led by AECL's shareholder, the Government of Canada. The objectives of this transformation were to reduce and contain risks and costs to taxpayers and to put in place the conditions for the nuclear industry to succeed. This was done in two phases. During the first phase, which was completed in 2011, the assets of AECL's CANDU Reactor Division were sold to Candu Energy Inc. (a wholly-owned subsidiary of SNC-Lavalin).

The second phase, which was completed in 2015, saw the management and operation of AECL's nuclear laboratories and decommissioning sites moved to a GoCo model. This model drew from best practices and lessons learned in similar operating environments in the United States and United Kingdom. Great efforts were made to learn from and avoid challenges faced in other jurisdictions surrounding procurement, contract structure and oversight. AECL continues to collaborate with its counterparts in other jurisdictions to share and benefit from ongoing experiences. Today, AECL is a small Crown corporation whose mandate is to enable nuclear science and technology in support of both the federal government and industry, and to manage the Government of Canada's radioactive waste and decommissioning liabilities.

AECL's role in delivering on this mandate has changed under the GoCo model. Whereas previously AECL was directly responsible for the management and operation of its sites, today a private-sector contractor –

Canadian Nuclear Laboratories (CNL) – is responsible for the day-to-day management of AECL's sites. AECL remains the owner of the facilities, assets, intellectual property and liabilities. AECL also continues to provide advice to the Government of Canada on areas that pertain to its responsibilities, as required. More details on the GoCo model are provided in Annex D.

AECL's role is threefold: 1) to act as agent of Government; 2) to support the Government's development of nuclear policy; and 3) to set priorities for CNL, oversee the contract and assess CNL's performance. AECL brings best value to Canada by playing a challenge function with a view to advancing its priorities in the most effective and efficient manner, while maintaining safety, security and the protection of the environment. AECL accepts CNL's annual plans, and CNL's performance is then systematically monitored and assessed based on targets and measures set out by AECL at the beginning of each year. AECL also oversees two important target-cost contracts, also with CNL, for the decommissioning and closure of two nuclear sites (the Nuclear Power Demonstration reactor, in Ontario, and the Whiteshell Laboratories, in Manitoba).

AECL's objectives under the GoCo model include accelerating the decommissioning and waste management program, managing the Federal Nuclear Science and Technology Work Plan for nuclear science and technology in support of government priorities and needs, and building a world-class nuclear laboratory that fulfills government requirements and grows commercial revenues while reducing or containing costs and risks to Canada.

AECL relies on a small complement of national and international experts who bring experience in the management of similar arrangements, both from a government and contractor perspective. The objective is for AECL to have the necessary expertise and capabilities to oversee the GoCo contract and play an appropriate oversight and challenge function to achieve value for money for the Canadian government.

AECL focuses its efforts on delivering on its mandate and overseeing CNL's activities in two main areas:

1. Decommissioning and Waste Management
   The objective is to safely and responsibly address the environmental responsibilities and liabilities which have been created as a result of decades of nuclear science and technology activities at AECL sites. This requires the decontamination and decommissioning of redundant structures and buildings, the remediation of contaminated lands and the management and disposal of radioactive waste at AECL sites, primarily at the Chalk River Laboratories and the Whiteshell Laboratories in Manitoba. AECL is also responsible for the remediation and long-term management of sites contaminated with historic, low-level radioactive waste where the Government of Canada has accepted responsibility, most notably as part of the Port Hope Area Initiative. Responsible decommissioning and radioactive waste management is necessary in order to clean up AECL's sites, protect the environment, and make way for new buildings that will support the ongoing nuclear science and technology mission at the Chalk River site.

2. Nuclear Laboratories
   The Chalk River Laboratories are Canada's largest science and technology complex and host to more than 2,800 employees including a large number of engineers, scientists and technical staff. The work undertaken at the laboratories supports Canada's federal roles, responsibilities and priorities in the areas of health, energy, the environment, safety and security. The laboratories also provide services to third parties on a commercial basis. The Chalk River site is currently undergoing an important renewal that will transform the site into a modern, world-class nuclear science and technology campus, thanks to a $1.2 billion over ten years investment by the federal government starting in 2016.

AECL continues to be responsible for the management of retained liabilities related to AECL's former CANDU Reactor Division. At this point, most liabilities have been settled, and AECL is focusing on addressing the few outstanding matters that remain.

Operating Environment

Assessment of 2017-18 Results

Fiscal year 2017-18 was the second full operating year under the GoCo model. As a result, AECL shifted its focus from overseeing the transition to the new model and the development of long-term strategic plans, to the implementation of those plans and the associated improvement and transformation initiatives.

Overall, the 2017-18 year yielded positive results for AECL and Canada under the GoCo model. AECL has been focused on driving progress and transformation in areas considered key to the achievement of its mandate and priorities, as well as the future success of the Chalk River Laboratories. It has leveraged the GoCo model to drive the delivery of activities, transformation initiatives and the achievement of health, safety and environmental performance.

Artist's rendition of the revitalized Chalk River Laboratories

CNL is showing positive, early signs of the transformational change that was anticipated under the GoCo model. Indeed since the implementation of the GoCo model in mid-2015, more than forty-five buildings have been demolished at the Chalk River site, commercial revenues have increased despite an anticipated reduction of revenues from isotope production, long-term plans for the revitalization of the Chalk River site have been developed and approved by AECL, and CNL's efforts to position itself as a key player in small modular reactors has placed it – and Canada – at the forefront of the global efforts to advance this technology on the international scene.

The performance measures presented in AECL's 2017-18 Corporate Plan are summarized below, with a particular emphasis on measures which were expected to be delivered during the 2017-18 fiscal year. Results as of the third quarter of the 2017-18 fiscal year are presented.

Decommissioning And Waste Management

GENERAL DECOMMISSIONING AND WASTE MANAGEMENT				
Outcome	Performance measure	Target	Results	What this means
Waste management practices are transformed based on a strategic, integrated and cost-effective long-term vision for the management of AECL's liabilities.	CNL uses the first comprehensive Integrated Waste Strategy document to drive delivery of decommissioning and waste management goals.	2017-18 to 2019-20: High priority characterization needs are identified and undertaken.	On track. All actions scheduled for 2017-18 are currently on track.	By identifying further details on the various types of contamination and radioactive waste that is currently managed (for example in a contaminated building), CNL can identify the highest-risk areas and address them sooner. This reduces environmental risks.
	Manage interim low-level radioactive waste storage capacity.	2017-18: Develop low-level radioactive waste storage capacity (so as not to limit facilities decommissioning objectives before the Near Surface Disposal Facility becomes operational).	Completed. Additional capacity was successfully made available in 2017-18. Forecasting efforts will continue in case additional capacity is determined to be required.	Until a disposal facility is available, CNL continues to temporarily store all of AECL's radioactive waste. As storage capacity for the low-level radioactive waste was limited, additional capacity was made available to store the waste that is continuously produced as a result of ongoing nuclear science and technology activities. Once the proposed Near Surface Disposal Facility is available, this waste will be moved there for disposal.

GENERAL DECOMMISSIONING AND WASTE MANAGEMENT				
Outcome	Performance measure	Target	Results	What this means
The decommissioning and waste management program at the Chalk River site is accelerated to reduce AECL's liabilities.	CNL designs, plans, seeks appropriate support and approvals and builds a near surface disposal facility.	2017-18: Regulatory approval to begin construction received and construction contract awarded.	Delayed. Timelines for regulatory approval have been delayed due to higher-than-anticipated stakeholder engagement. Schedules are being revised.	The construction of a near surface disposal facility requires proper regulatory approvals in order to confirm that the project is safe for the environment, the public and the workers. The project is currently undergoing an Environmental Assessment, which includes participation by and input from the public and Indigenous groups. CNL is taking the time necessary to address comments and revise, as appropriate, the project to take input into account. From an operational perspective, this means that low-level radioactive waste will have to continue to be temporarily stored on site and large-scale land remediation and building decommissioning will also be delayed.
	Milestones associated with skyline changes at the Chalk River Laboratories are met as per CNL's annual plans and the performance targets set by AECL.	Demolition of structures, systems and components. 2017-22: Approximately 65 structures.	Ahead of Schedule. Planned demolitions for 2017-18 are currently ahead of schedule. As of the third quarter of 2017-18, 14 buildings/ facilities had been demolished, with 7 more expected by the end of the fiscal year. This includes the advancement of 4 demolitions originally planned for future years.	CNL is demonstrating very good project management and integrated teams are performing well. As planned, focus is being placed mainly on structures which do not contain radioactive contamination. Several outdated and high-risk buildings which are contaminated will need to be decontaminated and demolished. As noted above, most of these activities will be undertaken once the Near Surface Disposal Facility is available to avoid continuously storing radioactive waste temporarily.

GENERAL DECOMMISSIONING AND WASTE MANAGEMENT				
Outcome	Performance measure	Target	Results	What this means
The decommissioning and waste management program at the Chalk River site is accelerated to reduce AECL's liabilities. *(continued)*	Repatriation of highly-enriched uranium: fuel rods and target residue material are repatriated to the United States (US).	2021-22: Target residue material shipments completed. 2021-22: Fuel rods shipments completed.	On track. Specific targets for 2017-18 are on track, with project completion targets also on track.	Highly-enriched uranium originating in the US has been used at the Chalk River site as reactor fuel and in the production of medical isotopes. This material requires high levels of security as well as costly and complicated storage. As part of the Global Threat Reduction Initiative (an initiative which aims at reducing proliferation risks by consolidating highly-enriched uranium inventories in fewer locations around the world), CNL is returning this material to the US for conversion and reuse. This eliminates the need for storing this material at the Chalk River site.
	Operate Fuel Packaging and Storage Facility and transfer fuel from tile holes (Chalk River site).	2021-22: Complete transfer of fuel from targeted tile holes to the Fuel Packaging and Storage Facility.	On track. Specific targets for 2017-18 are ahead of schedule; therefore project completion targets are on track.	The Fuel Packaging and Storage facility is used to remove fuel from existing tile holes that show signs of corrosion and place it in a state-of-the-art, above-ground storage facility for continued storage until a final repository for the used fuel is available. This reduces environmental risks.
	Stored Liquid Wastes are appropriately and safely handled.	2023-24: Liquid processing complete. 2025-26: Tanks decommissioned.	On track. All targets for 2017-18 were completed as planned and the project continues to be on schedule for the removal of radioactive liquids by 2024.	As part of the legacy radioactive facilities that are managed by CNL at the Chalk River site, some tanks containing radioactive liquids are regularly monitored by CNL. In 2017-18 improvements were made to further mitigate risks while a strategy is being implemented to remediate the tanks, which will protect the site, workers and the environment.

GENERAL DECOMMISSIONING AND WASTE MANAGEMENT

Outcome	Performance measure	Target	Results	What this means
The Port Hope Area Initiative is delivered efficiently and effectively in order to reduce AECL's liability.	Port Hope Area Initiative milestones are completed on or ahead of schedule.	2017-18: Port Hope Long Term Waste Management Facility ready to receive off-site waste.	On track. It is expected that the facility will be operational to receive off-site waste by the end of the fiscal year.	The Port Hope Area Initiative is Canada's largest environmental remediation project. The Port Hope Project involves the cleanup of approximately 1.2 million cubic meters of historic low-level radioactive waste from various sites in Port Hope and its transportation to a long-term waste management facility. With the facility being operational, this means that cleanup in the community can begin.

LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT OFFICE

Outcome	Performance measure	Target	Results	What this means
Activities associated with the Low-level Radioactive Waste Management Office are delivered efficiently and effectively in order to address AECL's responsibility.	AECL engages with local stakeholders with a view to reaching an agreement for final re-use or disposal of Northern Transportation Route soils.	To be determined based on discussions with stakeholders.	In progress. There is consensus reached on the final disposition of the soils. Work is ongoing to discuss clean-up plans with stakeholders and Indigenous groups.	With decisions on plans for the final disposition of the soils, AECL and CNL can now work with communities and Indigenous groups to develop specific clean-up plans with consideration for community involvement, transportation, support from local businesses and traditional knowledge.

CLOSURE OF THE NUCLEAR POWER DEMONSTRATION REACTOR SITE

Outcome	Performance measure	Target	Results	What this means
The Nuclear Power Demonstration reactor is successfully decommissioned and the site is closed in order to reduce AECL's liability.	CNL submits application for a licence.	September 2017.	Completed on schedule.	The decommissioning of the Nuclear Power Demonstration reactor requires proper regulatory approvals in order to confirm that the project is safe for the environment, the public and the workers. The project is currently undergoing an Environmental Assessment and CNL has submitted an application to the Canadian Nuclear Safety Commission for the in situ decommissioning of the reactor as per the planned schedule. If completed, the project will reduce AECL's and Canada's decommissioning and environmental liabilities.

CLOSURE OF THE WHITESHELL LABORATORIES

Outcome	Performance measure	Target	Results	What this means
The Whiteshell Laboratories site is successfully decommissioned and the site is closed in order to reduce AECL's liability.	Canadian Nuclear Safety Commission issues licence renewal to continue site decommissioning.	2018	On track. The licensing hearing is scheduled for October 2018 with a decision expected prior to the expiry of CNL's current licence (December 2018).	The Whiteshell Laboratories used to be a nuclear laboratory site but today is undergoing decommissioning. As it remains a nuclear site, CNL requires an operating licence from the Canadian Nuclear Safety Commission. CNL's licence for the Whiteshell site is expiring in 2018; as a result CNL will be requesting a renewal of its licence so that decommissioning activities can continue safely. This activity is separate from the Environmental Assessment that is currently underway for the in situ disposal of the WR-1 reactor.

Nuclear Laboratories

FEDERAL NUCLEAR SCIENCE AND TECHNOLOGY WORK PLAN				
Outcome	**Performance measure**	**Target**	**Results**	**What this means**
Federal priorities are met on time and with a high standard of quality.	Research projects as set out in the Federal Nuclear Science and Technology Work Plan are delivered on time and with high quality.	As per milestones and targets included in CNL's annual plans.	On track. Milestones in the annual plans are expected to be delivered on time with high quality.	Nuclear science and technology activities at the Chalk River Laboratories support the Federal Nuclear Science and Technology Work Plan, which helps the Government of Canada deliver on its responsibilities in the areas of health, nuclear safety and security, energy and the environment. CNL undertakes projects in support of 13 departments and agencies to address medium and long-term government priorities in the areas of climate change and a clean environment; informed, science-based policy decision making; innovation for economic growth and prosperity; and the health, safety and security of Canadians.
	Impact of science and technology based on feedback from federal customers.	Based on project reviews and assessment or other documents produced by government.	On track. Based on the mid-year project reviews, federal stakeholders have acknowledged the importance of the work being performed and have requested additional dissemination of results.	

SCIENCE AND TECHNOLOGY FOR COMMERCIAL PURPOSES				
Outcome	**Performance measure**	**Target**	**Results**	**What this means**
Grow commercial opportunities for the laboratories.	Increase in commercial revenues.	Revenues are more than $60M (not including isotope revenue).	Currently projected to meet target.	To further grow and build the science expertise and capabilities at Chalk River, CNL provides technical services and research and development products for third parties on a commercial basis.

NATIONAL RESEARCH UNIVERSAL REACTOR

Outcome	Performance measure	Target	Results	What this means
CNL transforms ongoing nuclear operations and prepares for the shutdown of the National Research Universal reactor.	CNL implements National Research Universal reactor Transition and Shutdown Plan.	As per milestones defined in the National Research Universal reactor Transition and Shutdown Plan.	On track.	Proper planning and execution is important in providing for the safe and orderly shutdown of the National Research Universal reactor.
The National Research Universal reactor and related experimental and production facilities are maintained in order to deliver research projects up to the March 2018 shutdown.	National Research Universal reactor operation and related production facilities are maintained and operational in accordance with operating licences.	National Research Universal reactor high power operation for 228 days including operation of the U2 loop to meet schedules for science and technology work.	Ahead of schedule. Forecast for high power operation is 245 days.	The NRU has played a central role in nuclear science and technology in Canada for 60 years. As it is an old reactor and is expensive to maintain and operate, it will be shutdown in March 2018. Prior to this date, the reactor will continue to provide science and technology services in support of the nuclear and other industries.

TRANSFORM THE OPERATIONS OF CNL

Outcome	Performance measure	Target	Results	What this means
Management and operations (including nuclear operations) of CNL are transformed to enhance efficiency and reduce costs.	Strategic reduction in CNL indirect costs.	2017-18: Delivery of a detailed plan outlining CNL's long-term indirect cost projections.	Ongoing. CNL is expected to provide a plan outlining their long-term indirect cost projections and implementation plan by year-end.	One of AECL's objectives under the GoCo model is to increase effectiveness and efficiency in the management of its sites. Reductions in indirect costs will enable cost savings while maintaining safety, security and the protection of the environment.

TRANSFORM THE OPERATIONS OF CNL *(continued)*				
Outcome	**Performance measure**	**Target**	**Results**	**What this means**
CNL's project and safety performance is improved.	Improved health, safety, security and environmental performance and reporting relative to good industry practice.	2017-18: Benchmarked and measurable improvements in health, safety, security and environmental industry-standard metrics (including weighted indices which are underpinned by statistically-based analyses).	CNL has achieved notable improvement in overall focus and attention in environmental and industrial safety performance, with positive trends in some metrics.	As based on established industry standard statistical methods, CNL is measuring performance in this area similarly to others internationally, including the United States Department of Energy sites.
CNL's company-wide security posture and performance is improved.	Planned physical and programmatic security upgrades, IT system upgrades are completed.	2017-18: As per milestones and targets included in CNL's annual plan.	On track/delayed. Physical improvements are progressing well against scheduled activities. However IT systems upgrades are delayed.	Security upgrades and improvements in CNL's security program are required so that the people and the sites continue to be secure, both from physical and cybersecurity threats. Initiatives are improving the detection and deterrence activities, and increase the protection for the nuclear security officers. In IT, the objective is to build a secure and robust infrastructure, modernizing or retiring legacy systems and components. This work also supports the delivery of the nuclear science and technology mission at CNL.
	Implementation of Security Program improvement recommendations identified in two independent assessments.	2017-18: Measurable improvement in the Security Program performance as measured by industry-standard Security Program weighted index, and through annual performance ratings from the Canadian Nuclear Safety Commission for CNL sites, and ratings from the Canadian Nuclear Safety Commission of major training exercises, etc.	On track. This is evidenced by improved performance on the Security Program Index. There have been important improvements to physical security at the Chalk River site. Overall security performance remains a focus area in order to remain responsive to evolving threats.	

TRANSFORM THE OPERATIONS OF CNL *(continued)*				
Outcome	Performance measure	Target	Results	What this means
CNL delivers infrastructure projects in support of a long-term vision for the Chalk River Laboratories.	CNL completes infrastructure projects on time and on budget.	On track. 51 of the 56 milestones related to infrastructure projects were met.	On track. 51 of the 56 milestones related to infrastructure projects were met.	Major milestones were all achieved on time and on budget, including the completion of the new Harriet Brooks Building (which houses cutting-edge research and development in chemistry and materials), the construction of the new tritium laboratory, and other site support infrastructure such as the domestic water supply and the new sanitary sewage treatment facility. Other noteworthy capital investments successfully completed over the past year include the installation of updated security equipment, the conversion of buildings to natural gas for heating, and equipment in science and technology (e.g. a new transmission electron microscope). Together, these achievements contribute to the revitalization of the Chalk River Laboratories and its transformation into a world-class, state-of-the-art nuclear science and technology campus. New facilities and equipment also support the nuclear science and technology in support of the Government of Canada's objectives in the areas of health, safety, security, energy and the environment.

Operating Considerations

With the GoCo model now implemented, AECL is focusing on overseeing the ongoing transformation at CNL to enable it to deliver on its mandate and priorities. The presence of Canadian National Energy Alliance as the owner of CNL has meant that expertise from global, experienced firms is being brought to bear at CNL. This has provided a powerful catalyst for transformation across many areas within the organization.

CNL's long-term plans, which are updated at regular intervals, are reviewed and accepted by AECL. They are aligned with AECL's priorities to accelerate decommissioning, waste management and environmental remediation work, align the science and technology activities with the needs of the Government of Canada, build commercial science and technology opportunities, and transform the Chalk River campus into a world-class nuclear science and technology campus.

Proposed Near Surface Disposal Facility

The Near Surface Disposal Facility is about environmental remediation. It is being built to provide better long-term protection of the Ottawa River and the surrounding environment.

In the area of decommissioning, radioactive waste management and environmental remediation, AECL is aligning with international best practices, which show the importance of promptly addressing decommissioning objectives and identifying long-term radioactive waste disposal solutions sooner in order to reduce risks. To that effect, AECL has asked CNL to propose solutions for the disposal of its low-level radioactive waste. As a result, CNL is proposing to build a near surface disposal facility at the Chalk River Laboratories for AECL's low-level radioactive waste, the vast majority of which (more than 90%) is already located at the Chalk River site or will be produced there as a result of the ongoing nuclear science and technology activities. The facility will enable the cleanup and remediation of contaminated land and the revitalization of the Chalk River site, since debris from the demolition of many buildings which need to be decontaminated and demolished as part of the site's transformation will be placed in the facility. Overall, the facility will help protect the environment from radioactive materials currently in temporary storage, waste from the decommissioning of contaminated buildings close to the Ottawa River, and contaminated soil which will be moved to a safe, highly-engineered facility, designed to contain the contaminants.

The licensing and construction of this facility is critical to CNL's decommissioning and waste management strategy. CNL is in the process of engaging with the Canadian Nuclear Safety Commission as well as stakeholders, members of the public and Indigenous groups as part of the Environmental Assessment process for this project.

AECL has also asked CNL to accelerate the decommissioning and closure of the Whiteshell Laboratories and Nuclear Power Demonstration reactor (located in Manitoba and Ontario, respectively), with a view to reducing long-term costs and risks. In both cases, projects proposing the in situ decommissioning of research or prototype reactors are undergoing an Environmental Assessment, and CNL is engaging with local stakeholders, the public and Indigenous groups to discuss their proposal.

Wiith respect to its nuclear laboratories, AECL is placing an important focus on the renewal of the Chalk River Laboratories through strategic capital investment. The objective is to leverage capabilities at the Laboratories, as well as significant investments in science and site supporting infrastructure, to revitalize the site and transform it into a world-class nuclear science campus. Part of this renewal will be enabled by the acceleration of decommissioning activities on site, allowing for old and often contaminated buildings to come down and making way for new, state-of-the-art science facilities while advancing CNL's science and technology goals. Increased focus on alignment between internal capabilities at CNL and commercial drivers will allow CNL to grow third-party revenues to meet both the current and future needs of industry, as well as maintain relevant and targeted expertise

at the Chalk River Laboratories. AECL is also managing the Federal Nuclear Science and Technology Work Plan by coordinating the needs of thirteen federal departments and agencies and seeing that CNL undertakes necessary work in support of the Government of Canada's priorities.

Chalk River Laboratories Revitalization

$1.2 billion is being invested to renew the science and site supporting infrastructure at the Chalk River Laboratories.

Of particular note in fiscal year 2017-18, the Office of the Auditor General completed a special examination of AECL and submitted its report to the Board of Directors in June 2017. The examination concluded that "except for a significant deficiency in Board renewal and some other improvements needed, the Corporation had in place good corporate management practices." It was noted that AECL does not have control over Board renewal. AECL was pleased with the result of the special examination and considered the process an important exercise in helping the organization improve its management practices. Steps were taken to address the few areas which were noted by the Office of the Auditor General as meeting their criteria, but with improvement needed. An action plan was developed and made available on AECL's website. All actions were completed in 2017-18.

In addition, by the end of June 2017, the Government of Canada appointed the Chair, interim President and Chief Executive Officer (CEO), and four Board members to the AECL Board.

AECL's sphere of influence

AECL's role under the GoCo model is to set strategic direction, oversee the contract and monitor/assess the performance of CNL relative to its contractual obligations, plans and targets. This includes leveraging the expertise and capabilities of CNL, including the leadership brought to CNL by Canadian National Energy Alliance (the owner of CNL), as well as performance-based contractual incentives to achieve priorities.

AECL's oversight role is fundamentally to direct the 'what', and let CNL manage the 'how'. CNL, as the operator of the licenced nuclear facilities and employer of the workforce, is responsible for the day-to-day management of the sites and directly accountable for directing the work.

Through the acceptance of CNL's annual plans, AECL can influence CNL's plans for alignment with AECL's priorities. AECL's role is to challenge CNL's plans to find the right balance between the level of activities that are necessary to achieve AECL's mandate and provide value for money for Canada. AECL uses incentive fees and target-cost agreements to effectively drive CNL to meet its objectives and deliver value for Canada.

Risks and Opportunities

AECL carefully plans for and manages risks as part of sound risk management practices, and seeks new and ongoing opportunities aligned with its mandate.

Given AECL's oversight role, AECL's risk management approach goes beyond internal organizational risks and includes oversight of CNL risks. Ongoing communication with CNL and the monitoring of plans, activities and results allows AECL to monitor risks and, if applicable, implement mitigation strategies.

Internal Risks

AECL's success, including the provision of effective contractual oversight, depends in large part on the organization's ability to operate as intended. Significant risks that have the potential to impact AECL operations are considered AECL internal risks, and include:

- **Cybersecurity** – there is a risk that a cybersecurity incident would compromise AECL systems and data assets. AECL has security protocols in place with a third-party service provider, and throughout 2017-18 implemented a number of improvements to increase its cybersecurity position. AECL's cybersecurity position has been and will continue to be supported by multiple third party reviews/audits. Throughout the planning period, AECL will consider the recommendations coming out of these frequent assessments and implement improvements utilizing a risk-based approach.
- **Attraction and retention of qualified personnel** – There is a risk that AECL cannot attract or retain replacements to fill vacant positions or have successors ready to fill retirements or employees moving to new positions. AECL's success depends in large part on the organization's ability to retain its small workforce, comprised of highly qualified and specialized employees. In particular, AECL has had to recruit international experts with experience in working under GoCo models in the United States and United Kingdom (where this model has been used specifically at nuclear sites) in order to have the right knowledge and competencies in place to help it implement the GoCo model. The retention of this expertise, along with the on-the-job training of other staff, continues to be critical to enable sustainable operations. AECL has put in place many mitigation measures in this area, including: securing extensions of contracts with key executives, and putting in place a succession plan with consideration for cross training/mentoring of staff in an effort to 'groom' the next generation of Canadian experts in the GoCo model and avoid any gaps in critical positions.

Contractual Risks

The GoCo model relies on the expertise brought about by the contractor as well as proper oversight by AECL to achieve value for money for Canada. The success of the model relies, in part, on the strength of the relationship established, the level of trust and confidence between the two organizations, as well as the proper level of oversight placed on CNL by AECL. AECL will continue to work to bring the right balance between having a line of sight into activities to play a proper challenge function, and onerous oversight that damages the relationship or results in unnecessary administrative requirements and processes.

To mitigate this risk, protocols and management processes have been established in an effort to ensure proper information is being shared at all levels and to facilitate oversight and collaboration, including a Contractor Assurance System (a system that allows for the tracking of key performance metrics) and an Earned Valued Management System (a standard-based and industry best practice system that allows for integrated planning and tracking of projects, including their scope, schedule and cost) which is available to AECL. AECL has also put in place processes to perform effective contract oversight and has broad audit rights over all aspects of CNL's activities.

CNL Operational Risks

AECL has identified several high-priority projects and is closely tracking CNL's progress in advancing the work. In all cases where AECL has identified such projects, closer oversight of projects is being applied. AECL's oversight includes the requirement that project plans appropriately reflect the identified risks and necessary mitigating actions, engaging with other stakeholders, as required, and monitoring performance.

Opportunities

At the request of AECL, CNL developed a long-term plan that outlines a vision for CNL with a view to positioning the organization as a global leader in nuclear science and technology, growing its commercial business and building a modern, efficient and collaborative campus environment at the Chalk River Laboratories. The objective is to strategically invest $1.2 billion in new and renewed science infrastructure at the site in order to support the nuclear research needs of the Canadian Government and the evolving science and technology needs of the Canadian and global nuclear industry. AECL has approved CNL's long-term plan and will be providing oversight of specific projects in order to bring value for money for Canada.

Building on existing expertise and capabilities and leveraging the experience brought by the private sector, the long-term plan outlines opportunities for CNL to:

- Provide global sustainable energy solutions, including the extension of reactor operating lifetimes, hydrogen energy technologies, and fuel development for the reactor designs of tomorrow;
- Demonstrate the commercial viability of advanced reactors, including the small and very small modular reactor;
- Continue to support radiochemical therapies, including collaboratively pioneering new alpha therapies; and,
- Protect Canada's environment by removing and responsibly managing nuclear liabilities.

The opportunity related to small modular reactors is noteworthy given Canada's expertise in nuclear technology, including its existing supply chain and potential market. The application of this type of technology could serve a wide variety of potential customers, including the mining and gas industry, and remote communities. As one of the challenges facing small modular reactors is the number of designs (there are currently over 100 different designs), AECL believes that expertise at the Chalk River Laboratories could be leveraged to advise both the government and commercial companies on the technology. CNL has voiced a strong interest in working as a key partner on the development and deployment of small modular reactors, and has already taken steps to further explore this opportunity. In 2017-18, CNL issued a Request for Expression of Interest, which prompted input from small modular reactor technology developers, potential end users, and other interested parties and stakeholders, including host communities, the nuclear supply chain and research and academic institutions.

Responses received showed areas of general agreement on small modular reactors, including the positive economic benefits to Canada, alignment with Canada's commitment to fight climate change, important applications for remote communities, and the potential to enhance nuclear safety through next-generation nuclear technology.

Going forward, AECL will work with Natural Resources Canada and will continue to support CNL as it builds a better understanding of its existing capabilities, technology gaps, requirements, and overall market interest. AECL will also support CNL's activities to demonstrate the commercial viability of the small modular reactor by 2026, including advancing commercial opportunities to host demonstration projects that are financed by third parties at AECL sites.

Objectives and Plans

AECL's mandate is to enable nuclear science and technology and manage its decommissioning and waste management responsibilities. Most of the work in support of AECL's mandate and priorities is done by CNL through the GoCo model.

At the request of AECL, CNL has developed long-term plans which are aligned with AECL's priorities, and which bring to bear the relevant expertise of CNL, its owner and their parent companies. AECL has accepted these plans and is now looking to CNL to implement them. This includes seeing that shorter-term plans, commitments and targets are aligned with and support the achievement of long-term goals.

AECL's objectives include increasing the priority and measurable advancement of the decommissioning and waste management program and building a world-class nuclear laboratory that fulfills government requirements and grows commercial revenues while reducing costs and risks to Canada.

Planned budgets for each of the priority areas are presented below. Additionaly, the Consolidated Financial Statements in Annex A provide additional financial details.

Total AECL FIve-Year Projection of Federal Funding requirements (Excluding Discontinued Operations) – Cash

Net of Revenue

			Plan					
$ Millions	**Actual 2016-17**	**Budget 2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**5 Year Total**
Funding Requirements								
Decommissioning and Waste Management	364	499	593	679	649	534	637	3,093
Nuclear Laboratories – Operating	282	302	304	246	190	179	187	1,106
Nuclear Laboratories – Capital	138	165	147	185	165	150	80	727
Federal Funding Requirements AECL	**784**	**966**	**1,043**	**1,110**	**1,004**	**864**	**904**	**4,925**

Note: Minor differences due to rounding.

Funding for the Nuclear Laboratories (operating) is expected to decline as a result of the shutdown of the National Research Universal reactor which occurred in March 2018. However, overall funding for the Federal Nuclear Science and Technology Work Plan is expected to remain stable throughout the planning period of this Corporate Plan Summary.

Decommissioning and Waste Management

Priority: Fulfill Canada's Radioactive Waste and Decommissioning Responsibilities

AECL has been conducting nuclear science and technology activities for decades. While these activities have had important benefits for Canada and Canadians – for example the production of medical isotopes used in the detection and treatment of cancer – they also produced radioactive waste. AECL manages various types of radioactive waste at its sites, including high-level waste (used fuel), intermediate-level waste and low-level waste. Several sites and/or buildings have also been contaminated as a result of nuclear science and technology activities; these now need to be decontaminated and demolished, and the radioactive waste disposed of or managed properly and safely. Finally, AECL has to remediate sites (principally at the Chalk River Laboratories) which have been contaminated as a result of past radioactive waste management practices which are no longer considered acceptable based on today's stringent standards.

AECL's objective is to increase the priority and measurable advancement of the decommissioning and waste management program to address risks and hazards sooner, reducing risks and costs for Canada in a safe manner, consistent with international leading practices.

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

The GoCo model has provided an opportunity for AECL to leverage the experience and expertise of the private-sector to optimize work and increase efficiencies and effectiveness, resulting in plans to address risks sooner and advance plans for waste disposal facilities. These disposal facilities will allow radioactive waste to be safely disposed of and the waste contained while protecting the environment. This will pave the way for necessary site remediation and building decommissioning and help reduce the long-term costs of maintenance and surveillance of existing buildings which are contaminated but no longer in use. As such, AECL will reduce the Government's liability in a much shorter period of time than what had previously been planned.

The advancement of decommissioning work was a clear priority of the GoCo model and started immediately upon its implementation. Significant progress is already happening at the Chalk River site, with changes to the site's skyline clearly evident as redundant buildings and facilities are decommissioned. Work will be continuing for the planning period (2018-19 to 2022-23), as based on CNL's long-term plans to advance AECL's decommissioning and waste management responsibilities (such plans which have been accepted by AECL) and make way for new facilities.

Work will be focused along five project areas:

1. General Decommissioning and Waste Management

Activities in this area include all waste and decommissioning activities to address AECL's environmental, decommissioning and waste management responsibilities at its Chalk River Laboratories and two other smaller sites, Gentilly-1 in Quebec and Douglas Point in Ontario. Activities for the planning period will mainly focus on the Chalk River Laboratories, where the majority of the waste and contaminated lands and buildings are located.

Activities in this area include:

- **Environmental restoration at the Chalk River site**
  Overview: For more than 60 years, nuclear science and technology activities at the Chalk River site have led to the production of radioactive and other hazardous wastes. Such wastes have been carefully managed at dedicated areas, otherwise known as waste management areas. While the majority of the Chalk River site remains undisturbed, the waste management areas and other affected lands have been impacted to varying degrees. As there remains a significant amount of buried waste, soil contamination and groundwater contamination, remedial actions are required to protect the environment.

  Status: Activities in 2018-19 will center around supporting the planning and execution of remedial activities, building on progress made in 2017-18. The execution of targeted remedial actions will improve environmental conditions and continue to provide the necessary protection of the environment. Examples of these activities include commissioning of a water treatment facility, site preparation and work planning for remedial activities at the Waste Management Area F, enhanced monitoring programs at the Waste Management Areas C and E and the development of options for remediation at one of the Waste Management Areas related to contamination stemming from legacy liquid dispersal. Futher large-scale remediation of contaminated lands and soils is required to further protect the environment, but this can only be achieved if the contaminated material has a place to go. The Near Surface Disposal Facility, which is currently undergoing an Environmental Assessment, is meant to provide a solution for these materials. Indeed the highly-engineered, multi-layer protection facility will isolate the low-level radioactive waste from the environment and offer significantly improved containment and further protection of the environment than what is currently the case at the Chalk River site.

- **Waste management and disposal at the Chalk River site**
  Overview: As noted above, existing radioactive waste is safely stored at the Chalk River site. However final disposal pathways must be developed for various types of wastes and to allow for the remediation of contaminated buildings, lands and soils. As such, CNL is proposing to build a near surface disposal facility for the permanent disposal of AECL's low-level radioactive waste, as well as small amounts of waste from other Canadian producers such as hospitals and universities. Near surface disposal is an internationally-proven method of disposing of such wastes. The facility would allow for the permanent disposal of the vast majority of AECL wastes currently in interim storage, as well as waste which will be generated as a result of contaminated land remediation activities, decommissioning activities and continued operations of the nuclear laboratories. This project is currently undergoing an Environmental Assessment, including engagement of local stakeholders and Indigenous groups. As noted above, this project is critical to advance decommissioning and remediation activities at AECL sites and to protect the environment.

  CNL also continues to manage existing waste management facilities at the Chalk River site and is responsible for keeping existing waste storage facilities safe and fit for service.

  Status: Efforts in 2017-18 regarding the Near Surface Disposal Facility project included CNL submitting documents and preparing response to comments received from federal and provincial reviewers, as well as members of the public as part of the Environmental Assessment process. CNL will continue its efforts to engage stakeholders and Indigenous groups in the lead up to public hearings on the proposal, to be held by the Canadian Nuclear Safety Commission.

In the meantime, interim waste storage was expanded in 2017-18 to support continued progress in decommissioning and the construction of new facilities.

Other activities related to waste management in 2018-19 include CNL continuing to safely store radioactive waste at the Chalk River site, and exploring options for types of waste that will not be destined for the Near Surface Disposal Facility.

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

- **Decommissioning of buildings at the Chalk River site**
  Overview: The Chalk River site includes multiple redundant buildings which require decontamination and demolition. The site has been in existence since the 1940s, and some buildings still standing today date back to that era. Some facilities were used as nuclear science and technology facilities (and therefore may have some level of radioactive contamination), while others were used as support buildings (for example machine shops, garages, etc.). Most of these facilities are outdated, no longer needed to meet operational needs and contribute to high site costs through ongoing maintenance for safety and security purposes, energy consumption, etc. CNL will be removing buildings in order to make way for the Chalk River site revitalization and to reduce AECL's costs and liabilities.

  Status: Significant progress was made in 2017-18 to decommission buildings at the Chalk River site: a total of 17 buildings were demolished throughout the site, including 4 which were demolished ahead of schedule. In 2018-19, CNL activities will be focused on the demolition of a few key facilities on site (buildings 100X, 102, 103, 104 and 202) as well as preparation activities for future demolition, for example by undertaking decontamination and asbestos abatement, as appropriate. As noted above, it is expected that large-scale activities will commence when the Near Surface Disposal Facility is operational, providing that CNL secures all of the necessary approvals for its construction. For now, expanded interim waste storage allows for continued progress in decommissioning.

- **Management of used fuel and repatriation of highly-enriched uranium**
  Overview: Highly-enriched uranium originating in the United States has been used at the Chalk River site as reactor fuel and in the production of the key medical isotope molybdenum-99. This material requires high levels of security as well as costly and complicated storage. As part of the Global Threat Reduction Initiative (an initiative which aims at reducing proliferation risks by consolidating highly-enriched uranium inventories in fewer locations around the world), AECL is working with the United States Department of Energy and CNL to return (repatriate) this material to the United States for conversion and reuse. This initiative provides for a safe, secure, timely and permanent solution to Canada's long-term management of this material. Any transportation of material is undertaken according to strict regulations, both in Canada and the United States. The highly-enriched uranium is transported under stringent security plans and in engineered casks that are specifically designed to contain materials under normal and abnormal situations.

  CNL also manages AECL's used fuel inventory. The Fuel Packaging and Storage facility is used to remove fuel from existing tile holes that show signs of corrosion and place it in a state-of-the-art, above-ground storage facility for continued storage until a final repository for the used fuel is available.

Status: The fuel repatriation program was very successful in 2017-18, with targets for the shipment of both target residue material and fuel rods being met. In 2018-19, a number of shipments of highly-enriched uranium fuel rods and target residue material are planned to be made to the United States. Work will also continue to establish the ability to retrieve and transport fuel from Whiteshell to Chalk River for storage.

Measures of success include:

		Target		
Outcome	Performance measure	Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
Waste management practices are transformed based on a strategic, integrated and cost-effective long-term vision for the management of AECL's liabilities.	CNL has an integrated waste strategy and clear disposal path for all existing waste streams.	High priority characterization needs are identified and undertaken to support the production of compliant waste acceptance criteria (e.g., for NSDF). Resins have been removed from the Douglas Point and Gentilly-1 reactors, repackaged and transferred to the appropriate waste facility.	Develop a program for radioactive waste that does not currently have a disposition route (where there are no plans for disposal). Develop a safety case for intermediate-level waste storage. Supporting and/or redundant facilities at the Douglas Point and Gentilly-1 reactors are demolished.	Determine the disposal path for intermediate level waste. Review options for Douglas Point and Gentilly-1 intermediate level waste transportation and disposition. The Douglas Point and Gentilly-1 reactors are placed into long-term storage with surveillance.
	The Chalk River site is ready to receive radioactive waste from other AECL sites for storage and/or disposal.		Ready to receive low-level radioactive waste from the Whiteshell site for storage and/or disposal. Ready to receive intermediate-level radioactive waste from the Whiteshell site for storage.	
Waste management practices are transformed based on a strategic, integrated and cost-effective long-term vision for the management of AECL's liabilities *(continued)*	CNL designs, plans, seeks appropriate support and approvals and builds a near surface disposal facility.	Regulatory approval to begin construction received and construction contract awarded.	First waste emplacement.	

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Outcome	Performance measure	Target		
		Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
The decommissioning and waste management program at the Chalk River site is accelerated to reduce AECL's liabilities.	Demolition of structures, systems and components leading to skyline changes at the Chalk River Laboratories.	Demolitions are completed for buildings 103, 104, 102, 102X, and 202.	Approximately 65 structures are decommissioned between 2017 and 2022 (cumulative).	Long-term liabilities are reduced through the safe and environmentally responsible removal of redundant facilities and structures. With the exception of the National Research Universal reactor, 122 structures have been eliminated and the NRX reactor has been decommissioned to an agreed end-state, helping reduce the site footprint.
	Repatriation of highly-enriched uranium: fuel rods and target residue material are repatriated to the US.	Target residue material and fuel rod shipments completed as per plan. Fuel Rod Shipments completed.*	Target residue material shipments completed.	AECL continues to investigate and pursue the disposition or repatriation of fresh and irradiated fuel material in order to further reduce liabilities for Canada.
	Operate Fuel Packaging and Storage Facility and transfer fuel from tile holes (Chalk River site).	Remainder of high-risk tiles holes are transferred to the Fuel Packaging and Storage Facility.**	Drying operations at the Fuel Packaging and Storage Facility are complete, with only surveillance activities remaining.	
	Stored Liquid Wastes are appropriately and safely handled.	Complete design for hazard reduction equipment.		Liquid processing complete. Tanks decommissioned.
	Environmental remediation of the Waste Management Areas progresses as planned.	Characterization and remediation plans for various Waste Management Areas at the Chalk River site are completed.	Remediation of Waste Management Areas begins once the Near Surface Disposal Facility is available.	Waste Management Areas and site remediation activities are completed.

* In the 2017-18 Corporate Plan Summary, the target for completion of the shipment of fuel rods had been presented as being in 2022. The repatriation of this material has progressed ahead of schedule and therefore the target has been accelerated to 2020.

** In the 2017-18 Corporate Plan Summary, the target for completion of transferring fuel from tile holes to the Fuel Packaging and Storage Facility had been presented as being in 2022. The transfer of this material has progressed ahead of schedule and therefore the target has been accelerated to 2019.

2. Port Hope Area Initiative

Overview: The Port Hope Area Initiative represents Canada's commitment to clean-up and safely manage historic low-level radioactive waste situated in the municipalities of Port Hope and Clarington. The objective is to safely manage roughly 1.7 million cubic metres of historic low-level radioactive waste and contaminated soils. Modern facilities for the long-term management of the wastes will be constructed in each municipality and will receive waste from existing waste management facilities, as well as other wastes which are dispersed in the local area.

Status: In 2017-18 construction of the Port Hope Long-term Waste Management Facility continued, with one section of the facility (cell one) being commissioned and operational, receiving waste. In 2018-19, construction will continue on the facility to finalize and commission two of the remaining three sections (cells). Planning and preparation activities for the remediation of small-scale sites will continue, including the completion of temporary storage sites, and remediation of certain sites, including the harbour front, will begin. Remediation work will conclude at the Port Granby site in Clarington, with the closing and capping of the Long-term Waste Management Facility there.

Measures of success include:

		Target		
Outcome	Performance measure	Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
The decommissioning and waste management program at the Port Hope site is accelerated to reduce AECL's liabilities.	Port Hope Area Initiative milestones are completed on or ahead of schedule.	Port Granby Long-Term Waste Management Facility closed and capped. Port Granby Long-Term Waste Management Facility in long-term surveillance.	The majority of the non-residential remediation projects, as part of the Port Hope Project, are complete.	Port Hope remediation of low level radioactive waste is complete. Port Hope Long-Term Waste Management Facility is closed and capped and in long term surveillance.

3. Low-level Radioactive Waste Management Office

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

Status: In 2017-18 AECL worked with local communities and CNL to find safe, suitable, cost-effective and accepted solutions for waste disposal in the Northern Transportation Route (in the Northwest Territories and in Alberta). In 2018-19 planning and stakeholder and Indigenous engagement will continue to develop and agree on specific cleanup plans, including possibilities of accelerating schedules. Activities will also continue to clarify responsibilities for sites in the Greater Toronto Area, with a view of discharging the Government's responsibility in a safe and acceptable manner.

Measures of success include:

Outcome	Performance measure	Target		
		Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
The decommissioning and waste management activities associated with historic low-level radioactive waste management (excluding the Port Hope Area Initiative) are accelerated to reduce AECL's liabilities.	AECL engages with local stakeholders and Indigenous groups with a view to confirming and agreeing on clean-up plans for the Northern Transportation Route.	Engagement of local stakeholders and Indigenous groups. Remedial action plans agreed for Sahtu sites along the Northern Transportation Route.	Engagement of local and Indigenous stakeholders. Remediation commences for Sahtu sites along the Northern Transportation Route.	Remediation completed for Sahtu sites along the Northern Transportation Route. Remediation completed for South Slave sites along the Northern Transportation Route and Greater Toronto Area properties.

4. Closure of the Nuclear Power Demonstration reactor site

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

As part of its objectives to safely address its environmental and decommissioning responsibilities, AECL has asked CNL to propose plans to decommission and close the Nuclear Power Demonstration reactor site while protecting the environment. Based on international benchmarking, CNL is proposing to decommission the reactor in situ, meaning that it would be immobilized in place by grouting (i.e. cementing) the reactor which is located below the surface. This would allow the remaining radioactivity to decay and would further protect the environment, the workers and the public from contamination. This alternative has been effectively applied in the United States to minimize environmental impact and reduce risks to workers. The project is currently undergoing an Environmental Assessment.

Status: CNL has been working to provide all documentation and meet the requirements under the Environmental Assessment process. In 2017-18, an administrative protocol was established between CNL and the Canadian Nuclear Safety Commission to establish timelines for this process. CNL provided a draft Environmental Impact Statement which was reviewed by the Canadian Nuclear Safety Commission and other federal departments. The document was also made available for public comment as part of the Environmental Assessment process. In the meantime, CNL will continue its work to characterize radioactivity and contamination, reduce hazards and maintain the facility. CNL will also continue to actively engage with local stakeholders and Indigenous groups on its proposal.

Measures of success include:

Outcome	Performance measure	Target		
		Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
The Nuclear Power Demonstration reactor is successfully decommissioned and the site is closed in order to reduce AECL's liability.	The decommissioning of the Nuclear Power Demonstration reactor is completed.	CNL's engagement activities with stakeholders, the Canadian Nuclear Safety Commission and Indigenous groups leads to the acceptance of the environmental assessment and the issuance of a license for decommissioning.	Canadian Nuclear Safety Commission issues license to abandon or otherwise accepts as completed all active decommissioning and waste management activities, with only long-term care activities remaining.	Ongoing long term monitoring and surveillance confirms the safety of the site.

5. Closure of the Whiteshell Laboratories

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

In 1998, the Government announced the closure of the Whiteshell Laboratories, and decommissioning activities have been underway since then. With the implementation of the GoCo model and the increased emphasis placed on tackling its environmental and decommissioning responsibilities, AECL has asked CNL to accelerate and complete the decommissioning of the site. As a result, CNL is proposing to decommission and close the site by 2024, well ahead of the previous schedule. The acceleration of the decommissioning of the site includes a proposal to decommission the WR-1 reactor in situ. That specific project is currently undergoing an Environmental Assessment.

Status: CNL has submitted their draft Environmental Impact Statement for the proposed approach of in situ disposal of WR-1, and has continued to engage with local stakeholders and Indigenous groups. CNL will also be requesting a renewal of its Whiteshell Laboratories site licence in the fall of 2018.

AECL will continue to work with the Local Government District of Pinawa, the Government of Manitoba and any other relevant stakeholders and Indigenous groups to discuss the future of AECL's lands, with a view to finding acceptable solutions which support the local community in advancing plans related to economic development.

Measures of success include:

Outcome	Performance measure	Target		
		Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
The Whiteshell Laboratories site is successfully decommissioned and the site is closed in order to reduce AECL's liability.	The decommissioning and closure of the Whiteshell Laboratories site is completed.	CNL's engagement activities with stakeholders, the Canadian Nuclear Safety Commission and Indigenous groups leads to the acceptance of the revised environmental assessment which allows for the in situ disposal of the WR-1 reactor.	Waste retrieval completed for all the standpipes in the waste management area. All high-level radioactive waste and used fuel are removed and transported to the Chalk River Laboratories.	The Canadian Nuclear Safety Commission issues a licence to abandon or otherwise accepts as completed all active decommissioning and waste management activities, with only long-term monitoring and surveillance activities remaining.

The budget related to the priority 'Fulfill Canada's Radioactive Waste and Decommissioning Responsibilities' is as follows:

Decommissioning and Waste Management Five-Year Projection of Funding Requirements – Cash

$ Millions	Actual 2016-17	Budget 2017-18	Plan 2018-19	2019-20	2020-21	2021-22	2022-23	5 Year Total
Decommissioning and Waste Management								
Total Decommissioning and Waste Management	365	500	594	680	650	535	638	3,098
Revenue	1	1	1	1	1	1	1	5
Federal Funding Requirement	**364**	**499**	**593**	**679**	**649**	**534**	**637**	**3,093**

Note: Minor differences due to rounding.

Nuclear Laboratories

Priority: Grow CNL's Science and Technology

AECL's objective is to leverage the vast expertise at the Chalk River Laboratories to contribute to the government's science, innovation and clean energy objectives. Nuclear science and technology activities at the Chalk River Laboratories support the Federal Nuclear Science and Technology Work Plan, which helps the Government of Canada deliver on its responsibilities in the areas of health, nuclear safety and security, energy and the environment. To further grow and build the science expertise and capabilities at Chalk River, AECL has asked CNL to provide technical services and research and development products for third parties on a commercial basis.

AECL continues to focus on the effective and efficient delivery of nuclear science and technology services by CNL. This includes aligning science and technology activities with best-in-class project management practices, increasing commercial revenues and reducing the administrative and management cost (overhead) of its programs in order to deliver more science-based activities. AECL has also asked CNL to leverage partnerships and collaboration with academia, government, industry and the scientific community to maintain the profile and relevance of the laboratories. In particular, linkages with international partners such as the United States, United Kingdom, China and India, will be strengthened. CNL has developed a 10-year plan outlining its strategic approach to delivering an integrated, effective, project-based and customer-focused science and technology mission that serves the needs of the federal government as well as those of external customers.

CNL will also take full advantage of the New Technology Initiatives Fund to explore new ideas and leverage capabilities. The New Technology Initiatives Fund was set up to allow CNL to undertake science and technology activities to build expertise and capability at the Chalk River Laboratories, with a long-term view to attracting and retaining world-class expertise and building skills and knowledge that is anticipated to be needed for future or emerging opportunities. Consistent with similar programs at national laboratories around the world, providing funding to support work that may be at very early stages, peripheral to current research priorities, high risk, or exploratory, the New Technology Initiatives Fund is expected to promote innovative thinking, reward initiative, balance near-term priorities with long-term vision, and improve employee engagement. In 2017-18, funding from the New Technology Initiatives Fund was used to advance science and technology activities in CNL's strategic initiatives in small modular reactors, life extension and long-term reliability of existing reactors, decarbonizing the transport sector and remote communities in Canada, alpha research institute, advanced fuel fabrication, nuclear forensics and response, and nuclear cybersecurity.

The execution of CNL's 10-year plan, including associated investments in new infrastructure, will be critical in providing the facilities that will enable the revitalization of the Chalk River site and the long-term success of the science and technology mission.

1. Federal Nuclear Science and Technology Work Plan

AECL continues to oversee the delivery of the Federal Nuclear Science and Technology Work Plan in order to support the Government's priorities and core responsibilities in the areas of health, nuclear safety and security, energy, the environment. AECL engages with federal departments and agencies to develop a program of work that meets broad federal needs and priorities while bringing value for money for Canada.

AECL's Federal Nuclear Science and Technology Work Plan focuses on five research themes and activities:

1) supporting the development of biological applications and understanding the implications of radiation on living things;
2) enhancing national and global security by supporting non-proliferation and counter-terrorism;
3) nuclear preparedness and emergency response;
4) supporting safe, secure and responsible use and development of nuclear technologies; and,
5) supporting environmental stewardship and radioactive waste management.

In 2017-18, the federal interdepartmental committees, representing 13 departments and agencies, worked with CNL on developing a program of work that addresses the medium and long-term government priorities in the areas of climate change and a clean environment; informed, science-based policy decision-making; innovation for economic growth and prosperity; and the health, safety and security of Canadians. This included work to:

- develop and demonstrate innovative nuclear energy technologies and applications such as the investigation of small reactor technologies for Canada in order to inform regulatory guidance, assessments and policies;
- develop new and improved biodosimetry techniques for emergency response, reducing uncertainties in low-dose risk assessment to address challenges in regulatory policy, health assessment and public communication; and,
- support Canada's interests, commitments and arrangements in non-proliferation, counter-terrorism and disarmament priorities.

Emphasis was placed on science and technology activities related to the effect of radiation on material and nuclear fuels, to take advantage of the National Research Universal reactor prior to its shutdown in March 2018.

Work in 2018-19 and over the planning period is consistent with and responsive to AECL's priorities and aligned with CNL's strategic initiatives outlined in its 10-year plan. In the near term, this includes:

- research to support the potential deployment of small modular reactors in Canada;
- research on the effects of radon to inform regulation and support CNL's new alpha research institute with the aim to become the center of international research efforts in alpha-emitting isotopes;
- developing new methodologies and practices for cyber security in the supply chain for industrial control systems used in nuclear power plants and other critical energy infrastructure;
- advancing Canada's capability in nuclear forensics; and,
- work in materials degradation for existing and next-generation reactors in Canada to inform regulation.

The Federal Nuclear Science and Technology Work Plan continues to contribute to government priorities in support of Canada's commitments to Mission Innovation, collaboration with the United States and India, Canada's participation in the Generation IV forum, the Fissile Material Cutoff-Treaty, the Comprehensive Test Ban Treaty, and the International Partnership for Nuclear Disarmament Verification.

As in 2017-18, the measures of success are related to meeting federal priorities through delivering on milestones and targets set out in CNL's annual plans.

Measures of success include:

Outcome	Performance measure	Target		
		Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
Federal needs are met on time and with a high standard of quality.	Research projects as set out in the Federal Nuclear Science and Technology Work Plan are delivered on time and with high quality.	As per milestones and targets included in CNL's annual plans.	Project objectives identified are met and the results are disseminated with uptake from the stakeholders.	Canada's position as a global player in areas of security, health, energy and nuclear regulation is supported; highly-qualified personnel for the next generation of nuclear workers and scientists are developed; unique technical knowledge and understanding is advanced to support nuclear policy and regulation; and Canada's ability to actively and effectively participate in international fora and meet international obligations with respect to energy technology, safety, security and nonproliferation is maintained.
	Impact of science and technology activities based on the number of project milestones for the Federal Nuclear Science and Technology Work Plan in CNL's annual plans.	85% of Federal Nuclear Science and Technology Work Plan project milestones are met.	85% of Federal Nuclear Science and Technology Work Plan project milestones are met.	CNL has a vibrant and sustainable Federal Nuclear Science and Technology Work Plan.
Federal investment in science and technology and infrastructure are leveraged	Science and technology activities are leveraged to increase collaboration and work at the Chalk River Laboratories, and the capabilities are maintained.	Collaborative agreements, memoranda of understanding or other agreements with organizations are developed.	Between 3 and 5 collaborative agreements, memoranda of understanding or other agreements with organizations are signed.	More than 5 collaborative agreements, memoranda of understanding or other agreements with organizations are signed. Capabilities are maintained and highly qualified personnel for the next generation of nuclear workers and scientists are developed.

2. Science and technology for commercial purposes

CNL will continue to provide commercial services to third parties and is expected to grow commercial margins in order to both build nuclear science and technology stature and to cover overall site and overhead costs for AECL and the Government. The objective is to leverage the assets and capabilities of CNL, to undertake commercial work on at least a full cost-recovery basis (covering both the cost of sales as well as indirect and

other administrative and site support costs). As CNL grows its revenues, these will serve to further grow CNL's science and technology capabilities, with intended benefits for Canada.

In 2017-18, CNL has engaged with and responded to existing customers' requests and explored new markets. These included, for example, commercial science and technology services to federal and industry customers in the areas of health, safety and security, energy, and environment – with energy being the single largest area of current work and the largest growth area. Work for industry customers included energy-related services to the CANDU Owners Group, Candu Energy and major utility companies.

Going forward, CNL will continue to expand commercial opportunities based on the strategic directions and initiatives set out in its long-term plan. Growth in commercial work is expected to come in the areas of small modular reactors and projects are targeted in each of the health, safety/security and environment program areas.

Measures of success include:

		Target		
Outcome	Performance measure	Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
Increased commercial opportunities for the Chalk River Laboratories.	Increase in commercial revenue.	Revenues are more than $61M (not including isotope revenue).	3%-5% growth year-over year.	2%-3% growth year-over year.

3. National Research Universal Reactor

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

Leading up to March 2018, the use of the National Research Universal reactor was maximized for a variety of science and technology activities and the production of isotopes other than molybdenum-99. In parallel, irradiation options following the shutdown of the National Research Universal reactor were considered and will be further explored in 2018-19.

Activities in 2018-19 will be focused on implementing the safe shutdown of the reactor, including its defueling, the removal of heavy water and of non-fuel assemblies requiring cooling. By 2021, 30 ancillary buildings will be placed into storage with surveillance. The reactor fuel will subsequently be transferred to dry storage and the rod bays (the large pools which were used to store the fuel after it was taken out of the reactor) will be drained and processed.

The shutdown of the National Research Universal reactor has significant impacts on the CNL workforce. CNL has been working over the past few years to retain, retrain and redeploy its staff in order to retain talent and expertise where possible.

Measures of success include:

Outcome	Performance measure	Target		
		Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
CNL transforms ongoing nuclear operations and implements the shutdown of the National Research Universal reactor.	CNL implements the transition and shutdown plan for the National Research Universal reactor.	The National Research Universal reactor is shutdown, defueled and dewatered (2018-19).	The National Research Universal reactor is in a permanent safe shutdown state, reactor and ancillary buildings in storage with surveillance.	The National Research Universal reactor is formally handed over to CNL's facilities decommissioning group.

The budget related to the priority 'Grow CNL's Science and Technology' for the planning period will be as follows:

Nuclear Laboratories Five-Year Projection of Federal Funding Requirements – Cash

$ Millions	Actual 2016-17	Budget 2017-18	Plan 2018-19	2019-20	2020-21	2021-22	2022-23	5 Year Total
Nuclear Laboratories – Operating								
Nuclear Laboratories	369	372	382	320	268	260	270	1,500
Revenue	87	70	78	74	78	80	83	394
Federal Funding Requirement	**282**	**302**	**304**	**246**	**190**	**179**	**187**	**1,106**

Note: Minor differences due to rounding.

Funding for the Nuclear Laboratories (operating) is expected to decline as a result of the shutdown of the National Research Universal reactor which occurred in March 2018. However, overall funding for the Federal Nuclear Science and Technology Work Plan is expected to remain stable throughout the planning period of this Corporate Plan Summary.

The anticipated decreased revenue levels from 2016-17 to 2017-18 shown in the above table are due, in part, to the ongoing decline in sales of isotopes and is consistent with the Government's decision to shutdown the National Research Universal reactor in March 2018. Projected moderate increases in revenues starting in 2020-21 are due to CNL's anticipated growth in commercial work other than isotope sales, particularly as it works to diversify and broaden its customer base.

Priority: Transform the Operations of CNL

The objective is to leverage the global expertise from Canadian National Energy Alliance (the owner of CNL) to transform CNL's operations to increase value for money and reduce costs and risks to Canada.

CNL's vision is to achieve a cost-effective, modern campus-like site with new and refurbished facilities to support the future growth of CNL. Any capital investments at AECL sites will take into consideration best practices with respect to sustainability and green building standards, with due consideration for cost, schedule and feasibility.

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

In 2018-19, AECL will be looking to CNL to advance important capital projects that are already underway, complete the construction of the refurbished tritium laboratory and to significantly advance planning activities for new projects as part of their larger strategy to revitalize the site as per their 10-year plan. The site and capital plan remains flexible and may need to be adjusted as scope, cost and schedule continue to mature for projects. For more details on the site and capital plan for 2018-19, please refer to Annex C.

Measures of success include:

		Target		
Outcome	Performance measure	Short-term 1-2 years	Medium-term 3-4 years	Long-term 5+ years
Management and operations (including nuclear operations) of CNL are transformed to enhance efficiency and reduce costs while maintaining safety and security of workers, the public and the environment.	Strategic reduction in CNL indirect costs.	Implementation of actions to achieve CNL's long-term indirect cost projections with demonstrable value for required indirect cost investments.	Continued achievement of indirect cost projections.	Sustainable level of indirect cost expenditures that would enable CNL to be cost competitive and achieve its vision.
CNL's project and safety performance is improved.	Health, safety, security and environmental performance metrics (including weighted indices which are underpinned by statistically-based analyses).	Stability in health, safety, security and environmental industry-standard metrics against industry standard benchmarks.	Marked improvement in health, safety, security and environmental metrics with simultaneous improvement in productivity through innovative approaches to work, waste management, and new facility design.	Sustainable best industry standard safety performance through fully integrated design, construction, operation, and disposition of nuclear and non-nuclear facilities.
CNL's company-wide security posture and performance is improved.	Planned physical and programmatic security upgrades, IT system upgrades are completed as per milestones established in CNL's annual plans.	Establish a vulnerability analysis that describes site threats with corresponding mitigation measures.	Effective implementation of mitigation strategies stemming from the vulnerability analysis as demonstrated by improving performance as measured by industry standard risk/cost/ indices.	Demonstrable integration of modern security designs leading to cost effective implementation in new facilities.

The following table presents the planned budget for capital expenditures, which reflects CNL's capital program to address infrastructure recapitalization and new investments at the Chalk River Laboratories and excludes infrastructure projects that are related to the decommissioning and waste management program.

Capital Five-Year Projection of Funding Requirements – Cash

			Plan					
$ Millions	**Actual 2016-17**	**Budget 2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**5 Year Total**
Nuclear Laboratories – Capital								
Capital	138	165	147	185	165	150	80	727
Federal Funding Requirement	**138**	**165**	**147**	**185**	**165**	**150**	**80**	**727**

Note: Minor differences due to rounding.

Other Areas of Focus

Heavy Water

AECL currently owns heavy water assets which is used in CANDU reactors and for other purposes, including non-nuclear purposes. Activities associated with this are limited to managing the existing inventory and selling the assets. Through the GoCo model, CNL acts as an agent for AECL for the marketing, sale and distribution of AECL's heavy water inventory. CNL also manages AECL's inventory of heavy water at AECL's facility in Laprade, Québec.

In 2018-19, AECL will be looking to CNL to optimize the management and sales of heavy water.

Wrap-Up Office (retained liabilities from former CANDU Reactor Division)

As noted above, given the reduced number of AECL legal matters arising from its CANDU Reactor Division, in 2016-17 AECL closed down its Wrap-up Office location, dissolving the team which had been dedicated to resolving matters related to outstanding liabilities from the CANDU Reactor Division. The few remaining claims and litigations that comprise the business of the Wrap-up Office are now being managed by AECL's legal team, supported by external counsel. This includes the commercial and legal work required to defend, assert and settle outstanding claims as delivered by the Wrap-up Office, including the pursuit of claims against insurers for the Point Lepreau refurbishment project.

Annex A – Consolidated Financial Statements

This section presents AECL's financial statements reflective of AECL's role under the GoCo model, which include payments to CNL and its owner, Canadian National Energy Alliance. The CNL-related mission budgets (e.g. science and technology, decommissioning and waste management and capital) include both direct and indirect costs.

Under the new GoCo model, AECL receives funding from the Government of Canada to deliver on commitments, priorities and objectives related to nuclear science and technology, decommissioning and waste management, as well as the revitalization of the Chalk River Laboratories site. CNL manages and operates AECL's sites and undertakes the necessary activities to respond to AECL priorities as per its contractual arrangement with AECL. Any third-party revenues that CNL generates accrue to AECL.

Important changes that affect this planning period are the shutdown of the National Research Universal reactor in March 2018 as well as the associated expected decrease in revenues from isotope production. Most notably, the shutdown of the reactor has meant that the production of medical isotopes ceased (production of the key medical isotope molybdenum-99 ceased in October 2016), which has had important impacts on revenue levels.

Government of Canada Funding

As presented in the previous section, AECL delivers on important priorities of the Government with respect to nuclear science and technology and decommissioning and waste management. The Government is also investing in the renewal of the Chalk River Laboratories to enable safe and reliable operations, as well as infrastructure that is necessary to sustain and build science and technology capabilities in a cost effective manner.

Revenue from third-party work performed by CNL is recognized by AECL as principal. Revenue generated comes from work to support the nuclear energy industry, isotope production, the sale or lease of heavy water, and research and development services provided to third-parties.

Consolidated Statements of Operations and Accumulated Deficit – Accrual

$ Millions		Actual 2016-17	Budget 2017-18	Plan 2018-19	2019-20	2020-21	2021-22	2022-23	5 Year Total
Revenues									
Parliamentary appropriations		784	966	1,043	1,110	1,004	864	904	4,925
Commercial revenue	[1]	111	76	85	81	85	88	90	428
Interest income		5	4	3	3	3	3	3	15
		900	1,046	1,131	1,194	1,092	954	997	5,368
Expenses									
Cost of sales		84	49	55	52	55	57	59	278
Operating expenses	[2]	68	60	69	66	64	74	74	348
Contractual expenses	[3]	332	320	321	263	209	199	207	1,199
Decommissioning, waste management and contaminated sites expenses	[4]	26	276	269	259	246	235	226	1,235
Wrap-Up Office activities		5	12	–	–	–	–	–	–
		515	717	714	641	574	566	565	3,059
Surplus for the period	[5]	385	329	417	553	517	389	433	2,309
Accumulated deficit, beginning of period		**(7,339)**	**(6,983)**	**(6,677)**	**(6,271)**	**(5,723)**	**(5,211)**	**(4,827)**	
Transfer to deferred DWM funding		(25)	(18)	(6)	–	–	–	–	
Transfer to repayable contributions		(4)	(5)	(5)	(5)	(5)	(5)	(5)	
Accumulated deficit, end of period		**(6,983)**	**(6,677)**	**(6,271)**	**(5,723)**	**(5,211)**	**(4,827)**	**(4,400)**	

Note: Minor Differences due to rounding.

[1] Revenue for the 5 year plan has been adjusted for heavy water cash proceeds (China and Bruce lease) as these sales have been recorded previously.These amounts represent AECL's operating expenses.

[2] These amounts represent AECL's operating expenses.

[3] Contractual expenses include payments to CNL (less payments for decommissioning and waste management, cost of sales and capital) and contractor fees.

[4] Decommissioning, waste management and contaminated sites expenses represent the accretion expense on the decommissioning and waste management provision and Contaminated sites liability.

[5] Large surpluses are a result of Capital and DWM funding received for which there are smaller corresponding accrual expenses. Capital funding received is partially offset by amortization expense, and DWM funding is partially offset by accretion expense.

The projected decrease in revenues is related to the decline of sales of medical isotopes given that the National Research Universal reactor ceased routine production of the key medical isotope molybdenum-99 in October 2016, and was subsequently shut down in March 2018. As CNL develops its business development and commercial operations, future years' planned revenues may be adjusted. This will be reflected in subsequent Corporate Plan Summaries.

Parliamentary appropriations are aligned with projected expenditures.

Operating expenses are comprised of AECL oversight operations and amortization of tangible capital assets.

Reported Contractual expenditures are expected to decrease over the planning period as a result of decreased spending for the National Research Universal reactor, as the reactor is being shutdown.

Decommissioning, waste management and contaminated sites expenses include the increase in the net present value (accretion of discount) of the decommissioning and waste management provision and contaminated sites liability. As the provisions decrease, the decommissioning, waste management and contaminated sites expenses will decrease as well.

The surplus in 2016-17 is a result of revisions in estimate and timing of expenditures on the decommissioning and waste management provision. In future years, projected large surpluses are a result of capital and decommissioning and waste management funding received for which there are smaller corresponding expenses on an accrual basis.

Consolidated Statements of Financial Position - Accrual

			Plan				
$ Millions	**Actual 2016-17**	**Budget 2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Financial Assets							
Cash	37	25	25	25	25	25	25
Long-term disposal of waste fund	17	27	37	48	59	70	80
Investments held in trust	50	52	54	56	58	60	62
Trade and other receivables	71	47	40	40	40	40	40
Appropriations receivable	94	100	100	100	90	80	70
Inventory	4	4	4	4	3	2	1
Heavy Water Inventory	201	191	185	179	173	167	161
	474	446	445	452	448	444	439
Liabilities							
Accounts payable and accrued liabilities	71	48	51	50	49	51	48
Employee future benefits	25	22	19	15	12	9	7
Due to Canadian Nuclear Laboratories	112	100	105	120	125	125	130
Deferred decommissioning and waste management funding	270	288	294	294	294	294	294
Decommissioning and waste management provision	6,492	6,352	6,146	5,955	5,814	5,621	5,329
Contaminated sites liability	1,082	1,032	920	699	444	344	230
Customer advances and obligations	1	1	1	1	1	1	1
	8,053	7,843	7,536	7,133	6,738	6,445	6,039
Net Debt	(7,579)	(7,397)	(7,091)	(6,681)	(6,290)	(6,001)	(5,600)
Non-Financial Assets							
Tangible capital assets	595	719	819	957	1,078	1,173	1,200
Prepaid expenses	1	1	1	1	1	1	1
	505	636	766	856	1,005	1,135	1,251
Accumulated Deficit	**(6,983)**	**(6,677)**	**(6,271)**	**(5,723)**	**(5,211)**	**(4,827)**	**(4,400)**

Note: Minor Differences due to rounding.

The long-term disposal of waste fund will increase as AECL sets aside funding to account for future liabilities arising from the ongoing operation of the site which create radioactive waste and/or decommissioning liabilities.

The Decommissioning and waste management provision and Contaminated sites liability represent the future obligation to address waste management and decommissioning liabilities. The liability is expressed in terms of the net present value of future expenditures required to discharge the obligation. AECL's decommissioning and waste management provision and contaminated sites liability are adjusted annually to reflect progress to date, new estimates as they become available and new waste liabilities arising from ongoing CNL operations. The year-over-year change in these accounts represents the increase in the net present value with the passage of time offset by the reduction in the liability from the spending incurred each year.

Changes to the liability may occur in future years as CNL advances decommissioning activities. The assessment and planning of projects, which are understood in more detail as projects are undertaken, could result in adjustments to expected cost estimates, which would impact the value of the liability. However, as decommissioning work ramps up in the coming years, the liability will be decreasing commensurate with the liabilities being settled. As the decommissioning and waste management provision and contaminated sites liability decrease, so will AECL's overall negative Accumulated Deficit. The above projections do not attempt to capture the impact of potential future changes in the interest rate used to derive the net present value changes of the reported liability.

Furthermore, funding for new waste liabilities arising from ongoing operations (e.g. ongoing operations such as nuclear science and technology activities) is set aside to fund the future dispositioning of those liabilities.

Deferred decommissioning and waste management funding represents the proceeds of a long-term receivable pertaining to the heavy water sales.

Tangible capital assets are expected to increase in line with increased investment in infrastructure at the Chalk River site, as reflected by the important funding provided for revitalizing the Chalk River Laboratories in the coming years. Accumulated deficit changes are largely reflective of changes in surplus for the period.

Consolidated Statements of Cash Flows - Accrual

$ Millions	Actual 2016-17	Budget 2017-18	Plan 2018-19	2019-20	2020-21	2021-22	2022-23	5 Year Total
Operating Activities								
Net Cash Flow Before Revenue and Funding	(799)	(901)	(985)	(1,000)	(918)	(795)	(908)	(4,606)
Revenue	111	100	88	75	79	81	84	408
Funding/Parliamentary Appropriations	784	966	1,043	1,110	1,004	864	904	4,925
Discontinued Operations Net Cash Flow Before Funding	(5)	(12)	–	–	–	–	–	–
	91	**153**	**147**	**185**	**165**	**150**	**80**	**727**
Investing Activities								
Acquisition of Capital Assets	(139)	(165)	(147)	(185)	(165)	(150)	(80)	(727)
	(139)	**(165)**	**(147)**	**(185)**	**(165)**	**(150)**	**(80)**	**(727)**
Net Cash Flow	**(48)**	**(12)**	**–**	**–**	**–**	**–**	**–**	**–**
Beginning Cash	**85**	**37**	**25**	**25**	**25**	**25**	**25**	
Ending Cash	**37**	**25**	**25**	**25**	**25**	**25**	**25**	

Note: Minor Differences due to rounding.

The difference between the revenues presented in the 'Consolidated Statements of Operations and Accumulated Deficit' statement on page 48 and the above 'Consolidated Statements of Cash Flow' relate to differences in heavy water sales revenues and lease revenues. As noted in the Consolidated Statements of Operations and Changes in Accumulated Deficit, income related to existing heavy water leases have been excluded due to the fact that the revenue for the sales has been recorded in prior periods. However, the cash proceeds are recognized by AECL as a cash inflow for the year.

The overall negative net cash flow in 2017-18 is the result of the activities related to AECL's discontinued operations, which are drawing down on their existing cash balance.

Annex B – 2018-19 Operating Budget

Revenue and Surplus – Accrual

$ Millions	Actual 2016-17	Budget 2017-18	Plan 2018-19
Revenues			
Parliamentary appropriations	784	966	1,043
Commercial revenue	111	76	85
Interest income	5	4	3
	900	1,046	1,131
Expenses			
Cost of sales	84	49	55
Operating expenses	68	60	69
Contractual expenses	332	320	321
Decommissioning, waste management and contaminated sites expenses	26	276	269
Wrap-Up Office activities	5	12	–
	515	717	714
Surplus for the period	385	329	417
Accumulated deficit, beginning of period	**(7,339)**	**(6,983)**	**(6,677)**
Transfer to deferred DWM funding	(25)	(18)	(6)
Transfer to repayable contributions	(4)	(5)	(5)
Accumulated deficit, end of period	**(6,983)**	**(6,677)**	**(6,271)**

Note: Minor Differences due to rounding.

Government of Canada Planned Funding - Operating - Cash

			Plan					
$ Millions	Actual 2016-17	Budget 2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5 Year Total
AECL								
Decommissioning and waste management	364	499	593	679	649	534	637	3,093
Nuclear Laboratories	282	302	304	246	190	179	187	1,106
Total Government Funding AECL - Operating	**646**	**801**	**897**	**925**	**839**	**714**	**824**	**4,199**

Note: Minor Differences due to rounding.

Decommissioning and waste management funding has increased due to a ramp up of activities at the Port Hope Area Initiative and accelerated decommissioning and waste management at the Chalk River Laboratories. Funding for the Nuclear Laboratories (operating) is expected to decline as a result of the shutdown of the National Research Universal reactor which occurred in March 2018. However, overall funding for the Federal Nuclear Science and Technology Work Plan is expected to remain stable throughout the planning period of this Corporate Plan Summary.

Cash Flows - Cash

$ Millions	**Actual 2016-17**	**Budget 2017-18**	**Plan 2018-19**
Operating Activities			
Net Cash Flow Before Revenue and Funding	(799)	(901)	(985)
Revenue	111	100	88
Funding/Parliamentary Appropriations	784	966	1,043
Discontinued Operations Net Cash Flow Before Funding	(5)	(12)	–
	91	**153**	**147**
Investing Activities			
Acquisition of Capital Assets	(139)	(165)	(147)
	(139)	**(165)**	**(147)**
Net Cash Flow	**(48)**	**(12)**	**–**

Note: Minor Differences due to rounding.
Numbers are presented on a cash flow basis.

The 2018-19 Net Cash Flow before Revenue and Funding is approximately $84 million lower than budgeted for 2017-18. This is due mostly to an increase in the Decommissioning and Waste Management program related to the Port Hope Area Initiative ($33 million) and general decommissioning and waste management ($40 million). Cash flow from Funding/parliamentary appropriations is expected to increase in line with the above-mentioned increased expenditures.

Annex C – Capital Plan for 2018-19

AECL's Capital Plan for 2018-19 is based on CNL's annual and long-term plans (which have been accepted by AECL) and as per its assessment of infrastructure needs, including consideration for health, safety, security and environmental risks, current facility conditions, regulatory requirements and business needs. As a result, all investments are meant to renew and revitalize the Chalk River site to address deficiencies created by reduced level in capital investment from previous years, as assessed by CNL and approved by AECL.

In 2018-19, CNL will continue detailed planning to deliver on its long-term plans, with a view to revitalizing the Chalk River Laboratories. As such, the capital plan may need to be adjusted as scope, cost and schedule are matured for new projects.

The Capital Plan is meant to address two main areas of focus:

1. New and Renewed Science Infrastructure – Consistent with industry best practices, these investments are part of a longer-term plan to revitalize the Chalk River site and build new and renewed science facilities in order to build a modern, world-class nuclear science and technology campus.
2. Site Support Infrastructure: Services and Utilities – Immediate investments required to renew existing and ageing municipal-like infrastructure systems and facilities at the Chalk River site such as potable water, storm sewer, sewage amd electrical. These are necessary to respond to regulatory health, safety, security and environmental requirements, as well as to maintain overall site operational capability.

The Capital Plan does not include infrastructure which directly supports decommissioning and waste management activities. Such infrastructure (for example the Near Surface Disposal Facility) is captured under the decommissioning and waste management program, with funding provided by this program.

Further details on areas of investment for 2018-19 are presented below.

Government of Canada Funding - Capital - Cash

			Plan					
$ Millions	**Actual 2016-17**	**Budget 2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**5 Year Total**
AECL								
Capital	138	165	147	185	165	150	80	727
Total Government Funding - Capital	**138**	**165**	**147**	**185**	**165**	**150**	**80**	**727**

Note: Minor Differences due to rounding.

New And Renewed Science Infrastructure

Projects in this category include modern, low-carbon world-class science and technology and supporting facilities and infrastructure to enable delivery of CNL's commitments set out in its long-term plan, as approved by AECL. The projects to be undertaken are aligned with the strategy to revitalize the Chalk River site and include:

- **Advanced Nuclear Materials Research Centre**
  Overview: The objective is to combine the capabilities of existing but outdated facilities into a modern shielded facility and laboratory research complex. It will combine the current capabilities from the Universal Cells, Fuel and Materials Hot Cells, Recycled Fuel Fabrication Laboratory, the metallographic laboratories and the storage and fuel handling capabilities of the National Research Universal reactor rod bays into a modern shielded facility and laboratory research complex. This new facility will allow further advancements in the nuclear science and technology program, including on alpha research, small modular reactors, advanced fuels fabrication, nuclear forensics and response, as well as ongoing work in support of utilities as they look at reactor life extension and reliability.

  Status: Work in 2017-18 was primarily focused on developing options analysis and determining a preferred solution for this facility, as well as completing a pre-feasability conceptual design. Effort in 2018-19 will center around detailed planning, verifying feasibility, and conceptual design. Following completion of the planning phase, a request for proposal will be issued for the detailed design.

- **Building 215 Tritium Laboratory**
  Overview: The Tritium Laboratory is important to the science and technology activities undertaken at the Chalk River Laboratories. Due to the use of heavy water in Canadian-based reactor technologies, tritium issues may arise. As these reactors, including prototype reactors owned by AECL, are decommissioned, there will be an increasing need for expertise in tritium handling and management in order to deal with the high levels of tritium in the reactors.

  Furthermore, several international organizations, including national laboratories in the United States, United Kingdom and Japan, have utilized CNL's tritium expertise and capabilities. Therefore maintaining and enhancing this capability is important to grow CNL's science and technology stature going forward. It is expected that CNL's tritium capabilities will continue to be used to serve commercial customers and government priorities for public safety.

  Work related to Building 215 Tritium Laboratory involves re-purposing Building 215 to accommodate the Tritium Laboratory that is currently housed in Building 250. This is the final element of a multi-pronged strategy to permanently re-locate staff and facilities out of Building 250, prior to its safe turnover to the decommissioning and waste management program. Although the fire alarm system and automatic sprinkler systems are in service and maintained monthly, with other fire hazard upgrades proceeding as necessary, Building 250 represents an important fire risk at the Chalk River Laboratories.

  Status: Construction of Building 215 Tritium Laboratory was initiated in 2015-16 and continued through 2017-18. Work in 2018-19 will be focused on the preparation and submission of final safety analysis reports, Canadian Nuclear Safety Commission approval for active commissioning and operations and project close-out.

- **Business Hub (Office Building)**
  Overview: A new office building, or "business hub" is being planned at the Chalk River Laboratories to enable CNL to deliver on its long-term plan and vision for the site. The new facility will accommodate current and future staffing projections at CNL over the next 10 years and beyond and consider efficiencies of work processes, external collaboration/conference requirements, and potential future expansion based on business requirements. With a number of older buildings currently housing staff slated for decommissioning, the business hub will fill the space gap long-term. Currently the site is dependant on temporary office space via trailer systems. The office building is also expected to house the data centre, the library, and the health and wellness centre.

  Status: Activities in 2017-18 focused on the detailed planning for the Business Hub. Work in 2018-19 will include completing the detailed design of the facility and obtaining required approvals to initiate the award of the construction contract.

- **Logistics/Warehouse Building**
  Overview: The purpose of this project is to design and build a logistics building that will facilitate shipping and receiving at the Chalk River site. The building will be located at the outer gate area, with an attached security entrance and receiving area for all visitors and contractors. The facility will increase security at the outer precinct of the site and reduce the need for non-CNL staff to be on site, thereby reducing administrative costs, improving logistics productivity and efficiency, improving inventory efficiency and turnover, and reducing site traffic and congestion.

  Status: Activities in 2017-18 focused on the detailed planning for the logistics/warehouse building. Work in 2018-19 will include completing the detailed design of the facility and obtaining required approvals to initiate the award of the construction contract.

- **Support Services Facility (Maintenance Building)**
  Overview: The objective of the maintenance building is to consolidate maintenance resources, work management resources and equipment into a single, centralized location at the Chalk River site. This includes the consolidation of 32 maintenance shops into 3, which will allow CNL to achieve efficiencies and provide safer, more cost-effective support to the programs on site which require maintenance support services.

  Status: Work in 2017-18 focused on the detailed planning. In 2018-19, design and preparation will be initiated for construction of the new facility.

- **Facilities Revitalization**
  Overview: Numerous facilities at the Chalk River site require revitalization to enable long-term reliability. This includes activities to provide continued compliance with regulatory and licensing requirements. During 2018-19, efforts will focus on the refurbishment of the Chemistry and Radio Analytical Lab, Biological Research Centre, Nuclear Fuel Fabrication Facility and Waste Treatment Center, while seeing that fume hoods across the site remain compliant with applicable safety, security and environmental requirements.

  Status: During 2018-19, facilities such as the Chemistry and Radio Analytical Lab, Biological Research Centre, Waste Treatment Center and fume hoods across site will receive upgrades to eliminate known safety hazards, improve working conditions and enable the ongoing availability of the facilities. The Nuclear Fuel Fabrication Facility will receive required upgrades to start manufacturing specialty plated fuel elements on a commercial basis.

Site Support Infrastructure: Services and Utilities

Part of the revitalization of the Chalk River site includes the implementation of new utilities and services as a key enabler to the site's transformation. These are necessary to address years of underfunding in basic site infrastructure and to respond to regulatory requirements, address risks and hazards and reduce overall site operating costs. Projects include:

- **Domestic Water System**
  Overview: The construction of the domestic water system addresses current deficiencies with the supply of potable water for food preparation, sanitary and personal facilities and safe drinking water at the Chalk River site. The objective is to conform to current provincial and/or federal standards by bringing potable water to the Chalk River Site. This involves extending potable water supply from the town of Deep River to the Chalk River site. This is scheduled to be completed in April 2018.

  Status: As scheduled, the work to bring domestic water supply to Chalk River will be completed and closed out in 2017-18. The second phase of the work, to distribute domestic water to facilities, will continue with water quality testing at the user interface and planning for the provision of back flow prevention.

- **Sanitary Sewage Treatment Facility**
  Overview: The new sanitary sewage treatment facility will replace the existing facility so that the Chalk River site's sanitary effluent discharge water quality complies with federal and provincial wastewater quality requirements. This project is planned to be completed in 2018-19.

  Status: The construction work associated with the Sanitary Sewage Treatment Facility Project was substantially completed in 2017-18. In 2018-19, work will focus on completing the construction and undertaking the demonstration period.

- **Storm Water Management**
  Overview: The objective of the Storm Water Management Project is to improve the drainage system within the secured and controlled areas of the Chalk River Site.

  Status: Work in 2017-18 included the completion of the main line in the controlled area and the construction of the dry ponds. Activities in 2018-19 will focus on completing the branch line connections within the controlled area, consolidating 24 outfalls into 11, and closing out the project.

- **Switch Yard Upgrades**
  Overview: The purpose of this project is to provide the Chalk River site with the required electrical system for it to have access to adequate and reliable class IV power and reduce operational costs. The current switch yard is nearing the end of its designed life, is located in a flood plain and requires replacement. Spare and replacement parts for the current switch yard are difficult to obtain with some having to be custom made, which is not cost effective.

  Status: Activities in 2018-19 will focus on detailed planning, including concept development, and the preparation of detailed project cost estimates and schedules.

- **Natural Gas Project**
  Overview: This project will bring a natural gas pipeline and distribution system to the Chalk River site, converting Building 420 powerhouse boilers and several other buildings' heating systems to natural gas. This is expected to reduce operational costs and reduce the site's carbon footprint by approximately 8,700 tons per year, as the powerhouse currently runs on crude oil.

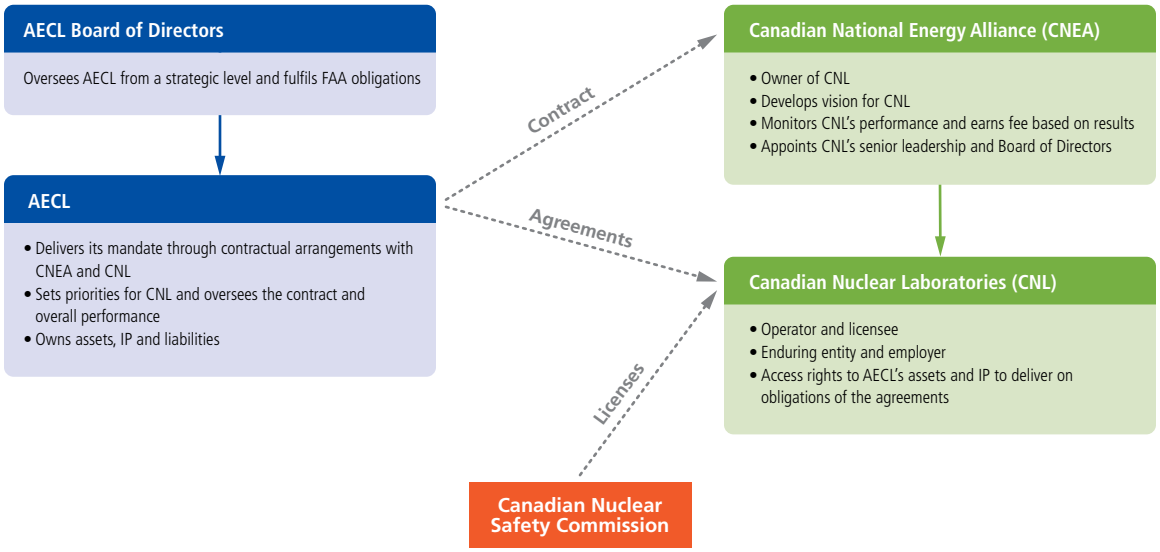
  Status: Work in 2017-18 led to the implementation of natural gas at a number of facilities at the Chalk River site, with natural gas now the lead heating fuel on site. In 2018-19 the project will enter the project close-out phase.

Annex D – Corporate Governance

Under the GoCo model, AECL provides oversight of the long-term contractual arrangement with CNL and its owner, Canadian National Energy Alliance, for the management and operation of AECL's sites. Under this model, AECL retains ownership of the sites, facilities, assets, intellectual property and liabilities while CNL is responsible for the day-to-day management of AECL's sites.

The figure below illustrates the roles and responsibilities under the GoCo model.

Government-owned, Contractor-operated Governance Overview

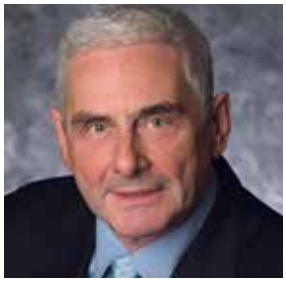


AECL's Internal Governance Structure

Board of Directors

AECL is governed by a Board of Directors, which provides strategic direction and advice to management. The Board, through its Chair, receives direction from the Corporation's single shareholder, the Government of Canada, as represented by the Minister of Natural Resources. It is accountable to Parliament through the Minister of Natural Resources.

As at March 2018, the Board consists of six Directors (the Chair, appointed Board members and the President and CEO) who represent the Canadian business and science and technology communities. AECL's Directors, the Chair of the Board and the President and CEO are appointed by the Governor-in-Council by Order-in-Council. A list of Board members is presented below.



Dr. Claude Lajeunesse

Dr. Claude Lajeunesse is Chair of AECL's Board of Directors. He has been serving on AECL's board since March 2005, and has been in the role of Chair since August 2016.

Previously, Dr. Lajeunesse served as President and CEO of the Aerospace Industries Association of Canada, President of Concordia University in Montréal, and President and Vice-Chancellor of Ryerson University in Toronto. He is also past President and CEO of the Association of Universities and Colleges of Canada, now called Universities Canada.

Dr. Lajeunesse obtained his B.Sc.A. in engineering physics from École Polytechnique de Montréal before going on to achieve his M.Sc. and his Ph.D. in Nuclear Engineering from Rensselaer Polytechnic Institute in Troy, New York.

AECL Committees: Audit, Human Resources & Governance

Ms. Martha Tory

Martha Tory was appointed to AECL's Board of Directors in October 2016 and serves as Chair of the Board's Audit Committee.

Ms. Tory retired in 2015 from Ernst & Young LLP where she was an audit partner with responsibility for clients in a variety of industries. She is currently involved as a Board member with a number of organizations: her current positions include being a Board member and Chair of the Audit Committee at HomEquity Bank, and Board Member of the MaRS Discovery District, University of Toronto Press and George Brown College. She is also a Board member, member of the Audit Committee and Chair of the Business and Human Resources Committee at Sunnybrook Health Sciences Centre.

Ms. Tory is a member of the Accounting Standards Oversight Council, an independent body responsible for monitoring and evaluating the performance of and providing input into the strategic direction and priority setting of the Accounting Standards Board and Public Sector Accounting Board, the groups responsible for determining accounting standards for Canadian organizations.

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

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

James Burpee

Mr. Burpee was appointed to the to AECL's Board of Directors in June 2017 and serves as Chair of the Board's Human Resources and Governance Committee.

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

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

Mr. Burpee is currently a Senior Counsel in the Energy and Environment Practice at Sussex Strategy Group.

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

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

Philip Jennings

Philip Jennings was appointed to AECL's Board of Directors in June 2017

Mr. Jennings is currently the Associate Deputy Minister at Natural Resources Canada. Prior to taking on this role, Mr. Jennings served as Assistant Deputy Minister, Industry Sector at Innovation, Science and Economic Development Canada, and in a variety of senior management roles at Natural Resources Canada, including as Assistant Deputy Minister, Major Projects Management Office; Assistant Deputy Minister, Atomic Energy of Canada Limited Restructuring; Director General, Petroleum Resources Branch; and Director, Frontier Lands Management. He also held other senior positions at the Privy Council Office, Human Resources Development Canada, as well as the Social Sciences and Humanities Research Council.

Mr. Jennings holds a Bachelor of Social Sciences with Honours in Economics from the University of Ottawa and a Masters of Economics from Queen's

AECL Committees: None

Carmen Abela

Carmen Abela was appointed to AECL's Board of Directors in June 2017.

Ms. Abela brings almost 20 years of experience advising senior leaders on public sector oversight, governance, accountability, internal audit, risk and performance management.

Ms. Abela is currently the Managing Director of WindReach Consulting Services Inc., and previously served as Interim Risk Officer at the Bank of Canada and Chairperson of the Board for the Institute of Internal Auditors Canada (IIA Canada).

Ms. Abela has a Masters degree in Public Administration from Carleton University. Ms. Abela is a Certified Internal Auditor and holds a Chartered Director's designation from the Director's College.

AECL Committees: Audit, Human Resources & Governance

Richard Sexton

Richard Sexton is the President and Chief Executive Officer of AECL.

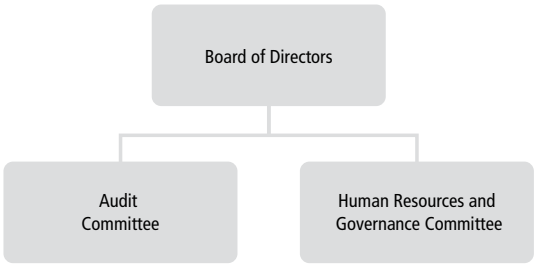
Mr. Sexton has over 32 years of experience in decommissioning and waste management gained through leadership roles on some of the largest and most complex decommissioning projects in the world, including Magnox and Sellafield in the United Kingdom, and Rocky Flats and the Connecticut Yankee site in the United States. Most recently, Mr. Sexton served as the Chief Operating Officer for the Magnox Reactor Accelerated Sites, where he was responsible for directing transformational change in decommissioning project strategy, delivery approach, cost, and schedule. Mr. Sexton also has extensive experience in managing multiple stakeholder relationships.

As President and CEO of AECL, Mr. Sexton is leading the organization in its oversight role, seeing that the priorities of Government are delivered safely and efficiently under the GoCo model.

Mr. Sexton holds an M.S. in Radiological Health Engineering from Northwestern University, a B.S. in Chemistry and American Board of Health Physics Certification, Part I. He has published and presented multiple papers on decommissioning and holds two patents for radiation detection equipment.

AECL Committees: None

Board of Directors and its Committee Structure



There are two committees that support the Board: the Audit Committee and the Human Resources and Governance Committee. The Audit Committee has a mandate to oversee the external and internal auditors, direct the internal audit function and assess the adequacy of AECL's business systems, practices and financial reporting, in accordance with the Financial Administration Act. The Audit Committee meets with management, the internal auditor and independent auditors on a regular basis to discuss significant issues and audit findings, in accordance with their mandate. The independent auditors and internal auditor have unrestricted access to the Audit Committee, with or without management's presence.

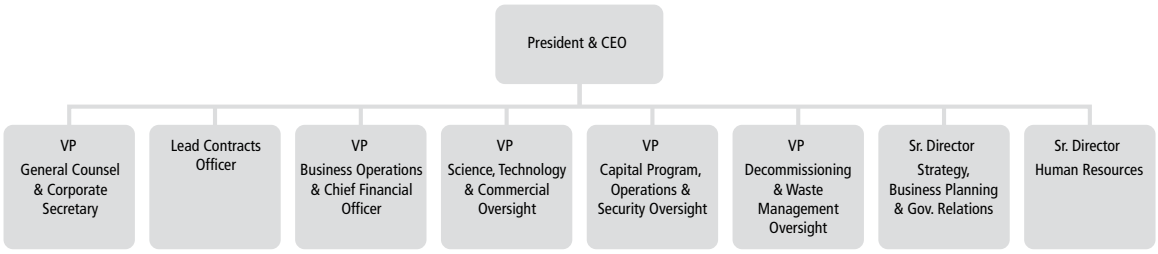
Among other things, the Audit Committee oversees the development of the Corporate Plan for alignment with the direction provided by the Board, and reviews the Plan before it is reviewed and approved by the Board of Directors and submitted to the Minister of Natural Resources.

Among other things, the Human Resources and Governance Committee oversees the areas of human resources and organizational health and safety.

Executive Management

The Governor-in-Council appoints a President and CEO who leads AECL in delivering on its mandate, including its oversight role as part of the GoCo model. All direct reports to the CEO of AECL are appointed by the Board on the recommendation of the Human Resources and Governance Committee based on the recommendation of the President and CEO. Each of the CEO direct reports is accountable for specific areas of business and operations as approved by the President and CEO and endorsed by the Board's Human Resources and Governance Committee.

AECL'S Executive Management Structure



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