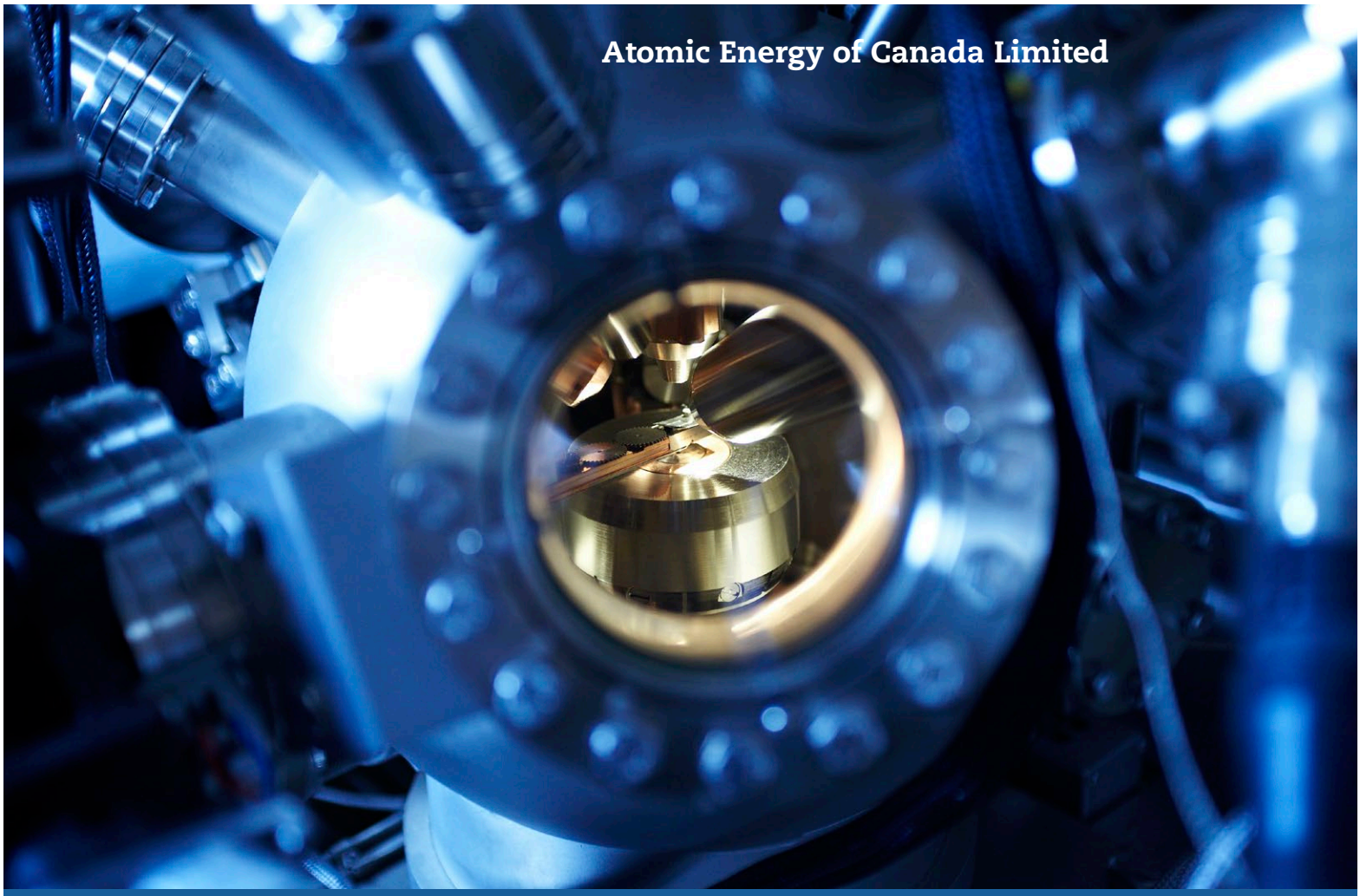
Atomic Energy of Canada Limited



Report to the Standing Committee on Public Accounts

AECL
EACL

This report is Atomic Energy of Canada Limited's response to the Report of the Standing Committee on Public Accounts on the Special Examination Report – Atomic Energy of Canada Limited, of the 2017 Fall Reports of the Auditor General of Canada

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Background

Building a world-class science campus

Since the implementation of the Government-owned, Contractor-operated (GoCo) model in 2015, efforts to revitalize the Chalk River Laboratories site have been underway, enabled by a $1.2 billion investment from AECL and the Government of Canada, to transform the site into a modern, world-class science campus.

Plans for new buildings are well underway, a new logistics facility is under development and two new science buildings have already been inaugurated: the Harriet Brooks Building that enables unique work in materials science, as well as the Tritium Laboratory that facilitates work to further understand tritium handling and management.

As a federal Crown corporation, Atomic Energy of Canada Limited (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.

The GoCo model allows AECL to leverage the expertise and experience of the private sector to accelerate the decommissioning and radioactive waste management program and build a world-class nuclear laboratory at Chalk River that fulfills Government requirements, while reducing costs and risks to Canada.
AECL, as an agent, of Government brings value to Canada by overseeing the GoCo arrangement and supporting the Government's development of nuclear policy.

AECL plays a challenge function with a view to advancing its priorities in the most effective and efficient manner, whilst ensuring CNL maintains safety, security and the protection of the environment.

Auditor General Special Examination of AECL

In June 2017, the Office of the Auditor General (OAG) published its report of the Special Examination of AECL.

The objective of the Special Examination was to: "determine whether the systems and practices we selected for examination at Atomic Energy of Canada Limited were providing it with reasonable assurance that its assets were safeguarded and controlled, its resources were managed economically and efficiently; and its operations were carried out effectively as required by section 138 of the Financial Administration Act." The scope of the audit was based on the auditors' assessment of the risks faced by AECL, which could affect its ability to meet the requirements of the Financial Administration Act.

Results

The OAG concluded that AECL has in place overall good corporate management practices and good contract management practices. A significant deficiency was noted in Board renewal, which the OAG acknowledged is outside of the control of AECL.

A few areas were noted by the OAG as meeting their criteria, but with improvement needed. An action plan was developed by AECL to address these, and all actions were completed within five months of AECL receiving the report. AECL's action plan can be found online at: www.aecl.ca

Public Accounts Committee Report

On May 8 2018, the House of Commons Standing Committee on Public Accounts (the Committee) met to discuss the OAG's Special Examination report of AECL. On June 8 2018, the Committee published a report entitled 'Report 49 – Special Examination Report – Atomic Energy of Canada Limited, of the 2017 Fall Reports of the Auditor General of Canada' (the Committee Report). The Committee Report reviewed the OAG Special Examination, including its findings and recommendations, and also looked at AECL's response to those recommendations and the measures taken to respond to the OAG's recommendations.

Two recommendations were presented in the Committee Report, this report sets out AECL's response to the Committee's recommendations:

Recommendation 1:
Atomic Energy of Canada Limited (AECL) should present the House of Commons Standing Committee on Public Accounts with a report outlining all the measures and targets in its performance assessment of the Canadian Nuclear Laboratories.

Recommendation 2:
AECL should provide the Committee with a report outlining the percentage of existing and new employees on the contract management team that have completed the contract management training program.

Removing contaminated buildings

Since 2015 at the Chalk River Laboratories, some 63 buildings totaling over 178,000 square feet of floor space have been decontaminated and demolished, paving the way for new and renewed science buildings at Chalk River Laboratories. By contrast, previous plans prior to the implementation of the GoCo model only planned for 3 buildings to be demolished over the same time period.

Recommendation 1 – Regarding performance measurement of the Canadian Nuclear Laboratories that, by 31 December 2018, Atomic Energy of Canada Limited should present the House of Commons Standing Committee on Public Accounts with a report outlining all the measures and targets in its performance assessment of the Canadian Nuclear Laboratories.

AECL's response

Moving forward on Canada's largest remediation project

The Port Hope Area Initiative represents Canada's commitment to clean-up and safely manage historic low-level radioactive waste situated in the municipalities of Port Hope and Clarington, in Ontario. The objective is to safely manage roughly 1.7 million cubic meters of historic low-level radioactive waste and contaminated soils.

Under AECL's oversight, the project has moved forward significantly since the implementation of the GoCo model. Long-term waste management facilities have been constructed at both the Port Hope and Port Granby projects and both are receiving historic low-level waste. This is a significant step forward in the delivery of Canada's largest remediation project.

AECL's Performance Measurement Framework

As a Crown corporation, AECL reports to Parliament through the Minister of Natural Resources. On an annual basis, AECL develops a Corporate Plan that is approved by the Governor-in-Council, a summary of which is tabled in Parliament annually. AECL also reports on its activities through its Annual Report. The Corporate Plan Summary and the Annual Report are both available on its website www.aecl.ca.

AECL has developed a comprehensive Performance Measurement Framework, included in its Corporate Plan, to assess the overall performance of the GoCo model in order to demonstrate that it is enhancing efficiency and effectiveness, and is containing and reducing costs and risks over time.

AECL's Performance Measurement Framework relies heavily on multiple systems to measure CNL. This includes a broad range of metrics, including the performance of AECL's contractor, CNL, against milestones and other performance objectives for short, medium and long-term outcomes. Progress will continue to be further measured and tracked, as sufficient data becomes available and appropriate baselines are established, through CNL's long-term planning and the implementation of an Earned-Value Management System. Over time, all of this will provide the data needed to evaluate the extent to which the objectives of the GoCo model have been met.

The Performance Measurement Framework for 2018-19 and the results for 2017-18 are further detailed in the annex.

AECL's Oversight of its Contractor, Canadian Nuclear Laboratories

Part of AECL's role under the GoCo model is to set priorities for CNL, and to oversee and assess its performance in order to provide value for Canada. This is achieved by having a small organization, staffed by experts in their field, in order to provide oversight to the delivery of CNL's activities.There are several measures and targets used by AECL in the measurement of CNL's performance, as detailed below.

Plans

On an annual basis, AECL provides strategic guidance to CNL for the development of its annual plan and budget. AECL then accepts CNL's plan, which sets out the scope and budget of all activities to be delivered in its management of all of AECL sites, with the exception of the Whiteshell Laboratories and the Nuclear Power Demonstration reactor, which are tracked separately. CNL's performance is tracked based on the activities set out in this annual plan, including specific project milestones as well as key deliverables. AECL's subject matter experts also carry out oversight and direct observation of operations and progress against targets in the field.

CNL's annual plans are supported and aligned with longer-term plans which are also accepted by AECL. These long-term plans include a 10-year plan that is updated at least every three years, as well as an annually-updated 5-year plan. Together, these plans allow AECL to have a strategic view of plans over 5 and 10-year horizons, as well as a detailed understanding of the activities that are required in-year to deliver on longer-term objectives.

CNL's performance is also systematically monitored and assessed based on a Performance Evaluation and Measurement Plan that is issued by AECL to the contractor at the beginning of each year. The Performance Evaluation and Measurement Plan is based on, and developed in parallel with, the annual plan. This plan outlines AECL's priorities for CNL and sets out areas where the contractor stands to earn fee for the management and operation of AECL's sites, as per contractual arrangements.

AECL uses this Performance Evaluation and Measurement Plan to incentivize the contractor to deliver on specific activities that are priorities for AECL, including, for example, transformation initiatives, the achievement of health, safety and environmental performance, project delivery and the stewardship of science and technology capabilities.

Enabling new technologies

Looking towards the future, opportunities related to small modular reactors are being explored 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 and could help meet Canada's commitment to fight climate change.

Expertise at the Chalk River Laboratories could be leveraged to advise both the government and commercial companies on the technology. CNL is currently exploring options to host demonstration small modular reactors at one of AECL's sites. Such projects, while still in the exploratory stage, could enable further scientific discoveries and innovation.

Conceptual image: Third Way https://www.thirdway.org

For work at the Whiteshell and Nuclear Power Demonstration reactor sites, the measurement of CNL's performance is based on cost and schedule performance against a target cost over the entire project.

It should also be noted that as safety, security and the protection of the environment are a priority for AECL, there are several mechanisms to ensure that these areas are never compromised. This includes having the flexibility to revise plans and budgets if changes are required in order to protect the health, safety and security of people and the environment, as well as contractual provisions that allow AECL to reduce fees in instances where there are safety and security-related incidents.

Earned Value Management System

AECL makes use of an Earned Value Management System (EVMS) in order to track and monitor the activities of CNL. EVMS is an internationally-recognized tool that allows for the simultaneous tracking of work scope, schedule and cost objectives, providing a high degree of control and risk management. EVMS is applied across all of CNL's plans at all sites and supporting areas of work in order to track projects and performance. It also provides a multi-year performance baseline capturing long-term scope, schedule and cost that can be used to monitor performance over the long-term.

AECL is able to monitor the work completed and the actual costs incurred compared to the work that was planned and budgeted. An independent review of the EVMS at CNL has ensured its compliance with international accreditation standards.

The next generation of cancer treatment

With the implementation of the GoCo model, a focus has been placed on building a world-class nuclear science and technology campus at the Chalk River Laboratories. This includes a renewed interest in looking at the nuclear health science of tomorrow. As part of its research work, CNL is looking into alpha-emitting isotopes which could help effectively fight cancer and other diseases by targeting treatments directly to tumors, limiting the damage to other areas of the body.

Contractor Assurance System

The Contractor Assurance System (CAS) is a comprehensive and integrated performance assurance regime that allows for:

- Capturing performance metrics
- Identifying and addressing program and performance deficiencies and opportunities for improvement
- Providing a means and the requirements to report deficiencies to responsible managers
- Establishing and effectively implementing corrective and preventive actions
- Sharing lessons learned across all aspects of operations

AECL uses the CAS to track CNL's performance across all areas of CNL's operations.

Recommendation 2 – That, by 31 December 2018, Atomic Energy of Canada Limited should provide the Committee with a report outlining the percentage of existing and new employees on the contract management team that have completed the contract management training program.

AECL's response

As noted in its Action Plan in response to the OAG Special Examination, AECL has strengthened the skills and competencies of the contract management team through both formal classroom and on-the-job training. The Lead Contract Officer, who was recognized by the OAG as having extensive experience in managing GoCo contracts, has continued to provide comprehensive on-the job training and mentorship to the rest of the AECL contract management staff since the time of the OAG review.

To further develop the team, AECL has implemented a custom, formal, classroom training program modelled on the US Federal government contracting certification program, with an emphasis on GoCo contracting. All contract management staff are participating in the program, which is delivered by an external training provider. Any staff joining the team in the future will have a comprehensive tailored induction and training program depending on their skills and experience.

AECL's succession plan includes consideration for the key skills and core competencies needed in the contract management team.

As of 21 September 2018, 100% of AECL's contract management staff (new and existing employees) have completed the contract management training program.

Protecting the environment

Management of radioactive waste and remediation of contaminated lands is vital for AECL's responsible stewardship of the environment. For example, the Fuel Packaging and Storage facility is a state-of-the-art, above-ground storage facility that is being used to store used fuel which was previously located in tile holes that were showing signs of corrosion. The objective is to protect the environment by moving used fuel into a facility where it is further isolated from the environment, until a final repository for the used fuel is available.

Innovations resulting from the GoCo model have enabled CNL to make significant strides in the execution of this project. Indeed current projections will see the project completed two years ahead of schedule, reducing risks and costs, and improving the environmental management of this waste.

AECL Performance Measurement Framework

AECL 2017-18 Results

Taken from AECL's 2018 Annual Report

The following tables set out the results achieved in 2017-18 based on performance measures and targets that had been set out in AECL's 2017-18 Corporate Plan Summary.

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.	Completed. All actions scheduled for 2017-18 were completed.	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.

DECOMMISSIONING AND WASTE MANAGEMENT *(continued)*				
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.	Achieved ahead of schedule. 26 demolitions were completed in 2017-18, including 4 which were originally planned for future years but were done ahead of schedule.	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.

DECOMMISSIONING AND WASTE MANAGEMENT *(continued)*				
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.	Achieved. The facility started receiving waste in December 2017.	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.
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.

Nuclear Laboratories

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.	Completed. Milestones in the annual plans were 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.	Achieved. 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.	
Grow commercial opportunities for the laboratories.	Increase in commercial revenues.	Revenues are more than $60M (not including isotope revenue).	Achieved.	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.
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.	Achieved.	Proper planning and execution is important in providing for the safe and orderly shutdown of the National Research Universal reactor.

NUCLEAR LABORATORIES *(continued)*

Outcome	Performance measure	Target	Results	What this means
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.	Completed. High power operations were achieved for 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 was shutdown in March 2018. Prior to this date, the reactor continued to provide science and technology services in support of the nuclear and other industries.
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.	Mostly achieved. CNL submitted a detailed plan outlining long-term indirect cost projections. However activities are continuing in 2018-19 to refine the plan in order to achieve AECL's objectives.	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.
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.

NUCLEAR LABORATORIES *(continued)*				
Outcome	Performance measure	Target	Results	What this means
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.	Mostly achieved. Several notable physical improvements were completed as per schedule. However IT systems upgrades were 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.	Achieved. 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.	

NUCLEAR LABORATORIES *(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.	2017-18: Completion of milestones defined in CNL's annual plan.	Mostly achieved. 51 of the 56 milestones related to infrastructure projects were met, and all major milestones were achieved on time and on budget. Three of the five milestones which were not achieved relate to IT projects (noted above), and the other two relate to the new sanitary sewage treatment facility and the domestic water project, both of which were completed shortly after the end of the fiscal year.	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.

AECL Performance Measures for 2018-19 and Future Years

Outcomes and targets for 2018-19 taken from AECL's Corporate Plan 2018-19.

The following tables set out AECL's performance measures and targets over the short, medium and long-term starting in 2018-19.

Decommissioning and Waste Management

		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.	
	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.	

DECOMMISSIONING AND WASTE MANAGEMENT *(continued)*

Outcome	Performance measure	Target: Short-term 1-2 years	Target: Medium-term 3-4 years	Target: 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, 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, 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.

DECOMMISSIONING AND WASTE MANAGEMENT *(continued)*

Outcome	Performance measure	Target: Short-term 1-2 years	Target: Medium-term 3-4 years	Target: 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.
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.
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.
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.

Nuclear Laboratories

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.

NUCLEAR LABORATORIES *(continued)*

Outcome	Performance measure	Target		
		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.
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.
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.

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