

National Research Council Canada's 2023-24 Departmental results report

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National Research Council Canada's 2023-24 Departmental results report

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From the Minister

It is my pleasure to present the 2023-24 Departmental Results Report for the National Research Council of Canada (NRC).

Throughout the past year, the NRC and other organizations in the Innovation, Science and Economic Development (ISED) Portfolio worked closely with other government departments and agencies to build a more resilient, sustainable and inclusive economy that benefits all Canadians.

The NRC's newly released 2024-2029 Strategic Plan: Research Powering Innovation for Canada outlines how the NRC will drive research and innovation to address Canada's economic, social, and environmental challenges. By leveraging cutting-edge technologies and collaborating with partners in critical areas like clean energy, life sciences, artificial intelligence and quantum technologies, the NRC is helping position Canada for the future. In the past year, the NRC began scoping work with provinces and territories for novel approaches to increase Canada's housing supply, licensed therapeutics technologies to develop new Canadian healthcare solutions, and advanced foundational quantum research projects in support of Canada's National Quantum Strategy and maintaining Canada's global leadership in the field.

The National Research Council Industrial Research Assistance Program (NRC IRAP) has been supporting Canadian industry for over 75 years with a unique combination of advice and financial support. In 2023-24, NRC IRAP helped over 9,400 Canadian companies grow and bring their ideas to market. The NRC will continue to open doors and help Canadian businesses enter global markets by supporting Canada as co-chair of Eureka, the largest innovation network in the world. Through the NRC, Canada is now a member of the Square Kilometre Array Observatory, which will provide Canadian scientists with access to one of the world's leading astronomical

facilities, and help maintain Canadian leadership in the international astronomical community. Across all industries and research, the NRC has reinforced its commitment to inclusive innovation by driving transformative research that empowers Indigenous communities, promoting diversity-focused recruitment programs, and supporting early career scientists from all backgrounds.

I invite you to read this report to learn more about how the NRC is working together with Canadians of all backgrounds and in all regions—urban and rural—to position Canada as a leader in the global economy.

From the President

The National Research Council of Canada (NRC) is Canada's largest federal research and development organization with more than a century of achievement. Today we are working to deliver on our new 5-year strategic plan, which establishes our priorities in research and innovation in areas where we can have the greatest impact, help meet the challenges Canada faces and help secure a prosperous future.

Over the past year, we worked to advance clean hydrogen as an alternative to fossil fuels through our Materials for Clean Fuels Challenge program. We used artificial intelligence to make landing helicopters in degraded visual environments safer, and designed a way for human immune cells to kill cancer cells, which is slated to be tested in clinical trials in 2024 to fight B-cell leukemia and lymphoma.

For more than 75 years, the NRC has worked through the Industrial Research Assistance Program (NRC IRAP) to support small and medium-sized enterprises (SMEs) in developing innovations that drive the growth of these businesses and Canada's future prosperity. In 2023-24, NRC IRAP expanded its advisory service offering to help innovative

Canadian SMEs protect their intellectual property (IP) through the IP Assist program. NRC IRAP continues to deliver its long-standing mission as advisor, connector and funder of our most promising businesses. As we look to the future, we are excited to bring new value as we pursue growth together, for example, in unlocking the value of artificial intelligence to drive innovation around new business models, products and services.

Collaboration is an important contributor to the NRC's results, and international collaboration helps spark innovation, open new markets and strengthen ties around the world. As a full member of the largest innovation network in the world - Eureka - Canada took on the co-chair role with Germany for 2024-2025—the first time in the network's almost 40-year history that the chair role will be shared and the first time a non-European country will take on this role. Eureka has helped thousands of Canadian businesses to connect with new partners, new research collaborators and develop relationships in new markets early in their growth journey.

With research excellence at the core of our mandate, we remain committed to fostering the next generation of scientists and engineers by launching initiatives to support the development of our workforce and diverse Canadian STEM talent. Excellence in research and innovation depends on a diversity of viewpoints, and we are bringing a range of perspectives into the design and delivery of our programs to make our research and innovation activities accessible to and beneficial for all Canadians. The NRC values a representative workforce and the performance results help us target our efforts where they are most needed. In 2023-24, we hired our first Indigenous engagement advisor as part of the newly created Indigenous Strategy and Engagement team, and developed the NRC's Indigenous Engagement Strategic Plan for 2024–29. This outlines our key objectives for Indigenous-inclusive innovation, including integrating Indigenous priorities into our research and operational activities.

As we reflect on our results, we are committed to delivering value for Canada and challenging ourselves to improve and meet ambitious targets along the way. We are pleased to present our departmental results report to allow Canadians to see what we have achieved and where we strive to do more. I am pleased to lead the NRC in delivering on our strategic plan, building on a foundation of leadership in research powering over 100 years of innovation.

Results – what we achieved

Core responsibility and internal services

- Core responsibility: Science and innovation
- Internal services

Core responsibility: Science and innovation

▼ In this section

- Description
- Progress on results
- Key risks
- Resources required to achieve results
- Related government-wide priorities
- Program inventory

Description

Grow and enhance Canada's prosperity through:

- undertaking, assisting and promoting innovation-driven research and development (R&D);
- advancing fundamental science and Canada's global research excellence;
- providing government, business and research communities with access to scientific and technological infrastructure, services and information; and
- supporting Canada's skilled workforce and capabilities in science and innovation.

The NRC has 3 departmental results for tracking and reporting against its core responsibility:

- Scientific and technological knowledge advances
- Innovative businesses grow
- Evidence-based solutions inform decisions in government priority areas

Progress on results

This section presents details on how the department performed to achieve results and meet targets for its core responsibility Science and innovation. Details are presented by departmental result.

Table 1: Targets and results for Science and innovation

Table 1 provides a summary of the target and actual results for each indicator associated with the results under scientific and technological knowledge advances.

Scientific and technological knowledge advances

Departmental result indicators	Target	Date to achieve target	Actual results
Citation score of National Research Council generated publications relative to the world average.	1.25	March 31, 2024	2021–22: 1.21 2022–23: 1.19 2023–24: 1.28
Number of peer-reviewed publications generated by the NRC	1,050	March 31, 2024	2021–22: 1,187 2022–23: 1,222 2023–24: 1,277
Number of patents issued to the NRC	90	March 31, 2024	2021–22: 99 2022–23: 104 2023–24: 166

Departmental result indicators	Target	Date to achieve target	Actual results
Number of licence agreements	35	March 31, 2024	2021–22: 30 2022–23: 46 2023–24: 39
Ratio of the NRC's workforce made up of equity deserving groups relative to Canadian average labour market availability - Women	1.00	March 31, 2024	2021–22: 1.03 2022–23: 1.04 2023–24: 1.07
Ratio of the NRC's workforce made up of equity deserving groups relative to Canadian average labour market availability - Indigenous Peoples	0.75	March 31, 2024	2021–22: 0.60 2022–23: 0.63 2023–24: 0.74

Departmental result indicators	Target	Date to achieve target	Actual results
Ratio of the NRC's workforce made up of equity deserving groups relative to Canadian average labour market availability - Racialized persons	1.00	March 31, 2024	2021–22: 0.94 2022–23: 1.00 2023–24: 1.10
Ratio of the NRC's workforce made up of equity deserving groups relative to Canadian average labour market availability - Persons with disabilities	0.65	March 31, 2024	2021–22: 0.45 2022–23: 0.57 2023–24: 0.65

Innovative businesses grow

Departmental result indicators	Target	Date to achieve target	Actual results
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Departmental result indicators	Target	Date to achieve target	Actual results
Percentage of research and development clients who report positive benefits of working with the NRC	90%	March 31, 2024	2021-22: 93% 2022-23: 89% 2023-24: 84%
Percentage revenue growth of firms engaged with the National Research Council (NRC Industrial Research Assistance Program-engaged firms)	20%	March 31, 2024	2021-22: 32% 2022-23: 35% 2023-24: 35%
Percentage growth in Canada's science and technology related jobs through NRC supported firms (NRC Industrial Research Assistance Program - engaged firms)	10%	March 31, 2024	2021-22: 18% 2022-23: 21% 2023-24: 21%
Revenue earned from clients and collaborators	\$80.0M	March 31, 2024	2021-22: \$86.2M 2022-23: \$84.7M 2023-24: \$67.1M

Evidence-based solutions inform decisions in government priority areas

Departmental result indicators	Target	Date to achieve target	Actual results
Revenue earned from other federal government departments	\$80.0M	March 31, 2024	2021–22: \$79.6M 2022–23: \$80.4M 2023–24: \$93.1M
Number of NRC peer-reviewed publications co-authored with other federal government departments	60	March 31, 2024	2021–22: 83 2022–23: 62 2023–24: 75

Additional information on [the detailed results and performance information](#) for the NRC's program inventory is available on GC InfoBase.

Details on results

The following section describes the results for Science and innovation in 2023–24 compared with the planned results set out in the NRC's departmental plan for the year. Note: the NRC leveraged its internal generative AI tool (AI Zone) to support the development of content within this report; all AI generated content has been reviewed and validated by a human.

▼ Departmental result 1: Scientific and technological knowledge advances

Contributing to the advancement of research in important areas for Canada, the NRC met all but one of its targets for 2023-24, surpassing the targets for peer-reviewed publications and patents issued by sizable margins. The value of the NRC's contribution to global scientific and technological knowledge is shown through the NRC's improved citation score, which surpassed the target for the first time since 2018-19. The NRC also contributes to a vibrant research community by improving its internal representation and providing opportunities for diverse researchers. The ratio of the NRC's workforce relative to the Canadian average labour market availability exceeded the target for 3 equity-deserving groups (women, racialized persons, and persons with disabilities) and missed the target for representation of Indigenous Peoples by 1%.

Results achieved

Digital technologies to advance research in priority areas for Canada

The NRC's innovative use of digital tools is helping shape the future of critical industries, and bolster national strategies and technological capabilities.

In 2023-24, the NRC worked with innovative organizations to explore practical applications of AI (artificial intelligence) and other digital technologies:

- The NRC partnered with British Columbia (B.C.) Ferries and Simon Fraser University on a project using AI techniques to analyze

3 years of ship data, and developed a model to predict real-time fuel consumption with the goal of integrating the model into vessels to help guide operators and potentially reduce fuel consumption. The project provides students with practical experience, gives the NRC access to valuable vessel datasets and enables B.C. Ferries to access NRC research expertise.

- In collaboration with the University of Waterloo, the NRC developed an algorithm based on machine learning for real-time sea-ice classification, which allows for accurate detection of hazards for safer navigation of autonomous vessels. This partnership also produced a control strategy for autonomous navigation in ice-covered waters to improve vessel safety and position Canada as an innovator in this field.
- The NRC started working with the Government of the Northwest Territories to develop sensing systems and digital products for winter roads. This work will help understand and monitor winter roads to support more reliable and cost-effective resupply (e.g., food, fuel) of Northern communities in a rapidly changing climate.
- The NRC collaborated with the Department of National Defence (DND) on research projects using VR (virtual reality) to monitor peoples' reactions in stressful situations and provide training in making decisions in difficult ethical situations. The success of these projects led to a new project with Defence Research and Development Canada on contactless vital sign monitoring.
- In another project using VR, cadets from the Royal Canadian Mounted Police (RCMP) were trained in scenarios related to equity, diversity, and inclusion (EDI), and de-escalation of stressful situations using fully functional demos. The project was so successful that the RCMP invited the NRC to present it to the international Security Simulation Technologies Group in Regina.

- The NRC launched a 4-year Critical Battery Materials Initiative to use automated, AI platforms to discover new battery materials and processes in a third of the time it usually takes, and signed multi-year collaborative projects with the University of Waterloo and University of Toronto on battery materials discovery and self-driving labs. These collaborative efforts will contribute to growing the Canadian battery supply chain in support of Canada's critical minerals strategy.

Leveraging the potential of quantum and nanotechnologies

The NRC is harnessing the transformative powers of quantum and nanotechnologies to develop real-world solutions across various sectors, from healthcare and telecommunications to advanced manufacturing and computing.

The NRC's collaborative challenge programs provide funding opportunities for leading Canadian researchers to work with the NRC to advance Canada's global position in quantum research:

- Under the Quantum Sensors Challenge program, 2 international projects were launched as part of a joint call for proposals by the NRC Industrial Research Assistance Program (NRC IRAP) and Innovate UK, and 8 national collaborative projects were launched to advance various quantum sensing technologies. The program also advanced Canada's National Quantum Strategy commercialization mandate by launching a joint call for proposals with the Natural Sciences and Engineering Research Council of Canada's Alliance program, seeking collaborative projects with teams of NRC researchers, academics, and industry partners in various areas of quantum to reinforce, coordinate and scale up Canada's domestic research capabilities in quantum science and technology.

- The Applied Quantum Computing Challenge program launched 8 collaborative R&D projects with 7 external partners and held a call for proposals in quantum algorithm research to enable scientific discovery.

NRC researchers are providing the foundational research that will underpin future breakthroughs in quantum and nanotechnologies:

- Experiments at an international collaborator's facility showed how molecules move and react when they are given additional boosts of energy. A joint publication demonstrated how time-resolved photoelectron spectroscopy, a technique used to study the structure and behavior of molecules, can help better understand how the different parts of a molecule interact and work together. This is important for applications in quantum computing, molecular electronics, and understanding basic chemical reactions.
- Progress was made on an easy-to-use, portable device that is able to transfer nanowire sources (tiny, wire-like structures that emit photons or particles) to silicon nitride chips (small, durable components valued for their strength, heat resistance, and electrical insulating properties), and evaluate the quality, clarity and consistency of the photons. This allows for the development of devices made from quantum dot nanowire that can emit light at longer wavelengths. This is important because longer wavelengths improve data transmission and communication efficiency. These advancements are paving the way for practical, scalable quantum technologies that can be used outside of laboratory settings in everyday applications, with the potential to revolutionize fields such as computing, telecommunications, and sensing.
- While traditional 3D printing technology relies on a layer-by-layer printing method, volumetric additive manufacturing provides fast

and layer-less 3D printing. However, this efficient and innovative process, struggles to print fine details, resulting in defects in colour, finish or performance. Collaboration with international partners led to a model that predicts the variation of print time with feature size (the smallest detail or dimension that a printer can accurately reproduce) to address this issue so the technology can be used for more applications.

Research that empowers Indigenous communities

The NRC is actively engaging in research that directly benefits Indigenous communities, focusing on innovative technologies and sustainable environmental practices.

Under the Indigenous Languages Technology project, the web-based plug-in for Indigenous audiobooks developed by the NRC, Carleton University and Indigenous collaborators, ReadAlong Studio, was released as open-source and adopted all over the world. ReadAlong Studio promotes learning of Indigenous audiobooks by reading or singing highlighted words aloud, allowing students to adjust playback speed to learn pronunciation. Interactive grammars were developed through Gramble, an intuitive framework designed for educators to create grammatical apps for Indigenous languages in a user-friendly interface. Verb conjugations are one of the most difficult aspects to learn and Gramble has been used for 3 Indigenous languages, with 2 others in development.

The NRC, the Nunavut Nukkiqsautiit Corporation and other Indigenous partners conducted culturally appropriate stakeholder consultations and fieldwork within Indigenous territories to assess the unique environmental conditions and how to harness energy from the natural movement of water such as rivers and oceans in Northern and remote

communities. This work is led by Indigenous perspectives and traditional knowledge, which guide the development of marine renewable energy solutions.

In a project with Canada-Inuit Nunangat-United Kingdom Arctic Research Programme, the NRC worked with Inuit Nunangat communities and SmartIce (a community-based social enterprise) to develop maps of sea-ice roughness and slush by using Indigenous knowledge, remote sensing, and data from land vehicles and drones. The work supports the capabilities of Northern and Inuit communities to address sea-ice travel concerns particularly related to Arctic warming.

Advancements in safe and efficient transportation systems

The NRC is playing a key role in promoting the safety and efficiency of transportation through innovative research and collaborations in various sectors including aviation, rail, and autonomous vehicles.

The NRC conducted a pilot simulation of a realistic gate-to-gate airport trip to capture behaviors and environmental measures, providing data that can be used to develop models by aviation regulators, public health agencies, airlines and airports to understand health risks during future pandemics. The NRC also collaborated with Canadian company ABC Ventilation Systems to measure the performance of conditioned air within aircraft parked at the gate at 2 Canadian airports.

The NRC continued to work with the rail industry to improve the safety of rail operations and mitigate risks to Canadian railways under changing climate conditions. In 2023-24, the NRC:

- applied remote monitoring and sensor technology to help a heavy haul railway operator resolve train separation concerns and

improve train handling procedures to prevent derailments, which could be used for guidelines for Canadian railways operating in mountain regions.

- used satellite data from Natural Resources Canada and NASA to develop a wildfire prediction and alert system for Canada's national railway network, with 2 railways interested in using the system in their operations.
- collaborated with a Canadian university on a prototype user-friendly application that processes measurements from an unmanned aerial vehicle equipped with Light Detection and Ranging technology (LIDAR) and a camera. This app allows track inspectors to accurately identify trees, vegetation, and obstructions that should be removed according to Transport Canada regulations. A similar prototype was developed based on information taken from a truck equipped with sensors and other measurement devices, with further testing along a Canadian railway planned for the high vegetation season in summer 2024.
- completed 2 projects evaluating new inspection technologies, including a project to identify the parameters that could affect performance and reliability of inspection technologies. This project resulted in a comprehensive list of recommendations for improvement in consideration of Canada's weather and operational context.

Working with government and industry to support safe and efficient navigation and offshore operations in ice conditions, the NRC developed an advanced risk assessment system, high-resolution ice forecasting system, and iceberg drift forecasting crucial for safe oil and gas projects on the Grand Banks, and sealift operations in Canada's Northern communities. The NRC is also advancing iceberg

forecasting models and creating publicly accessible data repositories to help de-risk development of wind energy in offshore ice-prone waters in Nova Scotia, and Newfoundland and Labrador.

The NRC is developing and testing technologies to promote the safe deployment of autonomous vehicles in Canada.

- The NRC demonstrated its autonomous aircraft technology in Yuma, Arizona as part of the Experimental Demonstration Gateway Event in 2023. New features were introduced to enable landing site assessments, and detection and avoidance of cooperative traffic (other aircraft that have compatible communication and collision avoidance systems) for obstacle-free landings. The NRC also applied autonomous aircraft technology to wildfire suppression by deploying remotely piloted aircraft systems (RPAS) equipped with infrared and LIDAR sensors for controlled burns.
- The NRC and Transport Canada collaborated on a project to better understand sensor performance for remotely operated autonomous vessels in harsh environments such as rain, fog, heavy sea conditions, snow and ice. In its second phase, the project began field work and data collection that will be used to inform the technical requirements and guidelines that define how autonomous vessels should be designed, built, and operated to ensure they are safe, reliable and capable of performing their intended functions.
- Expanding the NRC's collaborative project with the Geological Survey of Canada on measurements of methane emissions from permafrost, a new lightweight field-deployable methane sensor for drones was designed and went into production. The use of drones allows larger areas to be surveyed and flight times of up to 2 hours on a single battery charge, which is more cost-effective and

efficient than helicopters, expanding the scope of methane detection of permafrost in the North.

Foundational research in astronomy and metrology

The NRC is making significant contributions to the field of astronomy, enhancing the capabilities of Canadian and international astronomers to explore and understand the universe.



Prototype proof-of-concept dish for the Canadian Hydrogen Observatory and Radio-transient Detector, at the Dominion Radio Astrophysical Observatory in the White Lake Basin, B.C.

- The NRC completed the first of 640 dishes for the Canadian Hydrogen Observatory and Radio transient Detector, a new world-leading radio telescope facility an order of magnitude more powerful than its predecessor, CHIME (the Canadian Hydrogen Intensity Mapping Experiment). The dish was manufactured at the NRC's Dominion Radio Astrophysical Observatory using single-piece composite infusion technology (a manufacturing process

used to create large, strong, and lightweight parts from composite material) pioneered by the NRC.

- The John A. Galt Telescope, also located at the Dominion Radio Astrophysical Observatory achieved an important milestone: observation of the first spectrum of atomic hydrogen through an upgraded signal path, allowing for clearer and more accurate measurements of the different wavelengths of light (spectrum) that hydrogen atoms produce. The NRC's upgrade team was able to achieve this milestone by upgrading the telescope with a cryogenically cooled receiver from the MeerKAT radio telescope supplier, which features NRC-designed low-noise amplifiers.
- In 2024, Canada officially became a member of the Square Kilometre Array Observatory (SKAO), the world's next-generation radio-astronomy observatory. The observatory is a global collaboration that will operate 2 of the world's largest telescope arrays currently under construction. Membership will give Canada access to future SKAO procurements for innovative Canadian companies to access cutting-edge technologies in different fields. Progress on the Square Kilometre Array (SKA)-Mid telescope included delivering correlator hardware for integration with other telescope components, and correlating data from 2 digitizers at a facility in Cape Town, South Africa. The initial 4 antennae, scheduled to be integrated at the end of 2024, are being tested using digitally generated data at a facility in Richmond, B.C. When complete, the SKA-Mid in South Africa will be the most sensitive radio telescope in the world and allow Canadian and international astronomers to make countless new discoveries.
- Ten papers published from the CANUCS (CACanadian NIRISS Unbiased Cluster Survey) project, to which the NRC contributes, reveal new insights into the evolution of low-mass galaxies –

galaxies that have relatively small amounts of mass compared to other galaxies (i.e., fewer stars, gas, and other materials). They also provide evidence against some of the most unexpected James Webb Space Telescope (JWST) results that have garnered media attention with headlines such as 'Cosmology is Broken' and shown that those results were subject to large statistical fluctuations or systematic errors. The CANUCS team's work gained international recognition, securing additional observing time on the JWST in 2024 and 2025, and an invitation to contribute to a review paper on the study of the early universe based on JWST data.

The NRC is advancing foundational research in metrology, deploying innovative technologies and making significant contributions to international standards and definitions.

- The NRC served as Vice-chair and Chair of a task group to establish the International Committee for Weights and Measures Forum on Metrology and Digitalization. This leadership role allows the NRC to contribute to the development of international digitalization standards for metrological services.
- The NRC completed construction, testing, and proof-of-concept measurements for the new acoustic gas thermometer. Results of these measurements will contribute to the international project to disseminate the redefined kelvin, in which Canada plays a significant role as a formal collaborator.
- Significant progress has been made on a prototype of the portable Strontium ion optical clock, with successful assembly, conditioning and testing of various components. The project is on schedule to be compared against the NRC's lab-bench Strontium optical clock in 2025-26. The clock will enable the NRC's contribution to the

international campaign for the redefinition of the SI (system of units) second with several impacts across measurement science.

- Through an Innovative Solutions Canada (ISC) funded challenge project, the NRC characterized 2 companies' quantum-enabled prototypes to help bring their products closer to commercialization. The NRC also is also participating in an international pilot study with other national metrology institutes (NMIs) to develop device characterization methods required to provide future calibration services to Canadian quantum companies. Both of these activities support Canada's National Quantum Strategy missions and will help pave the way for future Canadian quantum technologies to be accepted in international markets.

Contributing to developing STEM talent

The NRC is making significant contributions to developing Science, Technology, Engineering and Mathematics (STEM) talent through a variety of initiatives aimed at supporting early career scientists and engineers, enhancing educational opportunities, and fostering collaborative research projects.

In 2023-24, the NRC participated in 13 career fairs with 27,000 participants, hired 502 students, 35 research associates and 12 postdoctoral fellows, and provided learning and collaboration opportunities across the STEM training continuum. Virtual onboarding events and a new student engagement program provided networking, leadership, and skill-building opportunities to foster career growth for promising scientists and engineers.

Through initiatives like its Ideation Fund, the NRC partners with universities, small and medium-sized enterprises (SMEs) and other government and research organizations to support the development

of Canadian talent by encouraging, testing and validating transformative research ideas. The fifth round awarded \$1.2 million to 52 innovative New Beginnings projects (individual researchers), and \$2 million for 2 collaborative Small Teams projects (small research teams with complementary capabilities).

Part of the Collaborative Science, Technology and Innovation Program (CSTIP), the Outreach Initiative program allocates \$250,000 every year to support STEM engagement and skills development, particularly towards youth or underrepresented groups. Last year, the Outreach Initiative supported 27 projects, reaching an estimated 14,481 participants across Canada.

The NRC completed its first cycle as administrator of the National Killam Program, awarding 5 Killam Prizes and 8 Dorothy Killam Fellowships in 2023. The Killam NRC Paul Corkum Fellowship was designed and launched in 2023-24 to support distinguished scholars in pursuing collaborative projects with NRC researchers, with the first fellows to be announced in February 2025.

▼ Departmental result 2: Innovative businesses grow

The NRC provides valuable research and innovation support to help innovative Canadian companies bring their ideas to domestic and international markets. In 2023-24, NRC IRAP exceeded its targets for revenue and employee growth of its supported firms, demonstrating its continued ability to boost Canadian innovation and economic growth. While the NRC's research and development teams continued to support their industry clients, increased commitments to federal partners led to a decrease in revenue earned from industry clients and a missed target. Industry revenue

is expected to increase as research programs implement their new strategic plans, including key business engagement strategies. The NRC has a positive impact on its clients, with 84% of surveyed clients reporting that their work with the NRC had already generated positive benefits shortly after project completion, falling short of the 90% target. As additional respondents indicated they had not yet seen benefits, the NRC is revising its client survey approach so clients have time for benefits to materialize and reliable client feedback is captured to inform future programming.

Results achieved

Support for business innovation and growth

The NRC is enhancing its support to help businesses innovate and grow by connecting them with essential resources and expertise at national and international levels.

By serving as a crucial link in the innovation ecosystem, NRC IRAP connects SMEs with top-tier business and R&D expertise, fostering innovation and economic growth in Canada.

- In 2023-24, NRC IRAP played an important role in the advancement of SMEs investing in innovation, working with 9,410 firms, supporting 12,719 jobs and providing 26,791 advisory services.
- NRC IRAP's Large Value Contribution program provided advisory services and over \$70 million in funding to 66 SMEs in 2023-24. The program provides strategic business and technical advice, and financial support that enables Canadian companies to scale-up and expand their risk tolerance for undertaking R&D projects that can lead to considerable benefits to Canada.

- The NRC IRAP-delivered Youth Employment Program (YEP) provides recent post-secondary STEM graduates with employment opportunities to help them gain practical work experience, and build technical and digital skills required in the job market. In 2023-24, the program supported 649 job placements with innovative SMEs, and saw strong job retention, with 87% of graduates reporting employment after their placement, and 96% of those individuals becoming employed at their placement firm. The program also achieved goals for representation of equity-deserving groups, surpassing 5 of its 6 targets (more results for the YEP can be found in the GBA Plus program impacts).
- The Innovative Solutions Canada (ISC) program disbursed \$7.8 million, completed 9 projects, managed 17 existing challenges involving 22 SMEs, and launched 4 new challenges. The ISC program enables close collaboration between NRC's research centres and innovative Canadian SMEs to build leading edge solutions that advance NRC's research goals and support the SMEs in IP development and commercialization. For example, NRC's Advanced Electronics and Photonics Research Centre collaborated with Solid State AI (Toronto) to successfully develop a first of its kind AI software for the Canadian Photonics Fabrication Centre that can improve the yield in photonics semiconductor manufacturing. The NRC's Metrology Research Centre teamed up with Integrated Nanotherapeutics Inc (Vancouver) to successfully develop innovative nanoparticle formulations for drug delivery that can overcome several challenges in the global pharmaceutical industry.
- In partnership with Global Affairs Canada, the NRC launched 2 international innovation projects in support of the Government of Canada's \$2.3 billion Indo-Pacific Strategy, which seeks to strengthen Canada's ability to engage and benefit from

international science, technology and innovation partnerships, and advance international clean technology in the Indo-Pacific.

Agreements were signed with Taiwan and South Korea, and work is underway to establish the requirements for co-innovation activities with Singapore and Japan.

Following Canada's achievement of full membership status in June 2022, the NRC was invited to co-chair Eureka with Germany in 2024-25. Eureka is the largest innovation network in the world with more than 45 participating economies supporting SME growth through international co-innovation and access to global value chains. This marks the first co-chairship in the network's nearly 40-year history, and the first non-European country to chair, reflecting Canada's strong standing as a well-regarded member of Eureka. In 2023-24, the co-chairs established a team to prepare the chairship program, and the NRC began outreach activities and engagement of key stakeholders, partners and clients, including Innovation, Science and Economic Development Canada, Global Affairs Canada, and other science-based departments. This leadership position enhances opportunities for Canadian innovators, offering them increased visibility and collaborative prospects from major events, including the Eureka Global Innovation Summit being held in Germany in 2025, in conjunction with the Hanover Messe Industrial Fair. With over 130,000 attendees annually, Hannover Messe brings core industrial sectors together and is an important window to the future of industrial innovation.

Fostering innovation through IP commercialization

The NRC fosters innovation by developing new IP and maintaining a valuable IP portfolio to attract collaborators and secure competitive advantages in various scientific and technological domains. Licensing

IP to key partners leads to commercializing Canadian research.

- The NRC licensed its portable thermal chamber technology for measuring the R-value ¹ of low-slope roofs to Thermtest Instruments, which is intended to reduce building energy consumption and carbon emissions by identifying areas of heat loss. The company received NRC IRAP support to commercialize the technology and launched a beta version of the product in early 2024.
- The NRC expanded licensing activities for mining-related sensing technologies to make mineral processing more sustainable. Using existing NRC IP, the NRC is engaging industry in sustainable mining and carbon capture, utilization and storage projects at low technology readiness levels. Through this effort, NRC technologies have been licensed to 3 companies, with another 3 in discussions.
- Three Canadian SMEs received NRC support in characterizing and prototyping their natural graphite for the battery supply chain, resulting in NRC partner Nouveau Monde Graphite securing agreements with Panasonic Energy and General Motors for a value of up to US\$325 million. This support will help the company develop a fully integrated source of carbon-neutral battery anode material to become a key supplier to the world's leading battery and automobile manufacturers.

NRC IRAP's IP Assist program helps innovative firms develop an IP strategy that supports their business goals, increases their internal IP competencies, and provides valuable information relating to their technology, IP and competitor landscapes. By clarifying the IP value proposition, prioritizing IP for innovative firms, linking IP to business objectives and commercial outcomes, increasing project values and eligibility, and establishing agreements to connect firms to IP service

providers, IP Assist services were able to have a direct impact on helping high growth innovative firms protect and leverage their IP for the benefit of the Canadian economy. As a result, 2,141 unique firms received IP awareness advisory services, 501 firms were supported with their IP strategy development, and 140 firms were able to execute actions from their IP strategy.

Making biologics and therapeutics accessible to Canadians

The NRC plays a role in enhancing the accessibility of biologics and therapeutics by licensing innovative technologies and advancing clinical developments. This ensures cutting-edge treatments reach patients more efficiently.

In 2023-24, the NRC licensed several proprietary vaccine and therapeutics technologies, achieving key milestones in bringing innovative treatments to Canadians, including the following:

- A license agreement with a Canadian SME to develop, manufacture and commercialize the NRC's adjuvant (Sulfated lactosylarchaeol) technology, as well as the adjuvant's inclusion in the Coalition for Epidemic Preparedness Innovations' Adjuvant Library, will make the technology more widely available to vaccine developers particularly in lower income countries.
- Licensing NRC technology to block COVID-19 infection to JN Nova, a Canadian clinical-stage biopharmaceutical company, resulting in the company filing a Health Canada application to evaluate the technology in Phase 1A safety studies, a major milestone in bringing innovative treatments to patients.
- Licensing an NRC gene therapy for lipoprotein lipase deficiency, a rare genetic disorder that can lead to severe pancreatitis and other health issues, to Canadian SME Eder Therapeutics to further develop the ground-breaking technology and advance it through

clinical trials with the potential to become a cost-effective treatment or even a cure for patients suffering from the debilitating disease.

- An international collaboration with the National Institute of Standards and Technology to deliver lentiviral reference material using the NRC's stable producer cell line approach as a benchmark in cell and gene therapy reference material.

The NRC continued to advance the transfer of its bWell cognitive care platform, an interactive platform to assess and treat cognitive and psychiatric disorders, by selecting Neuro Solution Group from 3 prospective SMEs. The company will further the NRC technology to clinically validate its functions to assess and remediate ADHD (attention-deficit/hyperactivity disorder).

In collaboration with the Canadian Space Agency and a Canadian manufacturer, the NRC is developing a portable system to monitor astronaut health in space with potential applications for remote communities that have limited access to large medical labs. Building on this work, the NRC is working with DND to further develop the technology and create a certifiable prototype with a Canadian SME to deploy in remote locations.

Through a public-private partnership, Biologics Manufacturing Centre (BMC) Inc., a not-for-profit corporation, took over operation of the NRC-built BMC facility on April 1, 2023. The NRC continues to support BMC Inc. by providing funding and lease agreements, and seeing that the facility is ready to manufacture vaccines and respond to public health emergencies, strengthening Canada's ability to support the health of its citizens (more details and results for the BMC can be found in the supplementary tables).

Enabling industry access to NRC facilities

The NRC is increasing industry access to its state-of-the-art facilities, enabling a broad range of Canadian SMEs to engage in valuable R&D projects that drive innovation and competitiveness in key sectors.

Staying competitive in the photonics industry

The NRC's Canadian Photonics Fabrication Centre (CPFC) supports industry R&D in photonics and electronics for various sectors.

Indeed, compound semiconductors are emerging as a strategic element in scaling up quantum networking and computing for AI, and is an area of comparative advantage in know-how for Canada.

The CPFC, as the only pure play compound semiconductor fab in North America, is poised to be a basis for helping companies establish a niche within a hardware space that is set to explode globally. By providing SMEs and MNEs with specialized services and expertise to reduce time to market, expand market share, and drive innovation in Canada, the CPFC helps firms stay at the leading edge. The CPFC also works with the telecommunications sector to offer secure and affordable high-speed internet in rural and remote areas across Canada, and with stakeholders of quantum network initiatives to enable the development of revolutionary sensors that harness the extreme sensitivity of quantum.

In 2023-24, the CPFC worked with 6 SMEs to help bring their new products to market. The CPFC also continued ongoing capital work to modernize and expand the facility, along with the Advanced Technology Fabrication research facility, to support both facilities in meeting industry needs and remaining competitive with the latest in photonics and electronics capabilities.

In 2023-24, the NRC delivered 330 research and innovation projects for 196 Canadian SME clients, with a combined value of \$21 million. The NRC continues to offer reduced fees to SMEs accessing its facilities and services, with all SME clients benefitting from these reduced rates. The NRC also continued to invest in its research facility capacity to remain relevant to leading Canadian innovators and competitive in key industries.

- The NRC's atypical fermentation facility established the Single Cell Production team in Charlottetown, Prince Edward Island, completed the initial phase of its strategic staffing plan, conducted 11 independent projects and secured 3 new collaborative research agreements to see that the facility can support SMEs in optimizing and scaling up development of bio-based products from agriculture and marine biomass.
- Under the ISC Testing program, the NRC supported Canadian SME Zentek in demonstrating the viral filtration efficiency of its innovative new air filters in HVAC systems. The NRC built a new test facility for this work within 9 months and due to the facility's market demand, the NRC determined the need for an additional investment to equip the facility to evaluate various other technologies to improve indoor occupant health. Construction is expected to begin in 2025-26.
- The NRC built a specialized facility to simulate unsteady airflow in an urban environment and worked with Canadian SMEs to validate the characteristics of urban airflow.
- The NRC continued supporting Pratt & Whitney Canada on their hybrid-electric propulsion flight demonstrator project. In 2023-24, the partnership led to a high-voltage mobile charging unit capable of charging batteries up to 1500 volts. High voltage, bidirectional

charging systems will be critical for a growing number of electric and hybrid-electric systems including aircraft.

- The NRC supported another Canadian company to test an electric engine, and NRC experts provided data to further develop the company's electric propulsion system they plan to use as a retrofit to electrify one of their own aircraft fleets.

The NRC finished operationalizing its Good Manufacturing Practices (GMP)-compliant clinical trial material facility, finished the commissioning, qualification and validation phase, and is preparing for future production in the facility.

▼ **Departmental result 3: Evidence-based solutions inform decisions in Government priority areas**

The NRC leads innovative research and adopts new methods to advance technology development in partnership with key public and private stakeholders. As an important component of the federal research system, the NRC increased its support to other federal departments in recent years. By exceeding its goals for peer-reviewed publications co-authored with other government departments and revenue from federal collaborators, the NRC was able to continue contributing to breakthroughs and new opportunities for Canada's major challenges.

Results achieved

Low carbon construction and resilient infrastructure

NRC initiatives and collaborations in low-carbon construction directly contribute to reducing Canada's carbon footprint and mitigating climate change.

- Under the Low Carbon Built Environment Challenge program, the NRC launched 28 research projects, including initiatives in low-carbon cement and concrete, biomaterials, material substitution and reuse, and other low carbon alternatives for materials like steel and coatings. This collaborative program aims to accelerate decarbonization across the entire Canadian construction industry.
- Through the NRC's Centre of Excellence in Construction Life Cycle Assessment, which will officially launch in 2024-25, the NRC will provide technical guidance to various government departments to support the development of low carbon emission construction policies. Furthermore, the NRC developed guidelines for infrastructure life cycle assessment and the National whole-building Life Cycle Assessment Practitioner's Guide, in collaboration with the Treasury Board Secretariat of Canada and the city of Vancouver. The NRC also presented a draft of the Low Carbon Guideline for Federally Funded Construction to the Federal Committee on Codes and a federal working group for review.
- The NRC provided technical guidance to the committees of the Harmonized Code Development System for consideration in the 2025 editions of the National Model Codes. This will facilitate the development of code changes for the design of buildings for future adaptation to climate change and to prevent overheating of dwelling units. The NRC is currently providing support to policy discussions on the role of the Codes in addressing additional climate hazards to buildings including, permafrost melt, wildland fire, durability, flooding and high wind.

- In support of Canada's Housing Plan and its objective to increase the housing supply in Canada, the NRC, in collaboration with provinces, territories and other interest groups, began scoping work to advance the uptake of modular construction. This work includes streamlining national inspection processes, evaluating the safety requirements for single means of egress in multi-residential buildings, and examining the digitalization of the National Building Code, including digital permitting, to improve efficiencies and capacity in the construction sector.

In 2023-24, the NRC continued to promote and enhance natural infrastructure solutions and clean energy technologies to support resilient infrastructure and environmental protection.



A nature-based emergency flood barrier made of oyster-shell filled biodegradable bags.

- The NRC established Canada's first emergency flood barriers ² testing facility to accelerate the development, certification, and safe use of flood defense solutions and guidance. The NRC is using the results from its work with certification agencies and industry associations to test and certify the practical and environmentally friendly flood barriers for Canadian manufacturers and develop testing standards and guidance for Canadian municipalities. The NRC is also working with organizations such as the Greater Toronto Area Rivers to incorporate nature-based solutions into decision systems to support sustainable watershed management and channel restoration.
- The NRC is working with innovative companies, and Indigenous partners and communities to remove barriers to adopting nature-based solutions to manage floods and erosion. A pilot project in Surrey, B.C. involved NRC collaboration with engineers, local government and First Nations partners to test physical models of various natural infrastructure designs, including new features such as oyster-shell filled biodegradable bags, brushwood dams, cobble and sand berms.
- In collaboration with Transport Canada, the NRC enhanced its physical modeling facilities to study and improve the hydrodynamic efficiency of Canadian fishing vessels, reducing emissions and underwater noise, and paving the way for future advancements in noise mitigation and energy-saving technologies.

Innovative solutions for sustainability

The NRC is advancing sustainable solutions across various sectors, pushing the boundaries of innovation to address Canada's environmental challenges and promote sustainability.

To better understand the environmental and safety impacts of transportation technologies throughout their entire lifespan, the NRC:

- launched 13 projects focused on advanced materials for carbon capture and conversion, collaborating with 3 Canadian SMEs on CO₂ (carbon dioxide) conversion, as part of the Materials for Clean Fuels Challenge program's second phase. Activities related to life cycle assessment (LCA) and technoeconomic analysis (TEA) are included in several phase 2 projects, including the "Development of harmonized datasets for both green hydrogen production and CO₂ conversion for integration into the NRC's LCA/TEA data hub".
- advanced life cycle assessment projects for hydrogen production and battery critical minerals by completing:
 - design, modeling and simulation of different methods for producing hydrogen gas to gauge carbon intensity and inform decision-making, and
 - assessment of potential methods of producing battery-grade lithium hydroxide in Canada to identify clean and cost-effective access to minerals for the battery supply chain.
- delivered 4 projects for SMEs and 2 projects for government in battery performance and safety, enhancing validation of emerging technologies to foster the Canadian innovation ecosystem in this area, through its Advanced Clean Energy Program. The NRC also contributed to the growth of the Canadian battery supply chain by piloting a battery recycling system that successfully separated critical minerals from other materials in used batteries, and removed cobalt from the active materials used for battery cathodes, a critical component in battery cells, helping to reduce Canada's reliance on scarce and expensive minerals.
- provided Natural Resources Canada with a Light Duty Vehicle life-cycle analysis database, which emphasizes the importance of

updating vehicle assumptions and accounting for vehicle classes when sharing information with the public on life-cycle emissions of different vehicle types.

- supported hydral codes and standards development by identifying regulatory gaps and new safety risks for battery and hydrogen-powered locomotives.

The NRC launched the new STAMP Hybrids industrial R&D group in October 2023 to develop a cost-effective, 1-step process for creating metal/thermoplastic composite hybrid components with significantly reduced weight. This 3-year project, involving 10 partners, aims to analyze the costs, develop process modeling tools, explore recycling technologies, and develop a prototype of the technology to demonstrate its potential to enhance the fabrication process.

The NRC's Advanced Manufacturing Program initiated 8 strategic initiatives in vehicle weight reduction, recycling materials for electric vehicles and developing metal-composite hybrid components. The initiatives contribute to Canada's climate goals such as the transition to zero-emission vehicles, and light-weighting of ground transportation vehicles to help reduce fuel consumption. The program aims to increase environmental sustainability in NRC-led industrial R&D groups through licensing IP developed under the initiatives. The NRC launched other activities under the Advanced Manufacturing Program to understand biodegradability and performance of emerging sustainable food packaging to support the circular economy. The updated [Canada Plastics Pact Roadmap to 2025](#) that defines Canadian industry needs for sustainable plastic packaging will guide program activities going forward.

The NRC continued to develop capacity in sustainable agriculture by launching 15 collaborative research projects in sustainable agriculture, with 12 under the Sustainable Protein Production Cluster support program and 3 under Agri-Food Initiatives. The NRC also led research in sustainable waste management by studying plastic waste conversion to hydrogen to capture carbon in solid form to produce clean fuel.

Sustainable aviation sector

The NRC supported the development of a more prosperous, sustainable aviation sector through significant advancements in clean and innovative aircraft technologies and measurement.

- The NRC continued work on an initiative to reduce measurement uncertainties for non-volatile particulate matter (nvPM) in aircraft emissions by developing a novel calibration system and leading an interlaboratory comparison designed to significantly increase consistency and precision in measurements. As the first laboratory to introduce a calibration service for instruments used to measure nvPM in aircraft emissions, the NRC is a global leader in aviation nvPM measurement and continues to participate in campaigns to understand and mitigate the environmental impacts of aviation emissions, and evaluate the benefits of using sustainable aviation fuels.
- In 2023-24, the NRC's Gas Turbine Laboratory completed a retrofit of its unique combustor rig to prepare for test campaigns that will enable detailed studies of hydrogen combustion behavior.
- The NRC worked with the University of Toronto Institute for Aerospace Studies to design and validate a novel aircraft configuration for enhanced fuel efficiency.

- The NRC expanded its hybrid-electric propulsion modeling capabilities to assess options for fuel savings, advanced battery performance testing and characterization, tested aerospace materials under cryogenic conditions to assess the potential for on-board hydrogen storage, and delivered a proof-of-concept for a low-drag aircraft coating design.

Key risks

Risks to the NRC's achievement of results were primarily driven by external factors such as cyber threats, economic uncertainty and geopolitical instability, as well as internal challenges related to maintaining a leading workforce and aging infrastructure. To mitigate the risk of cyber-attacks, the NRC developed a Cyber Security Event Management Plan, provided ongoing training for employees about cyber security risks and continued working with partners, including Shared Services Canada, to increase the NRC's overall cyber security maturity. Implementation of the NRC's new research security policy and guidance documents, consistent with federal direction, will help mitigate potential impacts on NRC security and collaborative relationships.

The NRC is addressing challenges in attracting and retaining new talent through a Talent Attraction Strategy with an NRC employer value proposition to position the NRC as an employer of choice, and launched new recruitment programs focused on attracting diverse talent. To offset the risks associated with aging infrastructure, the NRC approved its first wave of facilities projects with the funding announced in the 2022 Fall Economic Statement and developed a process to prioritize future investments in NRC buildings and facilities to revitalize the NRC's overall facility portfolio.

Resources required to achieve results

Table 2: Snapshot of resources required for Science and innovation

Table 2 provides a summary of the planned and actual spending and full-time equivalents (FTEs) required to achieve results.

Resource	Planned	Actual
Spending	1,388,919,204	1,328,737,018
Full-time equivalents	3,302.8	3,263.3

Complete financial and human resources information for the NRC's program inventory is available on GC InfoBase.

Related government-wide priorities

▼ Gender-based analysis plus

The NRC prioritizes equity, inclusion and diversity in its workforce and organizational culture. By working closely with its employees, clients, and partners, and applying GBA Plus to programs, policies operations and services, the NRC makes its research inclusive and accessible to all Canadians, including equity-deserving groups.

- Collaborative programs: By incorporating GBA Plus considerations into the design and evaluation of its Challenge programs, the NRC sees that the programs are sensitive to the different impacts they might have on various groups. The New Beginnings Initiative uses an anonymized proposal review process to track success rates of women and members of a racialized group, which the Small Teams Initiative plans to adopt. New Beginnings also collects data on gender parity on peer-review committees.

- Accessible communications: 2023-24 efforts focused on making communication products accessible to a broader audience, including those with disabilities. These included developing a plain language checklist for print and online content, assessing new content for compliance with accessibility standards, offering training sessions and updating online resources, as well as promoting accessible communications in weekly employee newsletters to enhance staff capability in effective and inclusive communications.
- Indigenous engagement: The NRC's new Indigenous Strategy and Engagement team identified gaps and priorities for Indigenous engagement to help build its 5-year strategic plan, focused on enhancing cultural awareness across the organization, growing relationship management, and integrating Indigenous priorities into NRC research and operations. The NRC developed a foundational suite of resources, and launched tailored advisory services to support dozens of projects and initiatives across the NRC to further its goal of building cultural competency. The NRC's Indigenous Engagement Network hosted a series of meetings that showcased Indigenous perspectives to support efforts to consider Indigenous viewpoints in NRC projects. The NRC also renewed its commitment to I-STEM and confirmed interest in building an approach for Indigenous scholar participation.
- National Killam Program: The National Killam Program continuously seeks out new opportunities to fund research aligned with Dorothy Killam's vision of building Canada's future through advanced study. The program actively participates in EDI discussions and collaborated with the Canadian Science Policy Centre to host a panel on Addressing Bias and Inequity in the Research Ecosystem. By endorsing the San Francisco Declaration

on Research Assessment, the National Killam Program committed to its principle of inclusive excellence to guide design and delivery of the program.

▼ United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

In 2023-24, the NRC made notable contributions to the UN's Sustainable Development Goals (SDGs) identified in the Federal Sustainable Development Strategy, particularly related to goals for: Climate Action, Affordable and Clean Energy, Industry, Innovation and Infrastructure, Sustainable Cities and Communities, Inclusive and Sustainable Economic Growth, Advancing Reconciliation, and Responsible Consumption and Production. Achievements include carbon-neutral infrastructure plans, innovative food waste management solutions, supporting clean technology projects from SMEs, improving research relationships with Indigenous researchers and communities, projects on dam resilience, climate-adaptive building code updates, standards and a guide for managing Wildland Urban Interface Fires, and a successful curtailment program to reduce electrical consumption.

More information on the NRC's contributions to Canada's Federal Implementation Plan on the 2030 Agenda and the Federal Sustainable Development Strategy can be found in our Departmental Sustainable Development Strategy.

▼ Innovation

In 2023-24, the NRC continued to align its efforts with the Government of Canada's vision of innovative culture by experimenting with new approaches in service delivery, program design, and policy making. Throughout the year, innovative solutions were implemented across various sectors to address significant challenges.

- NRC IRAP expanded its partnership with the Business Development Bank of Canada (BDC) beyond its Ontario pilot to reach SME clients nationwide. This collaboration included a pilot of educational workshops on robotics and automation, support on IP awareness, and the development and implementation of IP strategies through the IP Assist program. NRC IRAP also established a framework for referrals of IRAP clients to the BDC-delivered Canada Digital Adoption Program, which provided SMEs with interest-free loans up to \$100,000 for a digital adoption plan, significantly boosting innovation and business growth across Canada.

Program inventory

The following programs support Science and innovation:

- Advanced Electronics and Photonics
- Aerospace
- Aquatic and Crop Resource Development
- Automotive and Surface Transportation
- Biologics Manufacturing Centre
- Business Management Support (Enabling)
- Collaborative Science, Technology and Innovation Program
- Construction
- Design & Fabrication Services (Enabling)
- Digital Technologies

- Energy, Mining and Environment
- Genomics Research and Development Initiative Shared Priority Projects
- Herzberg Astronomy & Astrophysics
- Human Health Therapeutics
- Industrial Research Assistance Program
- International Affiliations
- Medical Devices
- Metrology
- Nanotechnology
- National Science Library
- Ocean, Coastal and River Engineering
- Research Information Technology Platforms (Enabling)
- Security and Disruptive Technologies
- Special Purpose Real Property (Enabling)
- TRIUMF

Additional information related to the program inventory for Science and innovation is available on the [Results page on GC InfoBase](#).

Internal services

▼ In this section

- [Description](#)
- [Progress on results](#)
- [Resources required to achieve results](#)
- [Contracts awarded to Indigenous business](#)

Description

Internal services are the services that are provided within a department so that it can meet its corporate obligations and deliver its programs. There are 10 categories of internal services:

- management and oversight services
- communications services
- legal services
- human resources management services
- financial management services
- information management (IM) services
- information technology (IT) services
- real property management services
- materiel management services
- acquisition management services

Progress on results

This section presents details on how the department performed to achieve results and meet targets for internal services.

To achieve its departmental priorities and goals, the NRC delivers necessary services and tools to its workforce and researchers. The NRC continued its efforts to commit to a more efficient and effective approach to serving researchers.

Enabling research excellence through modernization and digitalization

In 2023-24, the NRC made significant progress in modernizing its IT operations, processes and tools to facilitate innovative research and drive scientific progress. Continuous improvements to supporting research IT see that the highest possible value is obtained from investments in generating scalable, sustainable, and inclusive IP.

- In collaboration with Public Services and Procurement Canada's Labs Canada, the NRC led 3 projects to evaluate innovative approaches for modernized IT and IM research solutions, which could be deployed more broadly across Labs Canada participants. Projects focused on testing technology to preserve research data, enabling Digital Lab Software as a Service (SaaS) Notebooks, and trialing a proof of concept for M365 access within the secure research network.
- The NRC provides a leadership role within the federal government, co-chairing the Chief Information Officers (CIOs) Science Portfolio roundtable and ongoing meetings with Labs Canada to address digital requirements for researchers. Active engagement with CIOs from science-based departments and agencies has now been formalized by establishing a CIO community of practice to foster knowledge exchange and promote innovation in digital solutions for research.
- The NRC continues to modernize its IT and IM operations by leveraging cloud environments, enhancing data security, and improving its cybersecurity capabilities. In 2023-24, the NRC increased its cloud usage by 99% compared to the previous year, deployed Microsoft Power BI for monitoring and analysis and launched the NRC's AI Zone, an internal cloud-hosted portal for NRC employees to access secure AI services and information. Cyber security considerations were at the forefront of these new developments, along with the implementation of the NRC's Vulnerability Remediation Plan.
- The NRC established a Service Management Office to improve service delivery to researchers, streamline processes, enhance client relationships, and increase transparency. Improvements to research IT will see that Canadians realize the highest possible value from their investment in scalable, sustainable and inclusive IP generation.
- As part of its 4-year lifecycle initiative, the NRC replaced 1,250 end-of-life laptops, significantly contributing to the organization's security posture,

and replaced conventional landlines with Microsoft Teams Phone, a more cost-effective and modern solution.

To deliver the major capital projects needed to modernize the NRC's research infrastructure, the NRC has strengthened its internal capacity for investment planning and effective project management. The NRC developed new tools, templates, and guidance to support major capital investment projects, and launched a new Community of Practice for Investment Planners to strengthen investment planning capacity across all research and innovation programs. In 2023-24, the NRC developed and approved 10 additional facility renewal re-capitalization projects, bringing the total number of approved projects to 18. The NRC also developed and socialized the intake process and assessment criteria for the next wave of capital investments, scheduled to launch in November 2024.

Strengthening corporate services

The NRC successfully launched several initiatives to boost security capacity and employee awareness. This included a new digital security screening process and new training programs for employees. Cyber security continued to be a priority, with ongoing phishing simulation campaigns to raise awareness about the potential threats and training to equip employees with the skills and up-to-date knowledge to safeguard sensitive information and systems.

In 2023-24, the NRC made significant efforts to strengthen key corporate priorities for the organization, such as EDI, workplace health and safety, and talent attraction.

- The NRC released its 2024-2029 Human Resources Branch's Strategic Plan, focusing on attracting and retaining talent, developing leadership, employee wellness, diversity and inclusion, and modernizing HR programs and services. Initiatives underway include implementing the

NRC's Talent Attraction Strategy which focuses on a new employee value proposition and employer brand, and diversity-focused recruitment programs, including the Indigenous Student Employment Program and Persons with Disabilities Internship Program.

- Following a comprehensive review, the NRC implemented a new structure and service delivery model for its HR services on April 1, 2023. This reorganization enables more strategic support and improved operational effectiveness, enhanced focus on EDI, talent attraction, and talent management while better aligning HR service providers with specific client needs, and bolstering corporate labour relations and compensation functions.
- In fall 2023, the NRC revamped its workforce planning to enhance diversity considerations, succession and retirement strategies alongside tools for nurturing high-potential talent. Early in 2024, the NRC introduced a pilot sponsorship program to support Indigenous and racialized talent, and launched a supervisor training series and an executive leadership development award to foster innovation and excellence among future leaders.
- A comprehensive employment systems review, implementing the NRC 2023-2025 Accessibility Plan, establishing a new NRC Persons with Disabilities Network, and introducing tools and networks to support inclusive hiring and innovation helped the NRC achieve representation goals and, in some cases, surpass the Canadian average labour market availability (see departmental results table in this report).
- The NRC successfully promoted employee wellness through the final phase of its 3-year Wellness Strategy and continued promoting wellness during the transition to hybrid work. This included leveraging a wellness ambassador network, a wellness portal, supervisor toolkits, and training and events through a partnership with the Canadian Innovation Centre for Mental Health in the Workplace.

- The NRC established an independent ombud office to enhance neutrality and impartiality of its informal conflict resolution services. Throughout the year, the ombud office engaged in hundreds of conversations with employees and key internal stakeholders, information sessions, mandatory training, and mediation to bolster conflict resolution and communication skills across the organization. Moreover, the ombud office supplemented the NRC Workplace Harassment and Violence Prevention and Resolution Policy with additional guidance, and continued to review the NRC Code of Conduct with a focus on clarifying expected behaviors under NRC values, which will be finalized in 2024-25. These coordinated initiatives improved the management and resolution of workplace issues.
- The NRC launched a workplace safety campaign, called "Make It Safe!" in November 2023. A national safety stand-down event kicked off the campaign to create an open dialogue and promote a consistent understanding of safe work practices. This campaign reflects the NRC's commitment to safety in all that we do, so everyone can go home safely at the end of the day.

The NRC continued outreach activities and enhanced its online presence by publishing 70 success stories, promoting key research areas like climate change and sustainability, and engaging users through social media strategies. Other work to promote the use of social media included training researchers for media interactions, implementing a social media interaction strategy, featuring the work of the NRC and its researchers through LinkedIn, weekly blogs, Instagram campaigns and trending hashtags, and cross promotion with other government social media.

Resources required to achieve results

Table 3: Resources required to achieve results for internal services this year

Table 3 provides a summary of the planned and actual spending and full-time equivalents (FTEs) required to achieve results.

Resource	Planned	Actual
Spending	159,510,996	197,243,636
Full-time equivalents	1,007.5	1,059.9

Complete financial and human resources information for the NRC's program inventory is available on GC InfoBase.

Contracts awarded to Indigenous businesses

Government of Canada departments are to meet a target of awarding at least 5% of the total value of contracts to Indigenous businesses each year. This commitment is to be fully implemented by the end of 2024-25.

The NRC's result for 2023-24:

Table 4: Total value of contracts awarded to Indigenous businesses ³

As shown in Table 4, the NRC awarded 1.6% of the total value of all contracts to Indigenous businesses for the fiscal year.

Contracting performance indicators	2023-24 results
Total value of contracts awarded to Indigenous businesses ⁴ (A)	\$ 3,736,773

Contracting performance indicators	2023-24 results
Total value of contracts awarded to Indigenous and non-Indigenous businesses ⁵ (B)	\$ 232,225,599
Value of exceptions approved by deputy head (C)	\$0
Proportion of contracts awarded to Indigenous businesses $[A / (B - C) \times 100]$	1.6%

The NRC is a Phase 3 department and is aiming to achieve the minimum 5% target by the end of 2024-25. The NRC has taken or will be taking the following measures to achieve the 5% minimum target:

- Include clauses and evaluation criteria that prioritize Indigenous businesses in calls for tender documents.
- Incentivize suppliers to support and provide direct and indirect opportunities to Indigenous Owned Businesses (IOBs) by incorporating socio-economic considerations and requiring Indigenous participation plans.
- Participate in reverse trade shows to actively seek new partnerships with Indigenous networks and following-up with Indigenous suppliers.
- Increase awareness of Indigenous business considerations with procurement professionals by leveraging checklists within the NRC's procurement case management system to prevent Indigenous procurement opportunities from being overlooked.
- Increase awareness of Indigenous business considerations with management, project managers and technical authorities.
- Leverage PSPC procurement vehicles and mandatory tools, including standing offers and supply arrangements as appropriate for the commodity type to identify and contract with IOBs.

The NRC will monitor and report on contracts awarded to Indigenous businesses throughout the fiscal year.

Spending and human resources

▼ In this section
• Spending • Funding • Financial statement highlights • Human resources

Spending

This section presents an overview of the department's actual and planned expenditures from 2021–22 to 2026–27.

Budgetary performance summary

Table 5: Actual 3-year spending on core responsibility and internal services (dollars)

Table 5 presents how much money the NRC spent over the past 3 years to carry out its core responsibility and for internal services.

Core responsibility and internal services	2023–24 Main Estimates	2023–24 total authorities available for use	Actual spending over 3 years (authorities used)
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Core responsibility and internal services	2023-24 Main Estimates	2023-24 total authorities available for use	Actual spending over 3 years (authorities used)
Science and innovation	1,388,919,204	1,620,803,733	2021-22: 1,285,688,819 2022-23: 1,306,954,477 2023-24: 1,328,737,018
Internal services	159,510,996	198,229,269	2021-22: 150,620,495 2022-23: 163,802,501 2023-24: 197,243,636
Total	1,595,142,974	1,819,033,002	1,525,980,654

▼ Analysis of the past 3 years of spending

The upward trend in spending over the last 3 years is primarily due to new funding for initiatives such as NRC infrastructure renewal, Canada's participation in the construction of the Square Kilometre Array Observatory, and program expenditures supporting the National Quantum Strategy.

More financial information from previous years is available on the [Finances section of GC Infobase](#).

Table 6: Planned 3-year spending on core responsibility and internal services (dollars)

Table 6 presents how much money the NRC plans to spend over the next 3 years to carry out its core responsibility and for internal services.

Core responsibility and internal services	2024-25 planned spending	2025-26 planned spending	2026-27 planned spending
Science and Innovation	1,423,622,051	1,369,537,465	1,318,164,322
Internal services	171,520,923	180,066,049	179,553,623
Total	1,595,142,974	1,549,603,514	1,497,717,945

▼ Analysis of the next 3 years of spending

Increased planned spending in 2024-25 is primarily due to capital funding for the NRC's infrastructure renewal. The downward trend in subsequent years is due to reduced funding associated with sunseting programs.

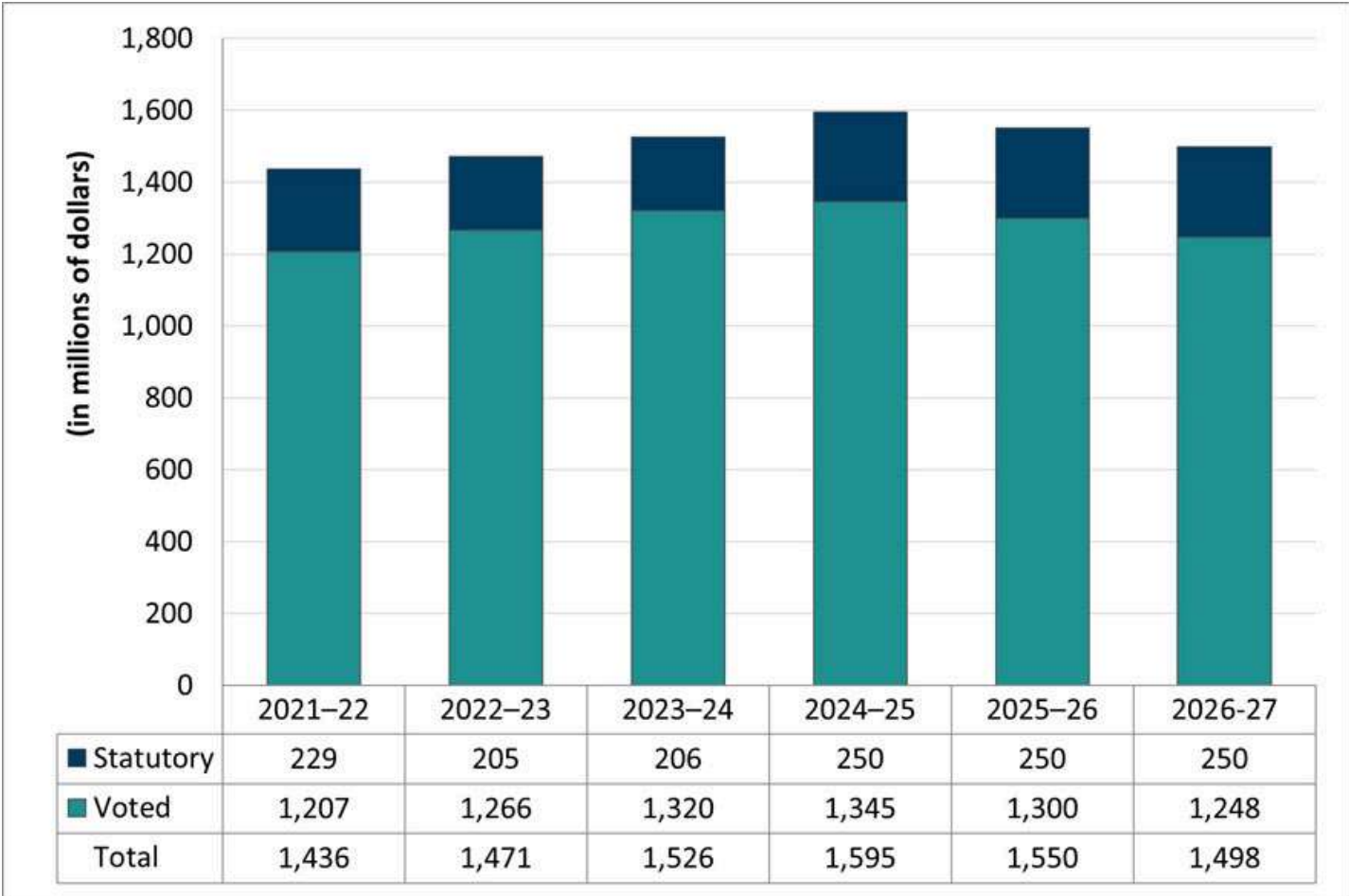
More detailed financial information from previous years is available on the [Finances section of GC Infobase](#).

Funding

This section provides an overview of the department's voted and statutory funding for its core responsibility and for internal services. For further information on funding authorities, consult the [Government of Canada budgets and expenditures](#).

Graph 1: Approved funding (statutory and voted) over a 6-year period

Graph 1 summarizes the department's approved voted and statutory funding from 2021-22 to 2026-27.



▼ Text description of graph 1

Fiscal year	Statutory	Voted	Total
2021-22	229	1,207	1,436
2022-23	205	1,266	1,471
2023-24	206	1,320	1,526
2024-25	250	1,345	1,595
2025-26	250	1,300	1,550

Fiscal year	Statutory	Voted	Total
2026-27	250	1,248	1,498

▼ Analysis of statutory and voted funding over a 6-year period

The NRC's actual spending of \$1,526 million in 2023-24 represents an increase of \$55.2 million from the \$1,470.8 million spent in 2022-23. This increase is primarily due to increased spending on infrastructure and IT/IM.

Actual spending of \$1,526 million in 2023-24 in comparison to planned spending of \$1,548.4 million represents an overall decrease of \$22.5 million (1.4%). The variance is primarily due to spending to support Canada's participation in International Astronomical Observatories that was lower than planned for the fiscal year.

The following table summarizes 2023-24 spending and year-over-year variances.

Description	2023-24 Spending	Variance from 2022- 23	Variance from 2021- 22
Operating	594.4	33.7	88.1
Statutory Revenue	134.6	2.7	5.5
Contributions to Employee Benefit Plans (EBP)	71.4	-1.6	-28.6
Total operating, revenue & EBP	800.3	34.8	65.1

Description	2023-24 Spending	Variance from 2022- 23	Variance from 2021- 22
NRC IRAP – firms and organizations	443.1	-17.3	48.3
TRIUMF	60.1	0.8	-2.1
Collaborative Science, Technology and Innovation	40.2	5.4	8.3
International Astronomical Observatories Program	36.7	10.0	9.2
NRC IRAP - Youth Employment and Skills Strategy	21.1	1.7	-42.3
Biologics Manufacturing Centre	18.7	17.7	18.7
Grants under Innovative Solutions Canada	3.5	-6.0	-6.2
Other	1.5	0.3	0.4
Total grants and contributions	625.0	12.7	34.3
COVID-19 initiatives	10.3	-35.8	-45.9
All other	90.4	43.5	36.3
Total capital	100.7	7.7	-9.6

Description	2023-24 Spending	Variance from 2022- 23	Variance from 2021- 22
Total expenditures	1,526.0	55.2	89.7

For more information on the NRC's departmental voted and statutory expenditures, consult the [Public Accounts of Canada](#).

Financial statement highlights

The NRC's complete financial statements (audited) for the year ended March 31, 2024, are available online.

Table 7: Condensed Statement of Operations (audited) for the year ended March 31, 2024 (dollars)

Table 7 summarizes the expenses and revenues for 2023-24 which net to the cost of operations before government funding and transfers.

Financial information	2023-24 actual results	2023-24 planned results	Difference (actual results minus planned)
Total expenses	1,554,745,000	1,557,149,000	(2,404,000)
Total revenues	182,665,000	184,369,000	(1,704,000)
Net cost of operations before government funding and transfers	1,372,080,000	1,372,780,000	(700,000)

The 2023–24 planned results information is provided in the NRC's Future-Oriented Statement of Operations and Notes 2023–24.

Table 8: Condensed Statement of Operations (audited) for the year ended March 31, 2024 (dollars)

Table 8 summarizes actual expenses and revenues which net to the cost of operations before government funding and transfers.

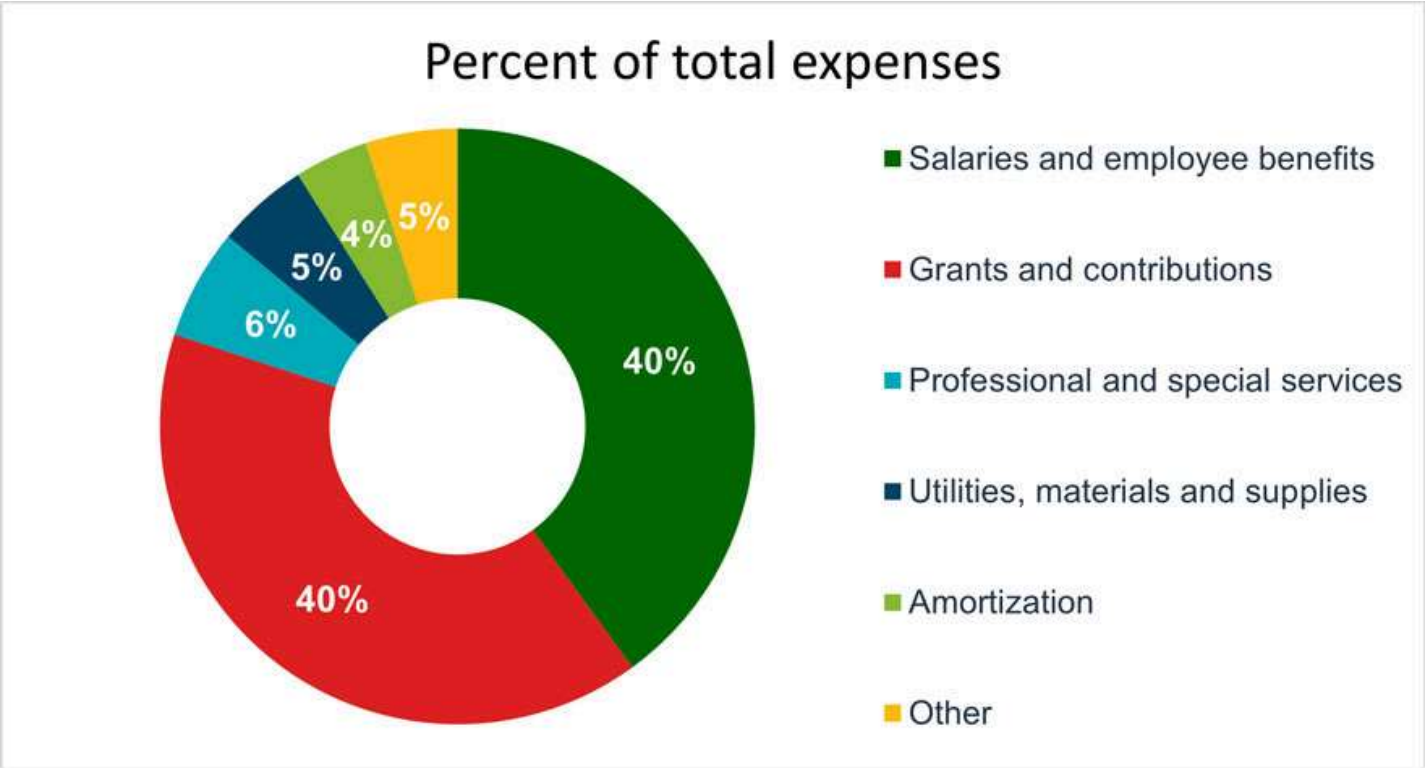
Financial information	2023–24 actual results	2022–23 actual results	Difference (2023–24 minus 2022–23)
Total expenses	1,554,745,000	1,479,917,000	74,828,000
Total revenues	182,665,000	189,254,000	(6,589,000)
Net cost of operations before government funding and transfers	1,372,080,000	1,290,663,000	81,417,000

The NRC's consolidated financial statements include the NRC and its portion of the accounts of the Canada-France-Hawaii Telescope Corporation (CFHT) and Thirty Meter Telescope International Observatory LLC (TIO). The NRC relationship with CFHT and TIO meets the definition of a government partnership under Canadian public sector accounting standards, which requires that its results be proportionally consolidated within those of the NRC. All inter-organizational balances and transactions are eliminated as part of the consolidation process. CFHT and TIO statements as at December 31, 2023 have been proportionally consolidated with the NRC's March 31 accounts.

The NRC's consolidated total expenses of \$1,555 million in 2023-24 represent an increase of \$75 million from \$1,480 million in 2022-23. The NRC's major expense components are salaries and employee benefits (\$621 million) and grants and contributions (\$615 million), representing nearly 80% of total expenses. The \$75 million increase is primarily due to an increase in salary and employee benefits of \$36 million, an increase in other operating expenses of \$20 million, and an increase in grants and contributions of \$19 million. The increase in other operating expenses is mainly due to a \$10 million increase in professional services and a \$6 million increase in transportation and communication (primarily travel). The salary increase is mainly due to increased rates of pay linked to collective bargaining. The increase in grants and contributions is mainly due to an \$18 million increase in contributions to the Square Kilometre Array Observatory, an \$18 million increase in contributions to the Biologics Manufacturing Centre Inc., a \$24 million decrease in NRC IRAP contributions under the Vaccine and Therapeutics program, and a net \$8 million increase in other NRC IRAP transfer payment programs. The planned expenses, as reported in the NRC's Consolidated Future-Oriented Statement of Operations in the 2023-24 Departmental Plan were \$1,557 million. The variance between planned and actual results of \$2 million is primarily due to an increase of \$34 million in grants and contributions, and decreases of \$29 million in other operating expenses and \$7 million in salaries.

The NRC generates revenue which can be reinvested in operations. The NRC's consolidated total revenues of \$183 million in 2023-24 represent a decrease of \$7 million from 2022-23. The NRC's major revenue components were research services (\$74 million) and technical services (\$77 million), representing 83% of total revenues. The planned revenue, as reported in the NRC's Consolidated Future-Oriented Statement of Operations in the 2023-24 Departmental Plan was \$184 million.

Graph 2: Expenses by Type (2023-24)

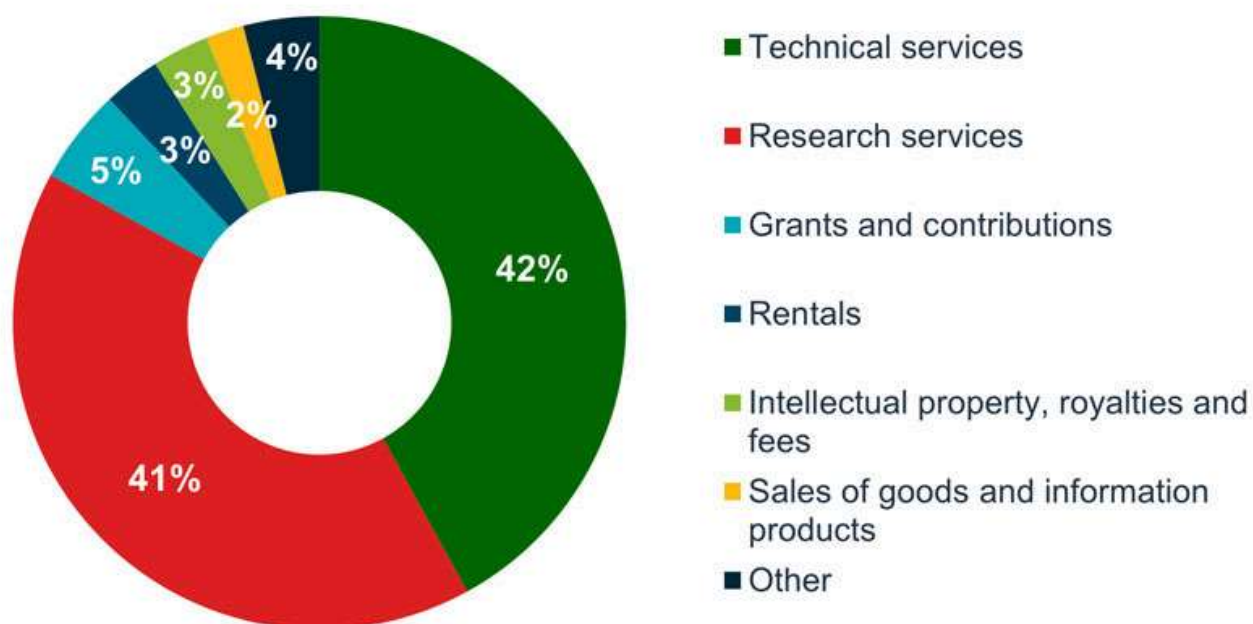


▼ Long description of expenses by type (2023-24)

Category	Percentage
Salaries and employee benefits	40%
Grants and contributions	40%
Professional and special services	6%
Utilities, materials and supplies	5%
Amortization	4%
Other	5%

Graph 3: Revenues by Type (2023-24)

Percent of total revenues



▼ Long description of revenues by type (2023-24)

Category	Percentage
Technical services	42%
Research services	41%
Grants and contributions	5%
Rentals	3%
Intellectual property, royalties and fees	3%
Sales of goods and information products	2%
Other	4%

Table 9: Condensed Statement of Financial Position (audited) as of March 31, 2024 (dollars)

Table 9 provides a brief snapshot of the department's liabilities (what it owes) and assets (what the department owns), which helps to indicate its ability to carry out programs and services.

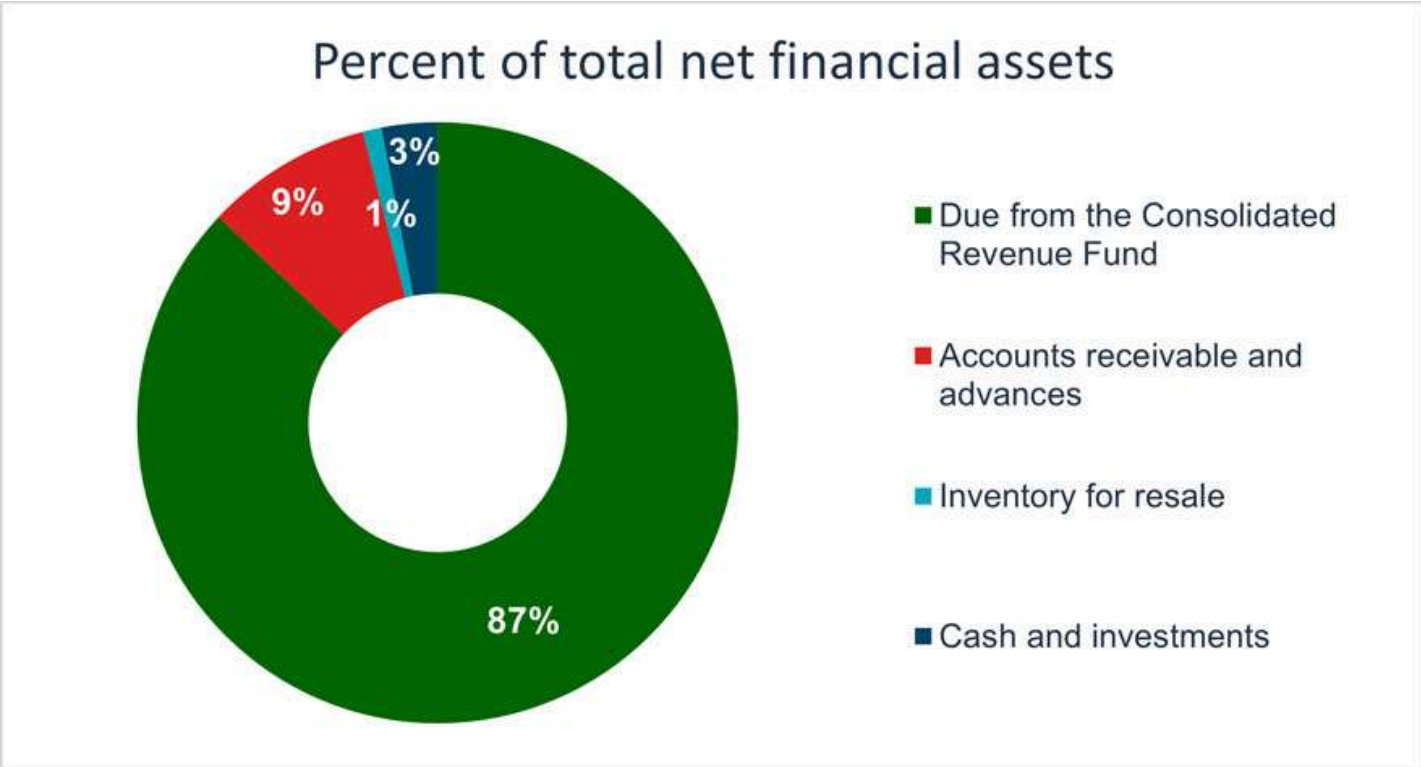
Financial information	Actual fiscal year (2023–24)	Previous fiscal year (2022–23)	Difference (2023–24 minus 2022–23)
Total net financial assets	455,369,000	390,809,000	64,560,000
Total net liabilities	378,612,000	334,293,000	44,319,000
Departmental net financial assets	76,757,000	56,516,000	20,241,000
Total non-financial assets	955,527,000	924,656,000	30,871,000
Departmental net financial position	1,032,284,000	981,172,000	51,112,000

The NRC's consolidated net financial assets totaled \$455 million as at March 31, 2024, an increase of \$65 million from the March 31, 2023 balance of \$391 million. The balance is made up of the amounts due from the Consolidated Revenue Fund (CRF), accounts receivable, inventory for resale, and cash and investments. The increase is primarily due to a \$69 million increase of the amounts due from the CRF, and a \$3 million decrease in cash and investments.

The NRC's consolidated liabilities consist of accounts payable and accrued liabilities, vacation and compensatory leave, lease inducements, deferred revenues, employee future benefits, and asset retirement obligations. The balance as at March 31, 2024 of \$379 million represents a \$44 million

increase from the March 31, 2023 balance of \$334 million. The increase is primarily due to a \$45 million increase in accounts payable and accrued liabilities, most of which is for accrued wages and employee benefits.

Graph 4: Net Financial Assets as at March 31, 2024

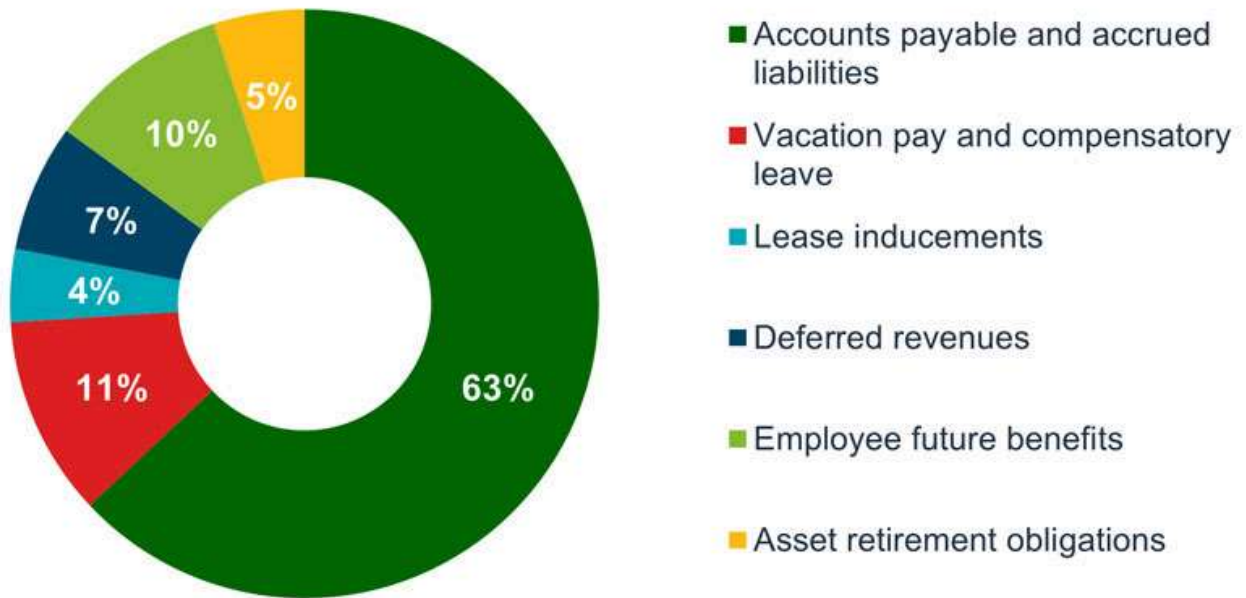


▼ Long description of net financial assets as at March 31, 20224

Category	Percentage
Due from the Consolidated Revenue Fund	87%
Accounts receivable and advances	9%
Inventory for resale	1%
Cash and investments	3%

Graph 5: Liabilities as at March 31, 2024

Percent of total liabilities



▼ Long description of liabilities as at March 31, 2024

Category	Percentage
Accounts payable and accrued liabilities	63%
Vacation pay and compensatory leave	11%
Lease inducements	4%
Deferred revenues	7%
Employee future benefits	10%
Asset retirement obligations	5%

Human resources

This section presents an overview of the department's actual and planned human resources from 2021-22 to 2026-27.

Table 10: Actual human resources for core responsibility and internal services

Table 10 shows a summary of human resources, in full-time equivalents (FTEs), for the NRC's core responsibility and for its internal services for the previous 3 fiscal years.

Core responsibility and internal services	2021-22 actual FTEs	2022-23 actual FTEs	2023-24 actual FTEs
Science and Innovation	3,307.7	3,300.8	3,263.3
Internal services	978.2	962.5	1,059.9
Total	4,285.9	4,263.3	4,323.2

▼ Analysis of human resources over the last 3 years

The NRC's actual 2023-24 FTEs (4,323.2) increased by 59.9 FTEs (1.4%) when compared to 2022-23 (4,263.3). The majority of this increase is related to increased FTEs within procurement and IT/IM groups.

Description	2023-24 FTEs	Variance from 2022-23	Variance from 2021-22
R&D FTEs	2,648.9	16.5	12.8
NRC IRAP FTEs	468.6	6.3	16.1
Internal Services and Enabling Services FTEs	1,205.8	37.2	8.4
Total NRC FTEs	4,323.3	60.0	37.3

Table 11: Human resources planning summary for core responsibility and internal services

Table 11 shows information on human resources, in full-time equivalents (FTEs), for each of the NRC's core responsibility and for its internal services planned for the next 3 years. Human resources for the current fiscal year are forecasted based on year to date.

Core responsibility and internal services	2024-25 planned FTEs	2025-26 planned FTEs	2026-27 planned FTEs
Science and Innovation	3,342.6	3,342.6	3,322.6
Internal services	1,056.5	1,056.5	1,056.5
Total	4,399.1	4,399.1	4,379.1

▼ Analysis of human resources for the next 3 years

The increase in FTEs is due to several new initiatives, most notably, the NRC infrastructure renewal and new procurement authorities.

Corporate information

▼ Departmental profile

Appropriate minister:

The Honourable François-Philippe Champagne, P.C., M.P., Minister of Innovation, Science and Industry

Institutional head:

Ministerial portfolio:

Innovation, Science and Economic Development

Enabling instrument(s):

National Research Council Act, R.S.C. 1985, c. N-15

Year of incorporation / commencement:

1916

Other:

The NRC is a departmental corporation of the Government of Canada, reporting to Parliament through the Minister of Innovation, Science and Industry. The NRC works in partnership with members of the Innovation, Science and Economic Development Portfolio to leverage complementary resources to promote research and integrated innovation, exploit synergies in key scientific and technological areas, promote SME growth and contribute to Canadian economic growth. The NRC's Council provides independent strategic advice to the NRC President and it reviews organizational performance. The President provides leadership and strategic management, and is responsible for the achievement of the NRC's long-range goals and plans in alignment with government priorities. Each of the NRC's Vice-Presidents is responsible for a number of areas composed of programs and research initiatives, research centres, the NRC Industrial Research Assistance Program and/or a corporate branch. Vice-Presidents and NRC managers are responsible for executing plans and priorities to support successful achievement of objectives.

▼ Departmental contact information

Mailing address:

National Research Council Canada
1200 Montreal Road, Bldg. M-58
Ottawa, Ontario, Canada K1A 0R6

Telephone:

613-993-9101 or toll-free 1-877-NRC-CNRC (1-877-672-2672)

Fax:

613-991-9096

Email:

info@nrc-cnrc.gc.ca

Website:

<https://nrc.canada.ca/en/>

Supplementary information tables

The following supplementary information tables are available on the NRC's website:

- Details on transfer payment programs
- Gender-based analysis plus
- Response to Parliamentary committees and external audits

Federal tax expenditures

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance Canada publishes cost estimates and projections for these measures each year in the [Report on Federal Tax Expenditures](#). This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs as well as evaluations and GBA Plus of tax expenditures.

Definitions

▼ List of terms

appropriation (crédit)

Any authority of Parliament to pay money out of the Consolidated Revenue Fund.

budgetary expenditures (dépenses budgétaires)

Operating and capital expenditures; transfer payments to other levels of government, departments or individuals; and payments to Crown corporations.

core responsibility(responsabilité essentielle)

An enduring function or role performed by a department. The intentions of the department with respect to a core responsibility are reflected in one or more related departmental results that the department seeks to contribute to or influence.

Departmental Plan (plan ministériel)

A report on the plans and expected performance of an appropriated department over a 3year period. Departmental Plans are usually tabled in Parliament each spring.

departmental priority (priorité)

A plan or project that a department has chosen to focus and report on during the planning period. Priorities represent the things that are most important or what must be done first to support the achievement of the desired departmental results.

departmental result (résultat ministériel)

A consequence or outcome that a department seeks to achieve. A departmental result is often outside departments' immediate control, but it should be influenced by program-level outcomes.

departmental result indicator (indicateur de résultat ministériel)

A quantitative measure of progress on a departmental result.

departmental results framework (cadre ministériel des résultats)

A framework that connects the department's core responsibilities to its departmental results and departmental result indicators.

Departmental Results Report (rapport sur les résultats ministériels)

A report on a department's actual accomplishments against the plans, priorities and expected results set out in the corresponding Departmental Plan.

Full-time equivalent (équivalent temps plein)

A measure of the extent to which an employee represents a full person-year charge against a departmental budget. For a particular position, the full-time equivalent figure is the ratio of number of hours the person actually works divided by the standard number of hours set out in the person's collective agreement.

gender-based analysis plus (GBA Plus) (analyse comparative entre les sexes plus [ACS Plus])

An analytical tool used to assess support the development of responsive and inclusive how different groups of women, men and gender-diverse people experience policies, programs and policies, programs, and other initiatives. GBA Plus is a process for understanding who is impacted by the issue or opportunity being addressed by the initiative; identifying how the initiative could be tailored to meet diverse needs of the people most impacted; and anticipating and mitigating any barriers to accessing or benefitting from the initiative. GBA Plus is an intersectional analysis that goes beyond biological (sex) and socio-cultural (gender) differences to consider other factors, such as age, disability, education, ethnicity, economic status, geography (including rurality), language, race, religion, and sexual orientation.

government-wide priorities (priorités pangouvernementales)

For the purpose of the 2023–24 Departmental Results Report, government-wide priorities are the high-level themes outlining the government's agenda in the November 23, 2021, Speech from the Throne: building a healthier today and tomorrow; growing a more resilient economy; bolder climate action; fight harder for safer communities; standing up for diversity and inclusion; moving faster on the path to reconciliation; and fighting for a secure, just and equitable world.

horizontal initiative (initiative horizontale)

An initiative where two or more federal departments are given funding to pursue a shared outcome, often linked to a government priority.

non-budgetary expenditures (dépenses non budgétaires)

Net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the Government of Canada.

performance (rendement)

What a department did with its resources to achieve its results, how well those results compare to what the department intended to achieve, and how well lessons learned have been identified.

performance indicator (indicateur de rendement)

A qualitative or quantitative means of measuring an output or outcome, with the intention of gauging the performance of an department, program, policy or initiative respecting expected results.

plan (plan)

The articulation of strategic choices, which provides information on how a department intends to achieve its priorities and associated results. Generally, a plan will explain the logic behind the strategies chosen and tend to focus on actions that lead to the expected result.

planned spending (dépenses prévues)

For Departmental Plans and Departmental Results Reports, planned spending refers to those amounts presented in Main Estimates.

A department is expected to be aware of the authorities that it has sought and received. The determination of planned spending is a departmental responsibility, and departments must be able to defend the expenditure and accrual numbers presented in their Departmental Plans and Departmental Results Reports.

program (programme)

Individual or groups of services, activities or combinations thereof that are managed together within the department and focus on a specific set of outputs, outcomes or service levels.

program inventory (répertoire des programmes)

Identifies all the department's programs and describes how resources are organized to contribute to the department's core responsibilities and results.

result (résultat)

A consequence attributed, in part, to an department, policy, program or initiative. Results are not within the control of a single department, policy, program or initiative; instead they are within the area of the department's influence.

Indigenous business (entreprise autochtones)

For the purpose of the *Directive on the Management of Procurement Appendix E: Mandatory Procedures for Contracts Awarded to Indigenous Businesses* and the Government of Canada's commitment that a mandatory minimum target of 5% of the total value of contracts is awarded to Indigenous businesses, a department that meets the definition and requirements as defined by the Indigenous Business Directory.

statutory expenditures (dépenses législatives)

Expenditures that Parliament has approved through legislation other than appropriation acts. The legislation sets out the purpose of the expenditures and the terms and conditions under which they may be made.

target (cible)

A measurable performance or success level that a department, program or initiative plans to achieve within a specified time period. Targets can be either quantitative or qualitative.

voted expenditures (dépenses votées)

Expenditures that Parliament approves annually through an appropriation act. The vote wording becomes the governing conditions under which these expenditures may be made.

- 1 Emergency flood barriers are readily deployable barriers that are more environmentally friendly and practical than traditional sand bags. They are increasingly part of emergency response plans for citizens, municipalities and property owners.
- 2 R-value refers to the measure of thermal resistance; a higher R-value indicates better insulation properties, meaning the roof is more effective at keeping heat inside during colder months and outside during warmer months.
- 3 For the purposes of measuring performance against the minimum 5% target for 2023–24, the data in this table is based on how Indigenous Services Canada defines "Indigenous business", which is one that is owned and operated by Elders, band and tribal councils; registered in the Indigenous Business Directory; or registered on a modern treaty beneficiary business list.
- 4 Includes contract amendments with Indigenous businesses and contracts that were entered into with Indigenous businesses by means of acquisition cards above \$10,000, and may include subcontracts with Indigenous businesses.
- 5 Includes contract amendments and contracts that were entered into by means of acquisition cards above \$10,000.

Date modified:

2024-12-17