



# Long Term Vision and Plan

LABORATORIES  
CANADA



Government  
of Canada

Gouvernement  
du Canada

Canada

# LABORATORIES CANADA



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## Introduction



### Science – Key Contributions in Canada

Science plays a key role in supporting a vibrant society and a thriving economy in Canada. Scientific advances—from medical breakthroughs to insights that keep our environment clean—improve the health and well-being of Canadians and their environment. From fundamental research to the development of real-world applications, science creates jobs, stimulates economic growth, and spurs innovation.

#### Federal Science

Federal science and technology (S&T) plays a unique role in Canada’s science and innovation ecosystem, complementing the science done by academia and industry. Federal S&T supports evidence-based policy, legislation, regulations, and standards; informs responses to threats, opportunities, and emerging priorities; delivers public-good services; and drives economic growth, prosperity, and well-being.

Recognizing the central role that science plays in Canadian society, the Government of Canada has put forward a bold vision designed to bolster evidence-based policy and decision-making and the science that underpins it. This vision will help Canadian scientists and decision makers solve the increasingly complex issues facing Canada, such as climate change, emerging diseases and pandemics, and cyber security. Advancing federal science through infrastructure investments will also create opportunities to make Canadians aware of world-class federal science activities and outcomes. Doing so will give Canadians the information they need to make good decisions regarding the issues they face in their daily lives—be they health, environmental, technological, or otherwise—increase science literacy, encourage the next generation of scientists, and even bolster support for science in general.

### Enabling Science with Modern Infrastructure

Continued and enhanced science excellence requires that current and future generations of federal scientists have tools they need to perform leading-edge science. Federal scientists also need to be able to collaborate with academic, industrial, and international partners and keep pace with transformative changes shaping the science landscape. Enabling and enhancing existing and new collaborations—by bringing researchers together both physically and virtually—will accelerate the breakthroughs and discoveries that will ultimately benefit Canadians.

### The Government’s Commitment to Science Renewal

The first phase of Laboratories Canada, for which Budget 2018 provided a \$2.8 billion investment over five years, will build sustainable, multipurpose, collaborative federal science and technology infrastructure. To achieve this commitment, an enterprise-wide approach based on Government of Canada science priorities, targeted investments in modern, collaborative, and connected science infrastructure, and asset life-cycle management will be used. This strategic investment in federal laboratories will shape government science for decades to come.

*“Rather than work in silos, this new approach to federal science and discovery will look to bring together federal scientists and science facilities across government... in order to advance interdisciplinary research on, among other things, climate change, ocean protection, and human health.”*

## Long Term Vision and Plan



This Long Term Vision and Plan (LTVP) for the strategy describes an integrated approach to building new federal laboratories and fostering the culture change necessary to amplify existing successful collaborative efforts.

### Long Term Vision

A world-class national network of modern, multipurpose, federal S&T laboratories to support collaborative, multidisciplinary research and innovation, and evidence-based decision-making, including in regulatory responsibilities.

### Cutting-Edge Science for the 21st Century

The LTVP focuses on achieving science excellence through new federal laboratories, modern scientific equipment and Information Technology (IT), and enhanced collaboration. It seeks to balance rapidly evolving S&T needs with real property risks and opportunities at the regional and national levels. These efforts will position Canada at the forefront of new discoveries, support innovative service delivery and ensure that the Canadian science ecosystem continues to foster excellence and deliver outcomes for Canadians.

The LTVP seeks to transform the design and delivery of federal science in order to generate the evidence base needed to inform decision-making. As the pace of scientific discovery continues to accelerate, enabling scientific advancements in “near real time” becomes critical to ensuring that science is at the leading edge of discovery, policy, and decision-making. Doing so will require a departure from the way federal laboratories are currently designed and managed, particularly in the context of fixed, long-lasting, real property assets. Building on the growing culture of experimentation and innovation in the public service, the LTVP proposes novel approaches to the management of real property, IT, scientific collaboration, and science program delivery. Experimentation and innovation will permeate all aspects of the LTVP and its implementation.

## Guiding Principles



Given the scope of the federal science infrastructure portfolio, Laboratories Canada has a 25-year horizon. Initial efforts will focus on addressing federal laboratories identified as being in the most critical condition. As work progresses toward achieving the LTVP, six principles will guide the strategy. In some cases, these principles are already an integral part of the way

federal scientists work, serving as benchmarks for what will be achieved across the entire S&T infrastructure portfolio.

## **1. Science Excellence**

Federal infrastructure is a critical enabler of science excellence, which is central to sound decision-making and societal well-being. Renewed federal laboratories will amplify scientific excellence by enabling scientists to produce robust scientific evidence, translate this new knowledge into tangible benefits for Canadians, and solve the challenges of today and tomorrow. High-calibre science will also create opportunities to engage Canadians by telling them about the cutting-edge work underway and the discoveries it leads to. Renewed laboratories will also attract top scientists and support them in delivering relevant and high-impact work with integrity, creativity, and transparency.

## **2. Collaboration**

Renewed federal laboratories will serve as collaborative hubs, enabled by modern real property approaches and appropriate connectivity. At its core, science is a collaborative enterprise, and renewed federal laboratories will support this collaboration by bringing together scientists from inside and outside of government. A culture of openness, along with the pooling and sharing of scientific knowledge and expertise across jurisdictions, will promote knowledge transfer and advance the pace of discovery. This open collaboration will benefit researchers at all stages of their career, support career development, and stimulate scientific advances and innovation.

## **3. A Diverse and Inclusive Talent Pool**

Science excellence is not only driven by modern facilities and equipment—it also requires talented and innovative individuals to find solutions to the challenges facing Canadian society. Attracting and retaining a talented, diverse, and inclusive cadre of scientists, including early-career and international scientists, will build Canada's reputation as a country of scientific innovation. State-of-the-art facilities and opportunities to collaborate with scientific leaders will help Canada recruit and retain high-calibre talent.

## **4. Agility and Responsiveness**

To continue producing science that has a positive impact on the well-being and prosperity of Canadians, federal S&T must keep pace with the rapidly evolving global scientific context. Federal departments must be responsive to new science realities to stay at the cutting edge of their respective fields and in step with shifting priorities. The facilities will use flexible and adaptable space to ensure that scientists can pivot quickly in response to emerging issues of national importance and allow federal scientists, in conjunction with key stakeholders, to play a leadership role in the global S&T landscape.

## 5. Environmental Responsibility

Through renewed S&T laboratories, the Government of Canada will demonstrate leadership in low-carbon, resilient, and green operations, with new facilities designed to meet federal standards for environmental sustainability. By reducing the overall footprint of federal science facilities and focusing on making new buildings environmentally sustainable, climate resilient, and carbon-neutral, the Government will lead by example and support its commitments under the Paris Agreement on Climate Change and the Pan-Canadian Framework on Clean Growth and Climate Change.

## 6. Responsible Public Stewardship

New investments under Laboratories Canada will seek to maximize the use of laboratory space, reduce redundancy and obsolescence, optimize science investments, and link strategic government IT investments together. Renewed laboratories will be fit-for-purpose and designed to respond to current and emerging science priorities. A portfolio approach will be taken to support asset recycling where appropriate, taking action to lay the foundation from which a more sustainable, strategically managed, and prudently stewarded S&T infrastructure portfolio can be built.

## Overall Approach



### Responsive to Science Needs

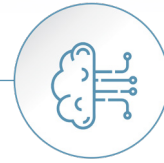
Advancing science excellence will be the primary driver of Laboratories Canada. This includes meeting the needs of the science community, as well as delivering on the Government's commitment to provide real and meaningful results for Canadians. The strategy will also be informed by strategic decisions related to the federal real property portfolio and targeted regional and community investments. This whole-of-government strategy will inform and support the mandates of individual departments and will be governed as such.

### Informed Planning

At its core, the strategy focuses on the planning, development, and delivery of federal laboratories to achieve the vision.

Given the emphasis on innovation and flexibility, leading practices and lessons learned will be tried, tested, and adopted or adjusted on a continuous basis. In this way, program planning and project delivery will happen in tandem. This approach will be supported by efforts to manage, support, and measure change, allowing for course correction where necessary and amplification of successes.

## Enabling Components



Progress toward the Laboratories Canada LTVP will be enabled by three key components: equipment, IT and information management (IM), and the mitigation of policy barriers. Addressing these enabling components will foster a culture of scientific collaboration among federal scientists and their national and international partners and stakeholders.

### 1. Equipment

Modern scientific equipment is essential to ensuring that federal laboratories deliver excellent science that provides solutions to the issues affecting Canadians. The strategy will improve the overall efficiency of federal laboratories through strategic equipment initiatives, such as facilitating equipment sharing and collaborative procurement. More sophisticated collaborative procurement and utilization methods will strengthen science programs and ensure the best value for money across the equipment's lifespan.

### 2. Information Technology and Information Management

Access to the right IT tools will allow federal science to meet both current demand and the technology-driven accelerated pace of change of modern science. A comprehensive strategy will balance the need for modern, agile IT infrastructure to support science collaboration, while securing core federal IT systems from cyber threats. The strategy will include partnerships with IT service providers from both the public and private sectors as appropriate. Improved IM practices will be a foundational element to data discovery and re-use. Shared Services Canada (SSC), through the establishment of an SSC Science Program, will work closely with the science community and related enablers to define integrated solutions that address the IM/IT needs of science. This collaborative approach supports the tenet that IT needs and IM practices for science be defined by the science community to empower innovation and collaboration. Accelerating the Government of Canada's adoption of modern IT infrastructure and IM practices will support scientists in delivering federal science programs and navigating the pace of change with agility in areas of strategic importance.

### 3. Policy Barriers

A number of factors that inhibit collaboration between federal scientists and external partners have been identified in recent years. The strategy is taking steps to address these silos and organizational barriers. For example, stronger linkages between government departments and the Natural Sciences and Engineering Research Council are already enhancing collaboration on science supporting government priorities, and policies related to funding for collaborative projects are being clarified. The creation of flexible, multi-purpose spaces, new governance frameworks for integrated planning and programming, and greater sharing of research results across science programs will enhance collaboration among federal scientists and other actors of the Canadian science ecosystem.

## Laying the Foundation for Success



### **Addressing Critical Facilities and Policy Barriers**

Enabling federal science to respond to current and emerging Government priorities is a primary driver of the strategy. However, as a necessary first step, Laboratories Canada will address the most critical infrastructure by focusing on federal facilities required to support science programs and those that pose a threat to the health and safety of their occupants. With critical infrastructure issues addressed, subsequent Laboratories Canada projects can be increasingly driven by science needs.

The strategy will also see the mitigation of policy barriers that impede collaboration and advances with respect to IT and IM for scientific purposes. These incremental and modular changes to support science excellence will lay the foundation to achieve the LTVP's 25-year vision.

Projects supported by Laboratories Canada will build on the lessons learned from the work of the Government of Canada's National Microbiology Laboratory in establishing a Centre for Innovation in Infectious Disease Diagnostics in Winnipeg, Manitoba, and the design and operation of the Canadian High Arctic Research Station in Cambridge Bay, Nunavut.

### **Regional Excellence**

Plans are being developed that capture and reinforce regional science excellence within the national science ecosystem. Opportunities to catalyze collaboration by optimizing and sharing laboratory facilities or co-locating science-based departments and agencies and external partners that conduct similar activities will be pursued in order to realize tangible synergies in program delivery. This approach will support the science needed to address horizontal issues that implicate multiple departmental mandates and will also result in an optimized real property portfolio.

### **Innovative Approaches**

Leading-edge approaches for construction and ongoing operations will be pursued, as will an agile IT infrastructure that enables science while keeping core federal IT systems safe from cyber threats. Ongoing collaboration between science-based departments and agencies and SSC will ensure access to high-speed, high-capacity, and high performance computing in a variety of ways, including linkages with partner organizations such as universities and CANARIE.

### **Responding to Science Priorities and Opportunities**

Planning will continue to lay the foundation for national federal science infrastructure renewal, greater inclusion of external partners, and continued adoption of innovative practices for the management and delivery of science in response to government priorities.

## **Setting the Course for the Future**

The federal laboratory of the future will be very different from today. It will enable scientists to nimbly adapt to current and emerging challenges in science and respond to the technological changes that come with progress. It will be equipped with the latest scientific equipment and be connected to the rest of the science community while ensuring appropriate cyber security.

The federal laboratory of the future will foster collaboration and innovation across organizations and jurisdictions to deliver excellent science in support of Government of Canada priorities and to better translate scientific results into concrete applications. With public-facing spaces, renewed laboratories will directly engage Canadians and provide them with the information they need to make decisions informed by evidence.

Future federal laboratories will be key demonstrations of the Government of Canada's leadership with respect to green government operations, being carbon neutral, climate resilient, and environmentally sustainable. The work to achieve this vision starts now, beginning with addressing the most critical infrastructure challenges, and taking incremental steps that will serve as a foundation as the initiative strategy unfolds over the next 25 years.



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