

# Canada's Buildings Strategy Update



**Energy and Mines Ministers' Conference**  
Iqaluit, Nunavut  
August 2018



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## Background

The Pan-Canadian Framework on Clean Growth and Climate Change (PCF), announced by Canada's First Ministers in December 2016, is Canada's vision for action to help meet its climate change objectives. Canada's greenhouse gas (GHG) emission reduction target is 30% below 2005 levels by 2030—a critical objective in Canada's transition to a low carbon future. The PCF builds upon existing federal-provincial-territorial climate change actions to create a competitive and resilient low-carbon economy.

As Canada transitions to a low-carbon economy, energy will play a key role in meeting its collective commitment, with energy production and use accounting for over 80 percent of Canada's GHG emissions. One-third of targeted PCF emissions reductions can be achieved through ambitious energy efficiency measures in the buildings, industrial and transportation sectors, as well as through federal government leadership in greening its own operations. Drilling further down into the numbers, 17% of Canada's GHG emissions come from residential, commercial and institutional buildings, making the Buildings sector an important area of opportunity with potential GHG emissions reductions of over 20MT.

Canada's commitments to the built environment under the PCF include:

- Making new buildings more energy efficient
- Retrofitting existing buildings, and fuel switching
- Improving energy efficiency for appliances and equipment
- Supporting mandatory energy labelling and disclosure
- Supporting building codes and energy efficient housing in Indigenous communities.



To make this a reality, *Build Smart: Canada's Buildings Strategy* was adopted in 2017 by Energy and Mines Ministers. *Build Smart* is Canada's implementation plan for the PCF and articulates commitments by federal, provincial and territorial governments in moving toward a clean energy future by making homes and buildings more energy efficient. By investing in energy efficient improvements to our homes and buildings – including hospitals, schools, and our places of work – we are investing in our environment, economy, and even our personal health and overall comfort.

## Early investments

Governments across the country have made commitments to implementing the Buildings Strategy. In January 2018, the Minister of Natural Resources, announced a \$182-million federal investment to increase energy efficiency and address climate change by improving how our

homes and buildings are designed, renovated and constructed. As part of the Green Infrastructure Fund, this investment includes \$48.4 million allocated to Energy Efficient Buildings Research, Development and Demonstration (RD&D) initiatives related to building codes for existing buildings and new net-zero energy-ready buildings. The goal of the RD&D funding is to:

- Accelerate development and adoption of technologies, design and construction
- Provide more cost-effective solutions through innovation
- Validate locally with real-world demonstrations
- Build confidence for adoption of updated codes

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## RD&D IN YT

Between 2011 and 2017, the Yukon undertook a study on long-term thermal performance and durability of vacuum insulated panels (VIP) building envelopes in the Canadian north. VIPs create high-performance buildings without sacrificing floor space taken up by thicker walls required by more traditional insulation materials. The study reviewed the thermal performance of the glass fiber VIPs over the seven-year period and included lessons learned from construction challenges and performance observations in an extreme cold climate. Perceived challenges were addressed through careful planning. Results of the study demonstrated the effectiveness of the VIP insulation in cold climate construction.

The **Energy Efficient Buildings RD&D Program** received 292 expressions of interest for innovative projects, including proposals from all provinces and territories, totalling over \$3 billion in construction costs. The Program addresses technical and financial challenges for both new and existing buildings, from low rise Multi-Unit Residential Buildings to large commercial and institutional buildings. It will demonstrate the cost effectiveness of building at high-energy efficiency performance levels to inform the development of the new energy building codes. One priority area focuses on building partnerships with provincial and territorial (PT) governments, seeking co-funding opportunities for locally PT delivered demonstration programs. The RD&D Program expects to include at least two more calls for project proposals to fully allocate funding through 2026. These demonstration projects will help spur innovation, increase construction industry knowledge and reduce the costs to meet the increasingly stringent new building codes before these codes come into force.

The **Low Carbon Economy Fund** (LCEF) is a key element of the Pan-Canadian Framework on Clean Growth and Climate Change, and is central to Canada's plan for reducing greenhouse gas emissions and fostering clean growth. The LCEF is split into two parts.

Under the **Leadership Fund** portion, \$1.4 billion was allocated to provinces and territories to help them deliver on their greenhouse gas reduction commitments outlined in the Pan-Canadian Framework. While there was no allocation in the LCEF dedicated to specific sectors,

such as buildings, most provinces and territories have put forward proposals that seek to create or expand on programs that support energy efficiency retrofits in buildings. It should be noted that the LCEF does not fund new building construction or RD&D initiatives.

LCEF Projects:

- On April 4<sup>th</sup>, 2018, the Minister of Environment and Climate Change, Catherine McKenna, and the Premier of Ontario, Kathleen Wynne, announced a federal LCEF investment of up to \$100 million to help Ontarians make energy efficient retrofits to their homes (including apartments, townhouses and low-income housing) and businesses.
- New Brunswick, Prince Edward Island, Newfoundland and Labrador, British Columbia and the Yukon are currently applying for LCEF funding to facilitate energy retrofits in buildings across their jurisdictions.
- On April 5<sup>th</sup>, 2018, Energy Efficiency Alberta introduced a second wave of its Residential Retail Products program, supporting additional products and emphasizing rural communities. This builds on partnerships with ~600 retailers who deliver instant rebates in a 4-6 week campaign for programs that include LED bulbs and fixtures, water savings devices, smart power bars, dimmers and motion sensors, and programmable thermostats.
- Approximately \$56 million will be invested in an existing home retrofit partnership with Efficiency Nova Scotia, expanding funding eligibility to include not only homes heated by electricity, but also all homes in the Province of Nova Scotia. The expanded program will help reduce GHG emissions, lead to greater home comfort and contribute to Nova Scotia's transition to a cleaner energy future.

## NATIONAL HOUSING STRATEGY

Canada's first ever National Housing Strategy (NHS) is a 10-year, \$40-billion plan that will give more Canadians a place to call home. The NHS aligns with Canada's climate change commitments by promoting energy efficient housing that is near public transit, jobs, daycares, schools and healthcare. Through the National Housing Co-investment Fund, affordable housing repair and renewal projects must achieve at least 25% reduction in energy use and greenhouse gas (GHG) emissions relative to past performance. New affordable housing construction projects must achieve at least a 25% reduction in energy consumption and GHG emissions over the 2015 National Building Code (NBC 2015) and the National Energy Code for Buildings (NECB 2015). The Rental Construction Financing Initiative (RCFi) requires a minimum 15% decrease in energy use and GHG relative to National Building Codes. These minimum requirements represent the most ambitious environmental standards ever applied by governments to housing programs in Canada. As the National Housing Strategy is implemented, these requirements will be revisited, further enhanced and increased as necessary, in light of experience, improvements in technology and building science, as well as expected advances in building code requirements.



## Making New Buildings More Efficient

**PCF Commitment: Federal, provincial, and territorial governments will work to develop and adopt increasingly stringent model building codes, starting in 2020, with the goal that provinces and territories adopt a “net-zero energy ready” model building code by 2030 (PCF, 2016).**

Natural Resource Canada (NRCan)’s Office of Energy Efficiency has been working to support the provincial and territorial adoption of model energy codes for new and existing buildings. NRCan has been actively engaging partners in this working group to assess their needs and advancing the development of tools for jurisdictions to use in their regions. Progress over the last year includes conducting a needs assessment, launching work on a new program to ensure the proper implementation of energy codes following their adoption, and sharing information from leading jurisdictions.

### NET-ZERO READY - NL

Newfoundland and Labrador’s first Net Zero Ready Home, located in Flatrock, Newfoundland, was built in 2016 and labelled under the Canadian Homebuilders’ Association (CHBA)’s pilot labelling program. The home also received the CHBA Net Zero Ready Qualified Home “Mark of Excellence”.

### LEADERSHIP BC STYLE

British Columbia is a leader in code development and implementation. The Province has committed to taking incremental steps to increase energy-efficiency requirements to make buildings net-zero energy ready by 2032. The BC Energy Step Code--a part of the BC Building Code--supports that effort. Its voluntary Energy Step code, published in 2017, is being adopted by over two dozen municipalities in the province.

Also at the federal level, The National Research Council (NRC) and Codes Canada launched the code commission process, with technical committee work underway to develop the first tier of more stringent energy codes.

Many new high-performance building projects are underway across the country. For example, Abondance le Soleil, a highly energy and resource-efficient triplex, is being built on an empty lot in Verdun, Quebec, just south of downtown Montreal.

<http://projetsverts.voirvert.ca/projets/abondance-montreal-le-soleil>

## Bringing Existing Buildings into an Energy-Efficient Future

**PCF Commitment: Federal, provincial and territorial governments will work with industry to develop a model code for existing buildings by 2022, with the goal that provinces and territories adopt the code. This code will help guide energy efficiency improvements that can be made when renovating buildings (PCF, 2016).**

Extensive work is underway at the federal and provincial/territorial levels to increase energy efficiency for existing buildings through a variety of actions. The federal government is working towards having model energy codes for existing buildings published, and ready for adoption by provinces and territories, by 2022. Evidence-based research is now underway through the NRC to identify the most cost-effective and technically feasible solutions for a variety of building types.

NRCan is exploring options to develop a national approach to recommissioning in order to optimize the operation of existing commercial and institutional buildings. NRCan is working with provinces, territories, municipalities and industry to advance discussions and consider options and activities to support a national approach.

Recommissioning and deep retrofit projects across the country include:

- The [Efficiency Nova Scotia Building Optimization program](#) supports recommissioning to ensure that buildings are working properly and are set for optimal efficiency. Recommissioning specialists work with building owners to review original operating documents, equipment, temperature settings and scheduling. The Nova Scotia Department of Transportation and Infrastructure Renewal (TIR) has recommissioned most core buildings in its portfolio in an ongoing effort to increase building performance, leading to reduced thermal comfort complaints and an enhanced understanding building systems for building operators.
- The Manitoba government is working with Manitoba's commercial building sector organizations such as the Building Owners and Managers Association, Building Energy Management Manitoba and the Canada Green Building Council to develop a strategy that includes recommissioning 80 per cent of buildings that do not currently meet high-performance energy standards by 2030.

### DEEP RETROFITS IN AB

[J.G. O'Donoghue Building Deep Retrofit Project](#) in Edmonton, Alberta, saw the J.G. O'Donoghue Building undergo a full mechanical and electrical upgrade, resulting in a doubling of its previous occupancy capacity and \$4 million in annual lease cost savings. Energy efficiency features include LED lighting, paperless washrooms, and a roof with photovoltaic panels.

## Provincial and territorial incentive programs

Recognizing that retrofitting takes investment and time, governments are launching or continuing to support incentive programs to promote energy efficiency and help make energy efficiency efforts more affordable.

- [Energy Efficiency Alberta](#) provides \$245 million in funding for 2017-18 and 2018-19 to support the following energy efficiency programs for Albertans: Residential No Charge Energy Savings Program; Business, Non-profit and Institution Program; Residential Retail Products Program; Residential and Commercial Solar Program; and Non-Profit Energy Efficiency Transition Program (NEET): <https://www.energycanada.ca>
- Quebec's [Rénoclimat](#) program offers financial assistance for renovations to residential buildings. In its most recent [Budget](#), the Government of Quebec also announced the creation of an innovative fund of \$30 million in support of energy efficiency for commercial buildings. The Rénover tax credit, which provides financial assistance for energy efficient renovations, was also extended to March 31, 2019.
- [Chauffez vert](#) is a program offered by the Government of Quebec and administered by Transition énergétique Québec, which offers financial incentives to encourage homeowners to replace their fossil fuel heating systems (other than natural gas) with renewable energy systems.
- The [Energy Efficiency Loan Program \(EELP\)](#) is an initiative of the Government of Newfoundland and Labrador, delivered in partnership with Newfoundland Power and Newfoundland and Labrador Hydro, which will be implemented from 2017-18 to 2019-20. The Province is providing a total of \$4 million for the program. EELP provides eligible participants who use electric heat in their homes with a low-interest loan of up to \$10,000, to be used for energy efficiency home upgrades, specifically purchasing and installing heat pumps, basement and attic insulation, as well as conducting home energy assessments.
- The [Yukon Residential Energy Incentives program](#) offers incentives to homeowners to improve air tightness and insulation levels in their existing residences. From January 2015 to January 2018, 1,126 retrofit rebates were issued to Yukoners. In 2016, participants in the program

## NS PASSIVE HOUSE

Housing NS has built many homes to the Passive House Standard and is exploring ways to continually improve efficiency in its buildings. Housing NS has signed on to a pilot program that will embed a qualified Onsite Energy Manager at Housing NS to help identify, coordinate and facilitate the implementation of energy efficiency projects.

(<https://housing.novascotia.ca/newsroom/energy-efficient-affordable-housing-open-yarmouth-county>)

saved the equivalent of 0.3 per cent of Yukon's total electrical generation. The [Yukon Commercial Energy Incentive program](#) offers incentives for improving energy use in multi-family dwellings and commercial buildings through building retrofits or lighting system upgrades. Between May 2015 and January 2018, there were 60 LED lighting retrofits completed, which saved program participants the equivalent of 0.9 per cent of Yukon's total electrical generation in 2016.

- Nova Scotia offers Deep Energy Retrofits for all low-income homes at no charge through the [HomeWarming Program](#), supported by the Province of Nova Scotia and Nova Scotia Power. As well, [rebates are offered to consumers on the highest efficiency models of heat pumps](#).
- The Town of Bridgewater, Nova Scotia, is piloting an ultra deep energy retrofit project with funding from NRCan. More details are in a news article published on March 23<sup>rd</sup>, 2018 – "[How Bridgewater reduced energy consumption by 23 per cent](#)".
- [Save on Energy](#) electricity conservation programs under Ontario's 2015-2020 Conservation First Framework, as well as natural gas conservation programs under Ontario's 2015-2020 Demand Side Management Framework, provide financial incentives and other energy management services for all customer sectors to retrofit existing buildings or to construct new energy efficient buildings.
- New Brunswick has a [homeowner energy savings program](#) that offers assistance on upgrades to home heating systems, regardless of how the home is currently heated. This program also covers upgrades that include insulation, windows, doors and even solar panels. A [New Home Construction program](#) is also available to encourage energy efficiency considerations for building new homes.
- Also in New Brunswick, new incentives for industry will help cover the up-front costs to replace, purchase and install high-efficiency equipment for operations. A [Commercial Buildings Retrofit Program](#) provides financial incentives for evaluations to determine the potential for energy efficiency upgrades in commercial buildings, as well as financial support for energy retrofitting projects that result in measurable electricity savings.

## TAKECHARGE NL

[TakeCharge](#) is a site hosted by Newfoundland Power and Newfoundland and Labrador Hydro that lists programs, initiatives and events to support energy efficiency in homes and buildings in Newfoundland and Labrador. These include an annual [Energy Efficiency Week](#), rebates, tips and products for residences and businesses, [government programs](#) and a [KIC \(kids in charge\) program for energy efficiency](#).

- The [Nunavut Energy Management Program](#), led by the Government of Nunavut (GN), aims to reduce energy consumption by 20%, by retrofitting existing GN owned facilities territory-wide. The program also focuses on reducing GHG reduction, substituting diesel-generated energy with renewable energy where feasible and exploring new energy efficient building technologies.
- The [Home Renovation Program](#), administered by the Nunavut Housing Corporation, provides assistance to eligible homeowners who wish to carry out major repairs, renovations and additions to their homes, including covering costs for materials, freight, and labour. Applicants are eligible to receive a maximum of \$50,000 per household, as well as an additional \$15,000 for renovations specifically related to energy savings or energy efficiency.

## Improving Energy Efficiency for Appliances and Equipment

**PCF Commitment: The federal government will set new standards for heating equipment and other key technologies to the highest level of efficiency that is economically and technically achievable (PCF, 2016).**

Progress on increasing energy efficiency for appliances and equipment has occurred on many fronts. Over the last year, federal, provincial and territorial governments engaged with more than 100 stakeholders across the economy to complete [market transformation roadmaps](#) for windows, space heating and water heating. These roadmaps will pave the way to meet the [aspirational goals for energy performance](#) released by EMMC in August 2017.

Federal and provincial governments have updated their energy efficiency regulations to encourage improvements in consumer and commercial products while eliminating the least energy efficient products from the

### SPOTLIGHT ON HEAT PUMPS

Heat pumps can provide Canadian homes and buildings with space and water heating services at efficiencies of greater than 100% to 200%, making this technology critical in the transition to a low- carbon building sector. Governments across Canada are supporting efforts to accelerate the adoption of heat pump technology by investing in several market transformation initiatives. For example, governments and utilities in Nova Scotia, Ontario, British Columbia, Manitoba and Quebec, along with NRCan and partners in the United States, are developing a voluntary variable capacity heat pump standard through the Canadian Standards Association. This standard is the first of its kind, and will allow manufacturers to rate electrical heat pump performance in cold climates. Concurrently, governments are conducting field demonstrations to better understand energy savings from these technologies, how technologies can be integrated with gas heating systems, and how they can provide grid benefits to manage peak demand. Research and development activities are also ongoing to understand new emerging heat pump technologies, and ways to reduce upfront costs to consumers. For further information on R&D and deployment priorities see the [equipment roadmaps](#).

Canadian market. NRCan released draft regulations in March 2018 to update or introduce new standards for 17 product categories. These changes are expected to generate \$4.5 billion in net benefits to Canadians by 2030, while reducing greenhouse gas emissions by 1.5 Mt in 2030. The Province of British Columbia updated its regulations in March 2018 with new and updated standards for gas fireplaces, residential heat pumps, general service lighting, fenestration and consumer electronic products. In January 2018, Ontario updated its regulations with new and enhanced standards for 12 products. Major updates to Quebec's regulations also came into effect in 2017.

NRCan continues to administer the ENERGY STAR® program, the Government of Canada's most recognized brand and a major driver of product innovation. In 2017, five product specifications were updated, and NRCan recently finalized a major update to specifications for windows, doors and skylights that will come into effect in 2020.

### Labelling Building Energy Use – Setting Energy Use Data Free

**PCF Commitment: Federal, provincial, and territorial governments will work together with the aim of requiring labelling of building energy use by as early as 2019. Labelling will provide consumers and businesses with transparent information on energy performance (PCF, 2016).**

Leading municipalities, provinces and territories are forging paths into the labelling and disclosure of energy use realm. The City of Whitehorse, with assistance from the Yukon government, has been requiring energy labels on new homes since April 1, 2014. As the sole Service Organization for the EnerGuide for Houses service in the Yukon, the Energy branch of the Yukon government works with NRCan to collect and analyze data from all Yukon energy assessments. To help building owners and managers transition to the mandatory building energy labelling initiative, the City of Edmonton has implemented a voluntary building energy reporting and disclosure program, using ENERGY STAR Portfolio Manager to benchmark and report energy performance. The city recently completed the first year of the three-year pilot.

Nova Scotia has a voluntary home energy performance label disclosure program developed by EfficiencyNS and ViewPoint, Nova Scotia's most frequently used real estate listings website: <https://www.viewpoint.ca/map>. As well, the Nova Scotia Department of Transportation and Infrastructure Renewal (TIR) is currently energy benchmarking nearly 80 TIR-owned buildings as part of the Energy Conservation Program (ECP). The ECP is using the ENERGY STAR Portfolio Manager as a benchmarking tool. The project is expected to be completed in fall 2018.

Federal, provincial, and territorial governments are working together to create a framework to support the PCF commitment of mandatory labelling of building energy. A Labelling and Disclosure Working Group, co-chaired by NRCan and the Province of Nova Scotia, has been meeting regularly to develop the national framework. The priorities of the working group have included:

## ON REGULATION

In 2017, Ontario introduced O. Reg. 20/17, which enables mandatory energy and water reporting and benchmarking for large buildings. Large building owners who are required to report will need to submit their building's energy and water consumption and greenhouse gas emissions on an annual basis to the Ministry of Energy.

- Developing tools to publicly share energy efficiency data, with a partnership between [NRCan and the Canadian Digital Service to build an application programming interface \(API\)](#) to open access to EnerGuide Rating System data for provincial, territorial and public users, providing information on energy performance ratings, energy literacy and cost-effective retrofits (see Annex Two).
  - Understanding the needs and priorities of each jurisdiction in Canada through a national needs assessment.
  - Supporting the development of a model national framework and an online database platform to support jurisdictions and stakeholders in implementing benchmarking, labelling and disclosure policies and programs in the commercial and institutional buildings sector.
- Engaging key stakeholders including municipalities leading in the area of labelling and disclosure and working with the Canadian Real Estate Association on [A Homeowner's Guide to Energy Efficiency](#), a publication to help realtors promote the benefits of energy retrofits and the value of energy efficiency labels.

NRCan is investing in new and expanded tools to support infrastructure for benchmarking and mandatory labelling and disclosure including:

- Launch of [ENERGY STAR certification program and ISO 50001 energy management program for commercial and institutional buildings in Canada](#) in March 2018
- Expansion of the ENERGY STAR Portfolio Manager with the release of new ENERGY STAR scores for ice rinks and office buildings and other tool enhancements.
- Initiation of the first [national survey of energy consumption in multi-unit residential buildings](#).

## Codes and energy efficient housing in Indigenous communities

**PCF Commitment: Governments will collaborate with Indigenous Peoples as they move towards more efficient building standards and incorporate energy efficiency into their building-renovation programs**

NRCan is working on a targeted outreach strategy for Indigenous communities. This includes activities such as creating information products in collaboration with Indigenous reps, on topics such as energy efficient housing and the EnerGuide Rating System, and operating and maintaining a home to achieve energy efficiency benefits. NRCan is also working with INAC, CMHC and other departments and agencies that deliver programming to Indigenous communities. We aim to support energy efficiency in housing programming for Indigenous communities. NRCan is funding two projects in the NWT communities of Fort Providence and Aklavik to help them implement community energy plans and achieve cost savings.

Working with Indigenous communities is only one of the complementary activities underway to support the Buildings Strategy. Knowing that retrofitting existing building stock will lead to the biggest and most challenging gains, stakeholders are deeply engaged in collaboration and in enhancing government investments. Working together, all of our actions will pave the road to success.

Annex One: Build Smart: Canada's Buildings Strategy

Annex Two: Setting Energy Data Free: Developing an Online Platform for Sharing Access to Home Energy Use Data