

Written Submission for the Pre-Budget Consultations in Advance of the Upcoming Federal Budget

August 7, 2020



List of recommendations

- 1** That the government provide \$1.5 billion in funding to expand green building workforce training.
- 2** That the government provide \$10.4 billion over three years to the low-carbon economy fund to expand provincial and municipal energy efficiency portfolios.
- 3** That the government provide \$13 billion to capitalize a building retrofit finance platform implemented through the Canada Infrastructure Bank, Canada Mortgage and Housing Corporation, and other relevant partners.
- 4** That the government provide \$2 billion for large-scale building retrofit demonstration projects.
- 5** That the government of Canada provide additional incentives to provinces that adopt higher energy performance tiers of the 2020 model national building codes, with a plan to achieve a 90% compliance rate.

Energy Efficiency as a tool to re-start the economy and increase resilience against COVID-19

Upgrading our buildings to be energy efficient and lower carbon will provide both immediate and quick increases in jobs and aggregate demand, while increasing economy-wide productivity and setting a long-term direction for economic growth for decades to come. The multiple benefits of energy efficiency can help Canada manage both demand and supply shocks from COVID-19 while improving the operation of our buildings to reduce virus transmission. Energy waste is also found in every region in Canada, making efficiency a resource that can create jobs throughout the country and unite Canadians.¹

Better buildings can restart Canada's economy by:

1. **Creating jobs.** Efficiency program investments create 16-30 jobs per \$1 M invested,² and 60% of expenditure on home retrofits goes towards labour.³
2. **Increasing consumer spending in the local economy** because energy savings reduce expenditures on imported energy and increase local buying power.
3. **Building investor confidence and business expectations** by demonstrating a profitable pipeline of energy savings opportunities for decades to come.
4. **Managing pandemic concerns through better indoor air quality,**⁴ thermal comfort for those staying at home,⁵ and improved affordability.
5. **Preparing for the future by increasing building resilience** to extreme weather from climate change and locking-in GHG reductions through advanced building codes and efficiency standards.

¹ See Haley and Gaede, 2019. Canadians can unite behind energy efficiency. Policy Options
<https://policyoptions.irpp.org/magazines/november-2019/canadians-can-unite-behind-energy-efficiency/>

² Dunsy Energy Consulting, 2018. The economic impact of improved energy efficiency in Canada. "Pan-Canadian Framework Plus" scenario.

³ <https://www.iea.org/articles/energy-efficiency-and-economic-stimulus>

⁴ Zhang, J., 2020. Integrating IAQ control strategies to reduce the risk of asymptomatic SARS CoV-2 infections in classrooms and open plan offices. Science and Technology for the Built Environment 26, 1013–1018.
<https://doi.org/10.1080/23744731.2020.1794499>

⁵ Dump fuel-hungry AC units to cut years of emissions and save trillions: UN report,
<https://news.un.org/en/story/2020/07/1068641>

Ministerial mandate letters include priorities such as free energy audits, competitions for commercial building retrofits, grants, and financing. The suggestions below complement and augment these initiatives, and are tailored to enabling economic restart and adaptation to COVID-19.

A \$28 billion public investment over 5 years will meet the current government's platform commitment to retrofit 1.5 million homes, and retrofit 15% of the total building stock. By crowding in another \$44 billion in private and partner investment, this investment plan will create 660,862 person-years of employment (132,172 annual average), increase GDP by \$160 billion (\$32 billion annual average), and reduce annual GHGs by 20.4 Mt.

Below we present initiatives that can occur while physical distancing measures are in place, programs that can ramp-up quickly to provide stimulus, and strategies to promote a durable, long-term economic recovery.

Train the green building workforce

Training initiatives can start right now, with many organizations successfully converting to online platforms.⁶ Increasing training and education in areas such as heat pump installation and integrated design principles are important to increase energy efficiency, and prevent the layoff of skilled labour. Most importantly, public policy can encourage those that have lost their jobs to build new careers in energy efficiency, through training in areas such as energy auditing and customer engagement. We suggest developing a specific strategy to engage women and young people who have lost their jobs in low-wage service sectors to find new careers in energy efficiency.

We support the Canada Green Building Council's call to allocate \$500 million (\$1000 per employee) to access existing training programs, and a further investment of \$1 billion to attract and train new people to create energy efficient and green building careers.

Immediately expand provincial/municipal energy efficiency portfolios

The federal government can leverage an already existing energy efficiency program delivery infrastructure to provide rapid, accountable, and effective support to Canadians.

⁶ See case study from the Canadian Institute for Energy Training at <https://cietcanada.com/news/covid-19-case-study-part-2/>

Supporting a portfolio of residential, commercial, and industrial programs means administrators can flexibly adjust strategies that make sure the money is actually spent and jobs are created, while adopting to different COVID-19 re-opening policies. Efficiency programs undergo a thorough review process overseen by utility regulators, involving scrutiny by third-party experts and stakeholders. There are established systems for cost-effectiveness testing; evaluation, measurement and verification; and performance tracking.

The Low-Carbon Economy Fund has already funded provincial program administrators. With a call for proposals to expand the scale and scope of existing portfolios and a direct application process between these funds and administrators, scale-up funding could be delivered quickly.

A 3-year funding increase of \$10.4 billion⁷ would put the Canadian provinces on a trajectory towards catching up to leading American states. Efficiency Canada's first North American comparison of state and provincial energy savings reveals that the provinces lag.⁸ For example, Massachusetts achieved electricity savings of 2.8% of retail sales in 2018, compared to 1.4% in Ontario (2017 figure) and 1.3% in Nova Scotia.

Within a portfolio approach to enable flexibility and adaptation, it is also possible for the federal government to place emphasis on performance criteria that prioritizes economic stimulus and greenhouse gas reductions. These include:

- **Deeper retrofits.** Given that 60% of expenditure on home retrofits goes towards labour, focusing on deeper retrofits is a strong job creator.⁹
- **Energy poverty.** 20% of Canadian households face energy poverty, and will be most affected by a recession.¹⁰ Directing immediate support for low and moderate income households will increase local spending multipliers, and leverage existing programs that are often impeded by restrictive cost-benefit criteria.

⁷ First three year ramp-up in PCF+ scenario in Dunskey Energy Consulting 2018.

⁸ See Haley 2020. Energy efficiency programs are 'shovel-ready' <https://www.energycanada.org/energy-efficiency-programs-are-shovel-ready/>

⁹ Scheer, J. and B. Motherway (2011), *Economic Analysis of Residential and Small-Business Energy Efficiency Improvements*, Sustainable Energy Authority of Ireland, <https://www.seai.ie/publications/Economic-Analysis-of-Residential-and-Small-Business-Energy-Efficiency-Improvements.pdf>

¹⁰ See <https://cuspnetwork.ca/centring-equity-and-affordability/energy-poverty-in-canada-a-cusp-backgrounder/>

- **Heating System Market Transformation.** Deeper retrofits and GHG reductions require switching to more efficient and low-carbon heating systems like heat pumps. Federal support can help break through “fuel silos” that can exist at provincial levels, and help deliver on the objective of the federal-provincial “market transformation roadmap for windows, space heating and water heating technologies”.¹¹
- **Advanced building codes.** Program strategies can complement the adoption of Canada’s net-zero energy ready model national building codes, and improved code compliance.

Launch a building retrofit finance platform

We can build a durable, long-term, recovery by providing a clear direction for future growth opportunities through a \$13 billion capitalization¹² of a public investment strategy aimed at creating a functioning building retrofit market. Public investment will leverage private capital through de-risking and co-investment strategies, and enable regional efficiency finance networks through standardized project origination and underwriting approaches (e.g. Investor Confidence Project), and aggregation and warehousing of projects to attract large institutional investors.

To enable rapid response to create jobs, and manage health and affordability concerns created by the pandemic, initial investments can focus on thermal comfort and air quality improvements in schools, affordable housing, hospitals, and public buildings.

The retrofit finance platform will be led by:¹³

1. Canada Infrastructure Bank, focused on public, commercial & institutional buildings. Facilitating aggregation, securitization, and incentives for project origination.
2. Canada Mortgage and Housing Corporation. Underwriting residential financing in partnership with Green Municipal Fund and utilities offering on-bill financing.
3. Natural Resources Canada facilitating a network of regional organizations developing “on the ground” projects capable of meeting federal finance criteria.

¹¹ See <https://www.nrcan.gc.ca/energy/regulations/21290>

¹² Consistent with estimate of \$300-\$500 billion retrofit investment needs, under strategy to attract private capital and recycle capital as investments are repaid and/or securitized and sold to institutional investors.

¹³ These recommendations mirror the Expert Panel on Sustainable Finance.

Retrofit at scale demonstrations

To meet net-zero emissions economy objectives, we need to dramatically expand the number of building retrofits per year and increase the depth of energy savings and carbon reductions. Retrofitting at much larger scale promises to reduce costs because retrofit approaches can be standardized across similar building types, while manufacturers streamline and upgrade their processes to meet large-scale, consistent, demands. In the Netherlands, the “Energiesprong” (energy leap) efforts in social housing demonstrate the promise of this approach. Adapting it to Canada’s context will require “system innovations” in areas such as marketing, manufacturing, logistics, and financing.

We suggest launching a multi-stage competitive process to support innovative business models capable of reaching performance targets related to energy and GHG savings, and reductions in time and cost of retrofits. Such a competition could be facilitated by Impact Canada, in partnership with organizations like the Federation of Canadian Municipalities, and Natural Resources Canada Office of Energy R&D.

Advanced building standards to lock-in savings

All strategies noted above should complement a long-term market transformation towards low-carbon building practices by reinforcing the introduction of mandatory building energy codes, labels, and standards. The final 2020 national model energy codes should be released this year.¹⁴ Unlike previous codes that only provided a minimum standard, the new building codes provide performance tiers moving towards a net-zero energy ready standard. The federal government can provide funding bonuses for provinces that adopt higher building standards. In particular, we recommend incentives for provinces with:

1. A plan to adopt the upper performance tiers, moving towards net-zero energy ready by 2030.
2. A plan to achieve 90% compliance with these building standards.
3. The introduction of mandatory energy performance labels and reporting in the residential and commercial sectors.

¹⁴ Lockhart 2020. What you need to know about the new building codes. <https://www.energycanada.org/what-you-need-to-know-about-the-new-building-codes/>

Results

The funding amounts suggested above are calibrated to meet the current government's platform commitment to retrofit 1.5 million homes in 5 years, which is 15% of the single-family dwelling building stock. It also includes targeting similar deep energy saving retrofit rates in multi-unit residential and commercial-institutional buildings. See a proposed investment plan below, with estimated results.¹⁵

¹⁵ Calculations by Efficiency Canada based on Dunsky 2018 (PCF+ scenario), Coalition for Green Capital, and Ralph Torrie retrofit calculator, and estimates of current retrofit rates from Natural Resources Canada.

5-year investment plan

Initiative	5-year investment (\$ billion)
Training the green building workforce	\$1.5
Immediately expand provincial and municipal energy efficiency portfolios (3 year)	
Program cost	\$10.4
Participant cost	\$8.1
Building Retrofit Finance Platform	
Public investment ¹⁶	\$13.0
Private investment ¹⁷	\$35.1
Retrofit at Scale Demonstrations	
Public investment	\$2.0
Partner investment	\$1.0
Total	\$71.1
Public	\$26.9
Private / partner	\$44.2

¹⁶ Consistent with estimate of \$300-\$500 billion retrofit investment needs, under strategy to attract private capital and recycle capital as investments are repaid and/or securitized and sold to institutional investors.

¹⁷ Assume 2.7 leverage rate in first 5 years and no capital recycling

5-year impacts

Retrofits	
Residential homes	1.5 million
Multi-unit residential buildings	752 thousand dwellings
Commercial-institutional buildings	113 million square meters

New Jobs ¹⁸	
Total person-years	660,862
Average annual jobs	132,172

GDP Increase ¹⁹	
Total GDP increase (\$ billion)	\$160 billion
Average annual GDP increase (\$ billion)	\$32 billion

Annual GHG reduction (Co2 e) ²⁰	20.4 Mt
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Societal benefits
Improved air ventilation to reduce COVID-19 transmission
Resilience against weather extremes
Energy poverty reductions, reduced heat stress, and more affordable housing

¹⁸ Multiplier from PCF+ scenario in Dunskey Energy Consulting 2018, including participant + program spend. Excludes spending on training. These figures include job creation in energy efficiency sector and economy-wide from spending multipliers.

¹⁹ Multiplier from PCF+ scenario in Dunskey Energy Consulting 2018, using program and participant spend. Excludes spending for training.

²⁰ Estimate using Ralph Torrie retrofit calculator. Assumption available upon request.