

Building a Competitive Economy

Through Energy Efficiency

October 2018



Efficiency
Canada

The national voice for an
energy efficient economy

Budget 2019 Priorities from Efficiency Canada

The next federal budget must prepare Canadians to compete in a potentially volatile global economy, while re-affirming our nation's commitment to a transition to a low-carbon society.

Launching a comprehensive energy efficiency strategy in Budget 2019 will boost competitiveness and growth and build on the vision of a low-carbon future outlined in the Generation Energy Council's report and the Pan-Canadian Framework on Clean Growth and Climate Change.

Who is Efficiency Canada?

Efficiency Canada is the national voice for an energy efficient economy, advocating to make our country a global leader in energy efficiency. We convene people from across Canada's economy to work together to advance policies required to take full advantage of energy efficiency. And we communicate the best research out there to build a more productive economy, sustainable environment, and socially just Canada.

Efficiency Canada is an operating unit of the Carleton Sustainable Energy Research Centre, a cross-disciplinary initiative between the School of Public Policy and Administration and the Faculty of Engineering and Design.



How Energy Efficiency Creates a Competitive and Resilient Economy

Energy efficiency enhances economic competitiveness and growth. Comprehensive economic modelling shows that **meeting the energy efficiency objectives outlined in the Pan-Canadian Framework would create 118,000 annual jobs and boost Canada's GDP by 1%**, while meeting one-quarter of the GHG reductions required under our international climate commitments. ¹

Efficiency can improve Canada's trade performance in all sectors. Spending less on energy waste allows Canadian businesses to weather economic disruptions and increase the amount of value that Canadian workers and firms capture from exporting goods and services. To take Canada's oil and gas industry as an example, a recent International Energy Agency report showed that maximizing efficiency would result in one trillion (\$US) dollars in additional fossil fuel trade revenues by 2050. ²

Efficiency improves productivity. Firms will be able to make **more productive investments in new equipment and skilled labour by spending less on energy waste.** Additional productivity benefits occur from creating more comfortable, safer, and higher performing buildings.

Better ventilated and designed buildings improve labour productivity through increased employee satisfaction and reduced sick days.³ Better lighting can increase worker safety and increase sales for retailers.⁴ These economic benefits can be much greater than the saved energy.

Efficiency builds a more resilient economy by putting money in the pockets of consumers. It strengthens the middle class by **making housing more affordable**, and when consumers re-spend the money they save, the economic impact increases three fold.⁵ This boost to domestic demand will cushion Canada against potential economic shocks.

Finally, there is an opportunity to grow Canadian clean technology companies. Improving energy efficiency is a strategic investment in the clean technology sector because it enables companies to accelerate growth and demonstrate leadership.



Building on the Generation Energy Council Report and Pan-Canadian Framework

The Generation Energy Council's vision recognizes that there **"is no more essential first step towards Canada's low-carbon economy than boosting our nation's energy productivity."**⁶ The report calls for a doubling and then tripling of the year-to-year rate of energy efficiency improvement, from the current 1% per year to 2% by 2025 and 3% by 2030.

The following objectives were listed as ways to achieve these energy productivity improvements:

- By 2040, Canadian homes and buildings are at least as energy efficient as leading cold climate jurisdictions worldwide, through:
 - Provincial implementation of a federal model code for all new construction to achieve a net-zero energy standard
 - Provincial implementation of a model code for new renovations by 2025
 - Energy performance labels on all homes and buildings by 2025
- By 2040, Canadian industry meets or exceeds US energy productivity, through:
 - 75% of industrial energy use benefiting from energy management systems by 2030

The federal government is currently supporting these objectives through the work of the Office of Energy Efficiency, the National Research Council, the Centre for Greening Government, and Canada's Low-Carbon Economy Fund. Yet, **achieving the Generation Energy vision will require marshaling the larger set of resources and capabilities found throughout the country.** In particular, there is a need to further support efficiency service program delivery, develop workforce capabilities, and mobilize private sector capital.



Budget 2019

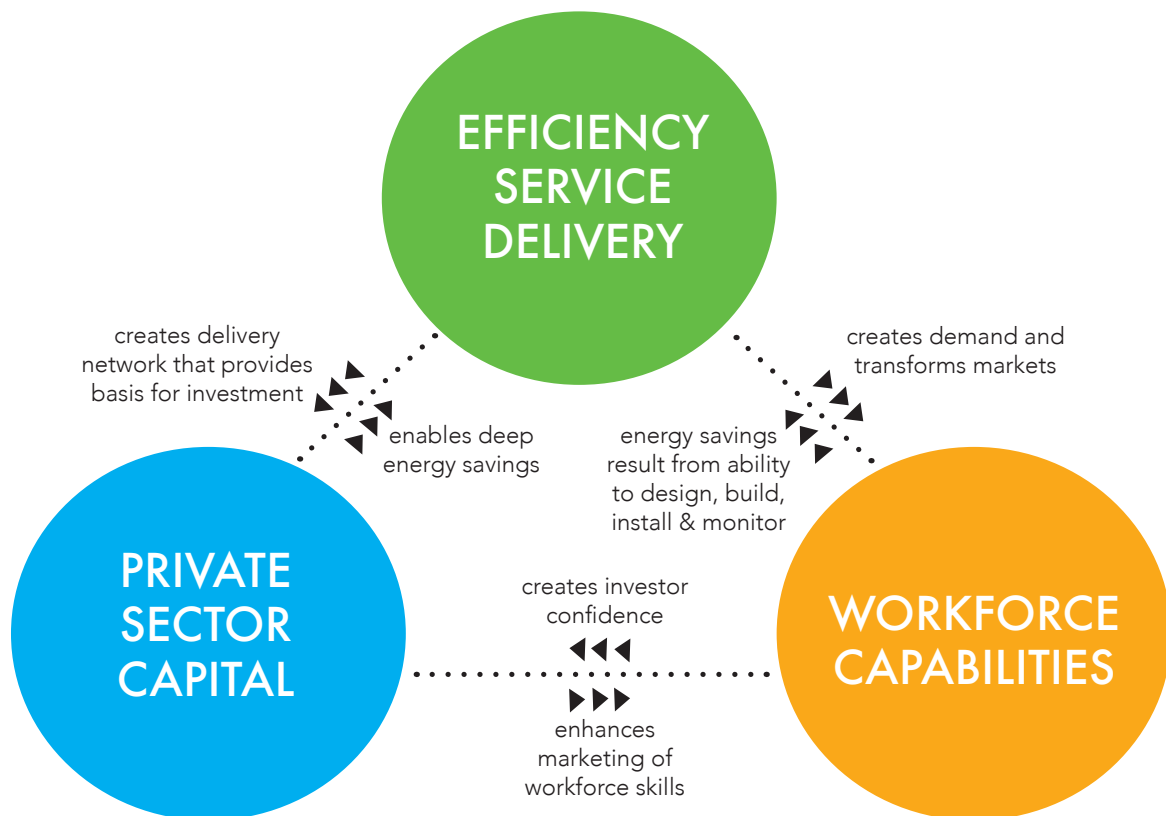
Priorities

In the summer of 2018, Efficiency Canada brought together leaders in the energy efficiency sector to identify the most important investments that could be made in the next federal budget. These consultations highlighted the following three priorities:

- 1) Supporting energy efficiency service delivery throughout Canada
- 2) Developing workforce capabilities
- 3) Mobilizing private sector finance to improve building infrastructure

Simultaneous action is needed **in all three of these areas**. These priority areas are complementary building blocks towards achieving an energy efficient economy.

Efficiency services can include audits, marketing, rebates, customized solutions, and data tracking. These services are provided by provincial utilities and efficiency organizations throughout the country alongside a network of contractors and trade allies. The programs operated by these organizations promote the adoption of energy efficiency technologies and techniques, and create the conditions for the implementation of more aggressive building codes and equipment standards.



A stable and consistent efficiency service delivery network is required to provide confidence for private investors, customers, and builders. The services that promote energy efficiency adoption will only be successful if Canada has a workforce trained in the use of the latest techniques and technologies, and improved knowledge of energy in business operations. A trained workforce further boosts investor confidence in energy savings.

Private sector investment is needed to achieve the deep energy savings that are possible. Financing works in conjunction with rebates and incentives provided by efficiency service delivery organizations. By financing up-front costs, our skilled workforce can market more innovative building techniques.

These are three ways that budget 2019 can support these priorities:

1

Create the Canadian Energy Productivity Fund to fill energy efficiency service gaps that relate to Generation Energy objectives

2

Ramp up Energy Efficiency Workforce Development

3

Create the Energy Efficient Buildings Branch of the Canada Infrastructure Bank



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1. The Canadian Energy

Productivity Fund

The Generation Energy Council report outlined a vision where efficiency is “baked into virtually everything we do.” **In a low-carbon economy, energy efficiency will become a basic service**, where accessing new opportunities to save energy should be just as easy as filling up the gas tank is today. Using the most efficient technologies and techniques will become the norm instead of the exception.

Across Canada, utilities and efficiency organizations deliver programs that offer energy efficiency services. These organizations are trusted contacts with energy expertise and coordinators of efficiency delivery networks. Their program activities rely on thousands of Canadian businesses and contractors with the expertise to deliver energy savings in homes, buildings and industrial processes.

There are currently energy efficiency service gaps that exist in many jurisdictions that are particularly relevant to achieving the Generation Energy vision. These gaps relate to:

Market Transformation: Programs with the specific objective of preparing supply chains to adopt new technologies and practices are needed to achieve the federal government’s objectives for more efficient building codes, labels, and equipment standards. “Market transformation” strategies can include research and development, field testing of new technologies, bulk purchases of

high efficiency equipment, exploring new ways to audit buildings and enforce codes, promotion of voluntary high-performance standards (e.g. BC Energy Step Code). Yet, these programs can be underfunded by utilities seeking short-term energy savings, and by the Low-Carbon Economy Fund which prioritizes readily available GHG reduction opportunities, over longer-term structural changes.

Industrial Energy Efficiency: The Generation Energy report aims to see 75% of industrial energy use benefiting from energy management systems by 2030, which will require an increase in the federal government’s industrial programs (e.g. CIPEC), working in partnership with efficiency service delivery organizations. Industrial efficiency funding gaps can exist at the provincial level because evaluation protocols can discount savings from operational efficiencies rather than capital improvements, and because industries use fuels (e.g. coal, biomass, oil) not covered by utility-based programs.

To create momentum towards the implementation of the Generation Energy Council’s vision and the Pan-Canadian Framework, we recommend creating the Canadian Energy Productivity Fund.

The fund will focus on promoting market transformation leading to the net-zero energy federal model building code, the model code for renovations, energy performance labeling, and federal equipment and appliance standards, as well as industrial energy efficiency.

The bulk of the fund is recommended to go

directly to local program administrators as they are ideally positioned to support both market transformation and industrial energy efficiency efforts across the country. This direct funding will stabilize Canada-wide efficiency service delivery capabilities that could be negatively affected by provincial-level political instability and boom-bust funding cycles.

We recommend a \$500 million fund to support service delivery throughout Canada and help initiate the structural changes envisioned in the Pan-Canadian Framework and Generation Energy Council Report.

The fund will provide immediate support for industrial competitiveness and create an energy productive economy with “baked in” resilience when faced with economic disruptions.



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2. Ramping up Energy Efficiency

Workforce Development

The Innovation and Skills Plan is a key component of Canada's competitiveness and innovation strategy, and the "Future Skills" initiative is set to examine major trends that will impact national and regional economies and workers. As Canada transitions to a low-carbon economy we need to develop a robust energy efficiency workforce and equip workers throughout the economy to manage energy systems in new ways.

Workforce development to prepare Canadians for a low-carbon economy will help the federal government meet some of its most challenging objectives. In particular, **energy efficiency can increase the labour force representation of women and underrepresented groups**⁷ through initiatives such as Manitoba's Aki Energy, which trains Indigenous workers in geothermal and solar thermal installations. In addition, focus on our building infrastructure will also **expand opportunities to leverage federal infrastructure projects for training and skills development**.⁸

Achieving the federal government's low-carbon vision requires preparing the workforce right now. The Canadian Home Builders Association anticipates the exit of 122,100 skilled and experienced workers by 2027 in the residential sector.⁹

In addition, achieving lasting energy savings will require transferring knowledge on how to develop, implement, and evaluate energy savings opportunities throughout business operations. This can include developing energy efficiency awareness amongst

managers of buildings and transportation fleets, senior executives, producers in supply chains, and potential contractors.

We recommend a \$200M boost to Energy Efficiency Workforce Development to ensure enough individuals are equipped to accelerate Canada's low-carbon transition.

These funds could support:

Existing Training Programs: Whereby federal investments can be quickly deployed through existing organizations such as the Canadian Institute for Energy Training, Passive House Canada, and the Canadian Green Building Council, labour unions, educational institutions, and professional bodies.

Work with the Future Skills Initiative: This would ensure future workers throughout the economy receive the energy systems knowledge they need in a low-carbon economy through adjustments to existing curricula and new outreach and capacity building approaches.

Ramping up workforce development will ensure Canada is prepared to benefit from the job creating opportunities created by reducing energy waste, and that all Canadians have the opportunity to participate in a low-carbon economy.

3. Energy Efficient Buildings Branch of the Canada Infrastructure Bank (CIB)

The federal government created the Canada Infrastructure Bank to leverage private sector financing and made a historic \$186 billion commitment to upgrade infrastructure. This includes investments in green infrastructure and the recent prioritization of launching a “Canadian Green Bond.”

Our buildings are a major component of Canada’s infrastructure, given that people spend about 90% of their time indoors.¹⁰ We must recognize that our buildings are where we produce the goods and services that make Canada internationally competitive. Thus, our building stock influences all aspects of economic productivity.

Achieving Canada’s climate commitments will also require moving from “shallow” to “deep” energy efficiency improvements (e.g. from 20% to 50-70% savings). These deep improvements will require existing utility and government incentives to be complemented with private sector financing that help industry and building owners pay up-front costs.

Private capital providers are currently enabling building upgrades in sectors with good credit profiles, such as government and high-quality commercial buildings. However, there are structural barriers that prevent engaging private finance in supporting the upgrade of Canada’s entire building stock. In particular, there is a lack of investor confidence in the cash flow expected to come from energy savings. In addition, institutional investors prefer larger transactions or a portfolio of standardized transactions, and efficiency projects are relatively small-scale. These

barriers are relevant in the bond market, and thus **failing to tackle them could reduce the effectiveness of the government’s plan to introduce green bonds.**

The Canada Infrastructure Bank could create a robust energy efficiency market if it is provided with dedicated resources to improve energy efficiency and distributed energy.¹¹ We recommend creating an Energy Efficient Buildings Branch of the Canada Infrastructure Bank. This branch would spark the creation of energy efficiency markets through:

Risk absorption and aggregation: The CIB can broaden the market for energy efficiency by providing loan capital and credit enhancements such as loan loss reserves or debt service coverage, which encourage lenders to offer longer-term financing and/or lower interest rates. Credit enhancements address the current practice in the financial sector of discounting forecasted energy savings. In addition, the CIB can serve as a warehousing facility by standardizing the underwriting criteria for smaller transactions into consistent portfolios that reach sufficient scale for sale in private institutional capital.

Promoting standardization through lending criteria: In exchange for absorbing some risk, the CIB can require the use of specific criteria for transactions and financing. This will institutionalize an energy efficiency market by promoting standardized measurement, verification, and reporting of energy savings - using private sector initiatives such as the Investor Confidence Project. The CIB can also promote the standardization of contracts, agreements, and business cases, especially when upgrading government buildings.

Making energy efficiency infrastructure investments will leverage private capital. Experience with “green banks” demonstrates that more private sector finance is leveraged over time. For instance, the Connecticut Green Bank moved from a 3:1 leverage ratio to an 8:1 ratio in six years.¹²

We recommend that a \$10 billion investment in building energy efficiency should be part of Canada’s Infrastructure Plan.

An investment of this scale would leverage significant amounts of private capital, stimulating the economy in the short-term and improving Canada’s long-term productivity.



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Conclusion

Making progress on these three actions in budget 2019 will launch a comprehensive and effective energy efficiency strategy that **reinforces Canadian competitiveness**, while demonstrating a real commitment to meeting Canada's greenhouse gas reduction commitments and **moving towards a low-carbon future**.

These priorities were developed in consultation with a network of efficiency experts throughout the country. This network can provide detailed expertise on each of the three priorities identified, and communicate the benefits of federal investments in a more energy efficient economy.



Endnotes

- 1 Clean Energy Canada and Efficiency Canada, [Less is More Report](#), May 2018.
- 2 International Energy Agency, [Energy Efficiency Potential in Canada](#), May 2018.
- 3 Douglas Miller, [Want Engaged Employees? Unlock the Full Potential of Human Capital through Sustainable Buildings](#), Rocky Mountain Institute, July 2014.
- 4 Heschong Mahone Group, Daylight and Retail Sales. Fair Oaks, CA: California Board for Energy Efficiency, 2003. Michael Connors, [Lighting the Workplace: A Perspective for Safety and Productivity](#), EHS Today, March 2010.
- 5 Dunsky Energy Consulting, [The Economic Impact of Improved Energy Efficiency in Canada](#), April 2018.
- 6 Generation Energy Council Report, p. 23.
- 7 Mandate letter to Minister of Employment, Workforce Development and Labour.
- 8 The latter objective within the mandate letter of the Minister of Employment, Workforce Development and Labour is listed as “underway – with challenges” on the mandate letter tracking website.
- 9 Canadian Home Builders Association, Environmental Scan of the Residential Construction Industry for Capacity Building Related to Energy in the Building Codes, February 2018.
- 10 Klepeis et al, National Human Activity Pattern Survey, Lawrence Berkeley National Laboratory, 2001.
- 11 Small scale solar and combined heat and power projects, for example, face similar structural barriers as energy efficiency and can be integrated in net-zero energy projects.
- 12 BlumShapiro 2017, Comprehensive Annual Financial Report of the Connecticut Green Bank.



Supporting Organizations





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