



Forget the Dream House

How Net Zero Building Codes May Place Home Ownership Beyond Reach

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SUMMARY

According to a recent Abacus poll,¹ the affordability of housing is the largest concern among young adults in Canada. Every quarter, RBC Economic Research publishes its survey of housing trends and affordability. In the report published in March 2019, RBC assessed the percentage of income needed by the average family to cover the costs of owning a home as 52%. So, on average, Canadians pay more than half their income on housing ownership costs.

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Federal and provincial government policies under the Pan-Canadian Framework on Clean Growth and Climate Change (PCF) will make matters considerably worse over the next decade. One PCF commitment is that 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.”

The incremental costs of these changes will be high. Building an Energy Star home will cost an extra \$8,000 to \$10,000, an R2000 home costs \$30,000-\$40,000 and a net zero home \$100,000-\$150,000. Canadians build roughly 200,000 homes per year. In 2012, around 1400 of those homes were energy star certified. Less than 50 were R2000 certified and about 15 were considered net-zero. Assuming that the cost of household energy use is between \$2,000 and \$4,000 per year, an Energy Star home would take 10 to 20 years to payback. R2000 would take 15 to 30 years to payback, and net zero 25 to 50 years to payback. Further, most homeowners only plan to live in a house for around five years, and so they will not get to experience the energy savings benefits.

Using the low end of the estimated additional cost of a net-zero house of \$100,000 per unit and the estimate of 200,000 average new home sales per year, moving to mandate the use of net-zero homes in Canada by 2030 would impose an additional \$20 billion per year cost on the Canadian economy.

¹ <https://abacusdata.ca/housing-affordability-is-the-top-issue-for-millennials-who-are-looking-to-achieve-the-dream-of-homeownership/>

FORGET THE DREAM HOUSE

HOW NET ZERO BUILDING CODES MAY PLACE HOME OWNERSHIP BEYOND REACH

According to a recent Abacus poll, the affordability of housing is the largest concern among young adults in Canada. Sixty-four per cent of millennials consider housing affordability their top issue for the federal government. The concern is well founded. Even well-qualified, well-employed individuals and families are facing high barriers to home ownership.

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The reasons are many, but the results are clear. Every quarter, RBC Economic Research publishes its survey of housing trends and affordability. In the report published in March 2019, RBC assessed the percentage of income needed by the average family to cover the costs of owning a home as 52%. So, on average, Canadians pay more than half their income on housing ownership costs.

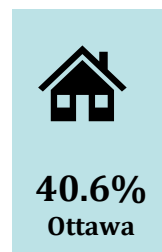
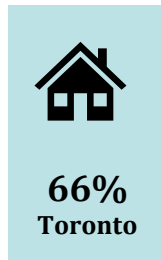
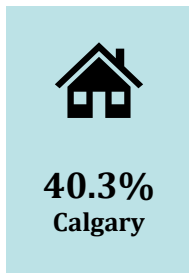


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Much of this is due to very high prices for all categories of homes. In the fourth quarter of 2018, the Canada-wide average price of a home was \$562,000. For a single-family detached dwelling, the average price was \$615,300, and for a condominium apartment it was \$462,800. Some urban areas have much higher prices. For example, the average price of a home was \$1.1 million in Vancouver \$850,000 in Toronto and \$800,600 in Victoria at one end of the scale and \$218,400 in St. John, New Brunswick, \$298,700 in St. John's, Newfoundland and \$306,800 in Winnipeg. The extraordinary price levels in Vancouver and Toronto are indicated by the average prices of single-family detached homes there - \$1,528,000 in Vancouver and \$1,024,000 in Toronto.

The average income family in Vancouver would have to devote 84.7% of its income to cover the costs of home ownership, while that in Toronto would have to devote 66%, Ottawa 40.6 % and Calgary 40.3%.

AVERAGE INCOME FAMILY - % OF INCOME REQUIRED TO COVER HOME OWNERSHIP



CLIMATE POLICY GOALS

What is less known is that federal and provincial government policies under the Pan-Canadian Framework on Clean Growth and Climate Change (PCF) will make matters considerably worse over the next decade. That policy aims to reduce Canada’s greenhouse gas emissions by 30% below 2005 levels by 2030, and buildings constitute 17% of Canada’s emissions sources. The announced goal is to reduce emissions by 20 megatonnes (Mt), from 85 Mt to 65 Mt. This allegedly will be accomplished during a period when Canada’s economy and population is expected to grow significantly.

To attain this goal, the PCF makes commitments in the following areas:

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

A host of new federal and provincial programs have been announced in support of these commitments. Interested readers can find out more about them by reading Canada's Buildings Strategy Update, a document published at the time of the Energy and Mines Ministers' Conference in Iqaluit in August 2018. See it here:

<https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/2018/en/18-00369-emmc-buildings-strategy-report-e.pdf>

One PCF commitment is that 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.” The National Research Council (NRC) and Codes Canada have launched the code commission process, with technical committee work underway to develop the first tier of more stringent energy codes.

Tiny homes are not the solution either. The building codes, and the extra costs, will apply to all sizes of homes, so the tiny-home idea, will not save people from the extra costs. Some, like a project in Canmore, will cost **other** taxpayers more money.^{2 3}

What is rarely discussed, however, is the cost associated with increasing the stringency of building codes. Federal and provincial officials, when questioned about this, will typically refer optimistically to the potential for new technologies to improve building energy efficiency, and reduce GHG emissions, in future. Thus, the largest part of the \$182 million federal Buildings Strategy, announced in January 2018, was the Green Infrastructure Fund that includes \$48.4 million allocated to Energy Efficient Buildings Research, Development and



Coun. Tanya Thorn, one of two dissenters of the Homestead Project, believes there are better ways to achieve affordable-housing goals without having taxpayers take on the \$4.26-million price tag.

“I think it’s the wrong decision for our community right now,” said Thorn.



² <https://calgaryherald.com/news/local-news/okotoks-tiny-home-project-entering-phase-one>

³ <https://theoutline.com/post/4639/tiny-house-affordable-housing-adu-boston-portland?zd=1&zi=oooyywr>

Demonstration initiatives related to building codes for existing buildings and new “net-zero energy-ready” buildings.

THE VOICE OF EXPERIENCED HOMEBUILDERS

The Canadian building industry has adopted a “can do” attitude, unable or unwilling publicly to challenge the extensive government intervention into the buildings marketplace to serve a “green” agenda. Occasionally, however, an individual home builder will emerge who, while not ready to challenge the goals, reveals the costs that will be imposed on home buyers.

One example is Matthew Sachs, an Ottawa home builder and home energy specialist. As General Manager of Urbandale Construction, a major builder in the Ottawa area, he was the

R-2000 Builder of the Year in 2009, a member of the Energy Star Technical Advisory Committee, and the Vice-Chair of the R-2000 Renewal Steering Committee. In a November 2014 presentation, he described the “barriers” to increasing energy efficiency.⁴

The following are summaries of his remarks as reported by the Carleton Sustainable Energy Research Centre (CSERC) at Carleton University:

*“Cost is the main problem regarding energy efficient housing, as the incremental costs of these improvements are high. **Building an Energy Star home will cost an extra \$8,000 to \$10,000, an R2000 home costs \$30,000-\$40,000 and a net zero home \$100,000-\$150,000. Canadians built roughly 200,000 homes per year. In 2012, around 1400 of those homes are energy star certified. Less than 50 are R2000 certified and about 15 are considered net-zero.**”*

“Although cost is a problem, there are other trade-offs or purchase concerns. There’s a risk and usability (hassle factor) which is a huge turnoff to potential homeowners. There’s the simple fact of the aesthetics. Solar panels on roofs are not attractive. For example, Urbandale partnered with Enbridge to sell solar water heaters below cost. They were giving away one \$10,000 system for a demonstration and they had difficulties giving it away. People think it’s an eyesore; even at below cost rates. The final trade-off is the reduction in liveable area of home. Especially if thicker walls are used since insulation

⁴ <https://carleton.ca/cserc/20142015-lectures/business-green-housing-people-want-arent-willing-pay/>

takes space. On average, new homes cost around \$220/square foot. The reduction in liveable space can result in a significant loss on a per square foot basis.

EnerQuality surveyed potential consumers regarding their opinions on purchasing an energy efficient house. 88% of respondents stated that they value energy efficiency when making a home purchase decision. On average these respondents are willing to pay up to \$12,000 more for an energy efficient home. Based on the number of actual green home sales in Canada, it does not match surveyed answers of consumers. What they say they want is different from what they pay. While most consider energy efficiency as an important factor, it doesn't actually play a role in their purchasing decision. Energy efficiency acts as an 'after the fact' bonus that people use to validate their decision."

Builders originally thought that home buyers would be attracted by the energy cost savings of buying a more energy-efficient home. That did not work. **Assuming that the cost of household energy use is between \$2,000 and \$4,000 per year, an Energy Star home would take 10 to 20 years to payback. R2000 would take 15 to 30 years to payback, and net zero 25 to 50 years to payback. Further, most homeowners only plan to live in a house for around five years, and so they will not get to experience the energy savings benefits.**



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Young people are increasingly challenged by the 'gig' market in terms of finding well-paid, long-term, consistent employment. Global markets are uncertain.

IMPLICATIONS

Low sales volumes of R2000 homes and especially of “net-zero” homes is a clear indication that, left to make their own free choices, Canadian consumers will not spend the significant additional amount of money on home alterations that represents a poor financial investment, especially when they are already stretched in their ability to afford a new home purchase. Government moves to

impose ever-more-stringent building codes is therefore a way for government to force consumers into making decisions they would not freely make, and to worsen the general problem of home affordability that is of such great concern to young Canadians.

Using the low end of the estimated additional cost of a net-zero house of \$100,000 per unit and the estimate of 200,000 average new home sales per year, moving to mandate the use of net-zero homes in Canada by 2030 would impose an additional \$20 billion per year cost on the Canadian economy.

Worse, under the PCF, as of 2016, the new federal building model codes would for the first time require that renovations on existing buildings meet the more rigorous building standards. So, existing as well as new home owners would face sharply higher costs, or simply forego making the home improvements.

The federal government typically updates its building models every five years, and the provinces and territories can choose to adopt those models as their mandatory codes. As the last federal update was in 2015, the next one will occur in 2020. Conveniently, just after the federal election.

Will our youth find that their dream home remains just that – a dream?



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About the Author

Robert Lyman is an Ottawa energy policy consultant and former public servant of 27 years, a diplomat for 10 years prior to that. His complete biography can be read [here](#).

About

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, engineers, and citizens who are celebrating its 16th year of offering climate science insights. After a thorough review of a broad spectrum of literature on climate change, Friends of Science Society has concluded that the sun is the main driver of climate change, not carbon dioxide (CO₂).

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