

Intelligence MEMOS



From: Charles DeLand

To: The Honourable Steven Guilbeault, Minister of Environment and Climate Change

CC: The Honourable Jonathan Wilkinson, Minister of Natural Resources

Date: October 17, 2022

Re: **OTTAWA'S UNREALISTIC BUILDING EMISSION REDUCTION TARGETS**

The federal government's [Emissions Reduction Plan](#) calls for economy-wide greenhouse gas (GHG) reductions of 40 to 45 percent below 2005 levels by 2030.

In particular, it projects emissions from homes and commercial buildings will fall 37 percent from 2005 levels. That's wildly unrealistic, according to reasonable estimates of what would be required.

Greenhouse gas emissions from buildings are Canada's third largest emission source. (Oil and gas tops the list and transportation is second.)

In contrast to some other sectors of the economy and despite better building technology and efficiency, emissions have actually increased since 2005, partly because the number of homes has increased by 20 percent.

There are roughly 16 million homes in Canada. About two-thirds emit GHGs. The remaining third are serviced by electricity, generally from hydro and therefore non-emitting. Fully 80 percent of the GHGs from buildings come from burning fossil fuels for heat and hot water. Half of Canadian homes are currently served by natural gas, while fuel oil remains important in Atlantic Canada. Ontario is home to five million emitting homes. Because of its greater use of electricity, Quebec faces a smaller net-zero challenge.

How might we electrify homes currently using gas or oil? Heat pumps are one solution. These are essentially two-way air conditioners that both heat and cool. To meet Ottawa's goal of a net-zero economy by 2050, virtually all homes would need to have heat pumps or similar technology.

This would require retrofitting more than 400,000 homes per year – more than 1,000 every day, Alexander Vanderhoof and I outline in our new C.D. Howe Institute [study](#).

Our analysis shows that achieving the 2050 goals would also take unprecedented changes in new home construction as well as retrofits to homes that typically stand for decades.

More unrealistic yet, are the plan's aggressive 2030 targets, which would require more than 500,000 retrofits a year. That's the equivalent of every home in Saskatchewan, every year over the next eight years. Moreover, starting today, every single new home in the country would need to be net-zero.

The cost to retrofit an existing home can be significant and varies according to age, type, size, location and regional climate. Canadian homes are typically built to last: about 60 percent were built before 1995. Our scenario conservatively estimates between \$12,000 and \$17,000 to replace a fossil-fuel system with a heat pump, and does not account for backup during periods of extreme cold. We also exclude any cost differences between electricity and gas or oil. And beyond that, there are the costs of adding generating and transmission capacity to the electrical grid.

Our estimates suggest that total annual retrofit costs, just to households, would run from \$4.5 billion to \$6.3 billion. Cumulatively to 2050, this adds up to \$140-\$200 billion.

These are big numbers and individual Canadians will bear them, directly or indirectly via government subsidy. High housing costs are already a burden for many people. And the construction industry labour force, already straining to build new homes to address Canada's housing shortage, is the same labour force that will be needed for all the retrofits.

To point out the high costs of net zero is not to argue that we are unconcerned about climate change or oppose GHG emission reduction. It is to say, however, that we need to find lower cost pathways of reducing emissions at a sustainable pace and with technology proven to work.

Such options already exist. Combined with smart controls, "dual-fuel" hybrid systems that pair gas furnaces and heat pumps can reduce emissions by up to two-thirds, according to one [study](#). And hybrids only add about \$3,000 in retrofit costs. The Ontario government has just announced a pilot program, working with Enbridge, to incentivize heat pump installation paired with smart controls, potentially saving homeowners up to \$80 per year while reducing emissions by up to 30 percent.

Electric utilities and regulators can help with policies that give consumers confidence future electricity prices won't jump dramatically, erasing incentives to switch. At the same time, governments can work with industry players to standardize efficiency measures in building codes and help keep sustainability requirements affordable. They can also undertake technical research and development to make sure lower-emitting solutions work in the Canadian climate.

Emission goals should be driven by transparent and detailed modeling that shows: how proposed policies can achieve emissions reductions; what these reductions will cost; and the trade-offs required. So far, the federal government has provided nothing of the sort.

There are ways to reduce residential emissions, and we should implement them. But governments need to be clear about both the cost and likelihood of achieving date-driven outcomes. Policy ought to inform the target dates, not the other way around.

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