

Can technology provide enough affordable homes?

Absolutely, say these advocates.



One of the most critical global issues, felt intensely in Canada, is the housing shortage.

In 2022, Canada Mortgage and Housing Corporation (CMHC) projected that 3.5 million additional housing units must be built this decade, over and above what is normally built, to bring house prices to an affordable level ([Estimating how much housing we'll need by 2030](#)). It's a complex, polarizing and, above all, urgent problem. Is there any chance there might a solution somewhere out there? In a Globe & Mail editorial from December of 2023 ([There are no solutions to Canada's housing crisis—only trade-offs](#)), Josef Filipowicz, Senior Fellow of the Fraser Institute, suggested there are no real solutions as he quoted American economist Thomas Sowell who said, "There are no solutions, only trade-offs."

Filipowicz, who is an independent urban and regional policy specialist, and former analyst at the Canada Mortgage and Housing Corporation and the Fraser Institute's Centre for Municipal Studies, goes on to list his argument that there are three primary alternative solutions: build our cities outward, with the trade off that more land for homes means less land for everything else; grow upward resulting in more density, with the trade off being that many neighbourhoods would have to significantly change; or slow down the rate of population growth, with the trade off being a slower-growing or even shrinking workforce.

Filipowicz hasn't really touched upon the very pragmatic obstacle of actually building enough homes, whether it's at the far edges of the city or in the developed areas of the city. Regardless of where the homes will be built, they still have to be built and it's the construction industry that is at the forefront of that solution.

No doubt, the worker shortage is a major stumbling block. Various sources report various scenarios, but let's use the CIBC Economics in Focus June 2023 newsletter ([If they come you will build it — Canada's construction labour shortage](#)) which states that the average number of workers per unit under construction has fallen from 6 to 4 over the past decade. Not surprisingly, this means it takes a lot longer to build a unit and the units become more expensive. Perhaps, just as concerning is that the number of construction workers over the age of 55 is at a record high. The newsletter goes on to predict that no fewer than 300,000 construction workers will retire in the next ten years.

The question then is: how can more homes be built faster? Housing, Infrastructure and Communities Canada says it has a plan ([Solving the Housing Crisis: Canada's Housing Plan](#)). Under the plan's heading of *Changing the Way Industry Builds Homes*, there are several interesting actionable items including: Introducing a Standardized Housing Design Catalogue, Scaling up New Tech to Build New Homes, Investing in New Approaches to Homebuilding, Providing Low-Cost Loans to Prefabricated Housing Projects, Simplifying the Way That Canada Builds Homes, and Making Building Codes Digital.

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New construction techniques and technologies are already being advocated by numerous groups in the construction sector, and importantly, by those who are training today's and tomorrow's construction workforce. For Rick Duchscher, Lead at SAIT's School of Construction Connector Lab, the emerging digital environment in the construction industry will have a major impact on productivity.

"Collecting information and making that information accessible are crucial for efficiency and cost effectiveness in any building project," Duchscher says. "Regardless of what capacity you're working as at a construction site, whether it's general contractor or project manager, information is essential to avoid waste and inefficient workloads. Using the digital management tools to provide the same information to everyone involved in the project in real time is far more effective than working with a siloed group, whether it's the engineering consultants working with the architects and the civil engineers and the geomatics surveyors, and all the other different moving parts on a construction project. When you have all of the project participants working together, being privy to the same information in real time, it will be a huge game changer for productivity in the construction industry, particularly home building."

Duchscher's colleague, Dylan Kunz, Academic Chair- Civil Engineering Technology at the School of Construction, also points out that researching and actually implementing alternative methods of construction are vital to improve building production rates.



Dylan Kunz, Academic Chair- Civil Engineering Technology at the School of Construction & Rick Duchscher, Lead at SAIT's School of Construction Connector Lab

"I truly believe that one of the most viable solutions is to incorporate pre-fabricated housing," says Kunz. "They're more affordable, they're more efficient to construct and it's also a safer construction process. That technique is being used for some high-rise construction applications already. I believe there is a huge opportunity for this method of construction to help in solving the shortage problem."

It's true that there are issues to be ironed out in order for pre-fabrication to be an acceptable business model, scaling up being one of those issues for builders that have entered or are planning to enter that sector. To accommodate that, Housing, Infrastructure and Communities Canada says its housing shortage strategy includes the launch of a new Homebuilding Technology and Innovation Fund to help scale up, commercialize, and promote adoption of innovative housing technologies and materials including for modular and prefabricated homes.

Shawn Gray, founder and CEO of ConstructionIQ Advisory, feels there are other aspects, as well, in the construction process that could be holding back the number of units being built, as well as contributing to higher costs. Along with the workforce shortage, those adverse aspects, he says, include challenges in cashflow, planning, rework and administration. "While there are policy and permitting issues and even supply issues," he says, "once the shovels hit the ground, that is where the bottlenecks are going to occur. When over half of builders are experiencing cash flow restraints, preventing them from bidding on work, procuring workers or equipment and material, this is low hanging fruit which can reasonably be addressed. It could be as simple as using software that enables early payment. That type of technology was not available 10 years ago but is now making its way into the residential building sector."

The type of software to which Gray is referring acts as a middleman to facilitate early payment of invoices to suppliers and/or subcontractors, relieving the standard 30/60/90-day payment terms. Gray feels bringing in digitalization creates more of a partnership between the general contractor/subtrade/supplier relationship. "If you understand the core constraints preventing a productive and profitable build and address them," Gray says, "then the cost should eventually come down. If it costs a business 20% more to build a house, you have to identify those costs and eliminate them. This enables the builder to price the house more affordably and still make profits. The opportunity is completely there." ■