

Ontario Offsite Construction Opportunity Study

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1 Executive Summary

This report explores the widening gap between housing needs in Ontario and the ability of the construction supply chain to satisfy these needs. Even if mortgage rates have taken a toll on the housing market, residential construction remains high by historical standards, with housing starts ranging between 100,000 units (2021) and 90,000 units (2023). The dominant trait of Ontario's housing market is the uncompromising growth of the multifamily segment. By 1997, only 8 per cent of units built were apartments, a proportion that has now reached 60 per cent.

Despite record housing starts, occupancy rates remain high, and more housing is needed. The Canadian Mortgage and Housing Corporation (CMHC) estimates that Ontario needs no less than 1.48 million housing units by 2030. This level means 211,000 incremental units each year, in addition to current construction levels, or 2.5 times the current housing activity. According to CMHC, such levels are nonetheless required if affordability is to be restored. The accuracy of the housing deficit estimate does not matter as much as its prime consequence: housing has become unaffordable. House prices in Ontario have almost tripled in the past 10 years, growing much faster than incomes. First-time homebuyers are increasingly forced out of the market.

On the supply side, the construction industry struggles to deliver housing units at par with market needs. Construction cycle times are lengthy, construction costs have increased alarmingly, and the labour shortage rages on. Current estimates of unfilled construction jobs in Ontario reach 20,000 open positions, while 82,600 construction workers, or 18 per cent of the industry's workforce, are set to retire in the next 10 years.

This tension between housing needs and construction supply is an unequivocal call for innovation. It explains why the interest towards novel construction techniques, such as offsite construction, has gained so much traction as of late. In this report, the many virtues associated with offsite construction form what we call the Offsite Promise. When implemented adequately, offsite construction holds the potential for shorter construction schedules, cost and time certainty, reduced waste generation, reduced labour content, improved health and safety and, in some cases, reduced costs. In addition, offsite manufacturing is more adapted to multifamily housing than any other type of buildings.

Most of this report is dedicated to understanding the conditions under which offsite construction can aptly fulfill its value proposition. Arguably, fully offsite construction still holds a tiny share of the market. The recent years have also witnessed a fair amount of business failures

in the offsite trade. The report provides a review of the lessons that could be learned from these failures, then a look at the business models which are succeeding in today's environment. Successful operations systematically entail a strong alignment between preferred markets, design, manufacturing, integration of all systems, trades coordination, delivery, and installation.

The evolution of construction practices has proved to be more rewarding for evolution than for disruption. It's not to say that disruptive approaches won't work: Cross Laminated Timber (CLT) is one such example of a new, thriving, construction system. A strict focus on disruptive approaches to construction would be misleading, however. New practices in the construction industry relentlessly increase the offsite content of building systems. The introduction of wall panels in the roof trusses industry is just one example. Therefore, offsite construction will occur over a continuum, from structural components and pre-engineered elements to fully volumetric systems, and from bare structure to finished units.

On the road to offsite construction, several conditions have yet to be set in place. Seven of them are outlined in the report, including the democratisation of design for manufacturing and disassembly. This approach to building design entails designing buildings with manufacturing constraints in mind. Other important considerations include the consideration of the end-user, especially architects. The development of capacities also come as an important factor among others to reduce risks, real and perceived. Public strategies can also play an important role. In reviewing practices in other jurisdictions including the United Kingdom (UK), Quebec and British Columbia (BC), the role of procurement strategies and the importance of education at all levels become apparent.

As part of this project, a financial model was developed to provide an understanding of investments in offsite manufacturing. The model is used to analyse a potential investment in a wall panel fabrication line within a structural components business. Arguably, such scenario represents the very first foray into the offsite construction continuum. Results outline that automation requires high operating rates, and the ability to leverage existing resources of the organisation in sales and design, in order to be sustainable financially.

The analysis leads to several recommendations equally addressed to governments, manufacturers, designers, and the construction trade. The first recommendation is to take a broad perspective on offsite construction. The focus of offsite conducive policies should be improving the housing supply, facilitating market development, and access to property. This means that valuable efforts or programs can be made in various segments of the supply chain, from components manufacturers to fully offsite suppliers. Multifamily construction in general, and affordable housing in particular, should also be prioritised. The various levels of governments can further pave the way by implementing exemplary practices and projects. On the supply side, one hidden card is installed capacity, which is not equally used within the highly volatile construction markets. Engaging existing manufacturers as part of the solution, for instance by sequencing some projects to tap into seasonal lows, should be of consideration. Other recommendations deal with training and education, innovation, financing, and market monitoring.