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Building More Productively

Modernizing Housing Construction in Canada

CANADIAN STANDARDS ASSOCIATION™

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Executive Summary

Canada faces a housing supply challenge at a time when productivity growth in residential construction lags behind many other sectors of the economy. At the same time, improving productivity has become a central focus of Canada's economic policy agenda.

Modern methods of construction (MMC)—particularly off-site methods such as modular construction and prefabrication—have emerged as promising approaches to complement conventional construction, expand industry capacity and accelerate housing delivery. Growing federal support, including through Build Canada Homes (BCH), reflects increasing recognition that a broader mix of construction methods and greater innovation will be needed to meet Canada's long-term housing needs and boost productivity.

MMC offers several potential benefits, including reduced material waste, improved energy efficiency during construction, shorter construction timelines, greater cost certainty, enhanced worker safety, and better opportunities for productivity measurement and continuous improvement. However, MMC adoption remains seemingly constrained by a number of factors, including fragmented regulatory frameworks, financing and insurance models poorly aligned with newer methods, and workforce and ecosystem readiness challenges.

A central finding of this paper is that Canada lacks a consistent framework for measuring and benchmarking housing construction productivity. Without standardized definitions, metrics and reporting practices, it is difficult to evaluate which construction methods, technologies and policy interventions are delivering meaningful productivity gains. Improving productivity measurement will therefore be essential to informing future policy, supporting accountability and enabling continuous improvement across the sector.

Drawing on industry data, confidential expert interviews and emerging policy initiatives, this paper argues that improving productivity is not simply a matter of adopting new technologies or construction methods. It requires creating the conditions that allow innovation to scale through demand certainty, supportive regulatory frameworks, aligned procurement and financing systems, workforce and institutional capacity, and the ability to measure results consistently over time.

Introduction



Recent federal policy has strongly positioned productivity as a core economic challenge for Canada, linked to competitiveness, investment, and long-term prosperity. Within this broader context, housing construction has emerged as one of the more visible manifestations of the productivity challenge.

Productivity growth in Canadian residential construction has been on a steady downward trajectory since the early 2000s. This decline has taken hold as housing demand has risen, with the sector struggling to deliver housing more quickly, efficiently and at lower cost. Improving productivity has therefore evolved beyond a bottom-line issue for industry—it is increasingly linked to housing affordability, impacting millions of Canadian households.

Canada Mortgage and Housing Corporation (CMHC) has estimated that housing starts must nearly double to between 430,000 and 480,000 units annually through 2035 to restore affordability and meet projected demand, underscoring the need to rethink how homes are built.[1]

Boosting both supply and affordability of housing has been a dominant issue for Canadian policymakers at all levels of government for some time. A key shift in recent years, however, has been the growing interest in modern methods of construction (MMC). MMC encompasses a range of innovative construction approaches, rather than a single technology or building method.

According to the UNB Off-Site Construction Research Centre,[2] MMC includes:

- Off-site construction methods such as modular, panelized and prefabricated systems
- On-site innovations that improve products and processes
- Digital tools that support better project execution, such as Building Information Modelling (BIM) or digital twins
- Emerging technologies such as additive manufacturing (3D printing) or advanced robotics

Among these, modular construction has attracted significant attention from governments seeking to improve the speed, scale and efficiency of housing delivery.

Table 1. The construction spectrum

Construction Spectrum *Increasing level of prefabrication* Mostly on-site construction → Hybrid on-site/off-site → Mostly off-site construction		
Conventional Construction	Off-Site Construction (Modern Methods)	
Raw building materials are delivered and processed entirely at the active building site in a strict, sequential order.	Factory-made components are used to speed up site assembly while retaining traditional finishing methods. **2D panelized systems:** Flat walls, floors and roof panels are manufactured in a factory and shipped to the site for structural joining. **Pre-assembled components:** Items like pre-cast concrete pillars, pre-cut timber frames or bathroom pods arrive ready to install.	**Volumetric modular:** Entire rooms or building sections are fully manufactured in a factory, transported to the site and stacked together.

The purpose of this paper is to assess how MMC can contribute to improving housing construction productivity in Canada, and to identify the policy and market conditions needed for MMC to scale. It situates MMC within the broader challenge of lagging construction productivity and housing affordability, emphasizing that new methods will only deliver meaningful gains if supported by better measurement, regulatory clarity and capacity, predictable demand, aligned financing and procurement systems, and workforce readiness.



1.0 Productivity and Modern Methods of Construction

Housing construction productivity trends

Canada's construction sector is a major economic driver. It contributes approximately 7.4% of national gross domestic product (GDP)—roughly $162 billion—and supports more than 1.6 million jobs.[3] Despite its significance, the sector has consistently underperformed relative to other industries in terms of productivity growth.

Over the past two decades, labour productivity (measured as output divided by number of workers) in housing construction has dropped by 37.3%.[4] The sector experienced the largest decline in productivity between 2019 and 2024 relative to other key industries, and is now at 67% of the Canadian average, down from 88% in 2000.[5]

This slowdown in productivity has direct implications for housing affordability. According to a recent calculation by the Centre of Study for Living Standards, the decline has added $6 billion to $7 billion to new housing costs between 2019 and 2024, equating to about a 15% to 20% price increase per home.[6]

Other metrics reinforce concerns about the sector's performance. For example, investment in research and development (R&D) within construction remains low relative to other sectors, at just 0.3% to 0.8% of revenue, compared with roughly 2% elsewhere.[7] This suggests that, comparatively, the capacity or willingness of construction firms to invest in innovation is more limited—or incentives to do so are lower.

Conversely, the rate of R&D investment between 2014 and 2022 in construction experienced the fastest growth relative to other sectors.[8] One explanation for this could be the increased investments made by universities and other research organizations, rather than construction firms themselves. It is unclear, however, how effectively these findings and innovations are being bridged into industry practice.

Material use presents another significant challenge. An estimated 30% of building materials delivered to construction sites go unused, while the residential sector alone accounts for 61% of total construction waste in Canada.[9] Taken together, these patterns point to underinvestment and inefficiencies that constrain productivity gains.



Notably, construction crews today rely on a similar number of workers, labour hours and methods as they did decades ago to deliver housing projects. However, today's workers earn wages that have risen over time to keep pace with rising living standards and economic trends. This dynamic helps explain why construction remains relatively labour-intensive compared to other sectors, and why output has not scaled commensurately with demand.[10]

Improving construction productivity is therefore central to addressing long-term housing supply and affordability challenges—a priority directly acknowledged by CMHC.[11] In a 2025 analysis, it suggests that improving housing construction productivity by 10% could lower housing prices by 2%, while adding roughly 17,000 housing starts annually. CMHC identified technology adoption, offsite manufacturing, digital planning tools and skills development as key pathways to achieving these gains.[12] Meanwhile, a 31% increase in productivity in housing construction (bringing it in line with average levels of productivity across other industries), would result in a 6% decrease in housing prices, and add nearly 51,000 housing starts on average.[13]

The evidence highlights the need to strengthen Canada's housing delivery system to address persistent productivity, supply and affordability challenges. This does not require replacing conventional construction methods. Rather, greater use of MMC and industrialized building approaches can complement conventional practices, providing additional pathways to expand capacity, address labour constraints and improve project delivery outcomes.





Measuring construction productivity: A foundational challenge

There are several ways to measure construction productivity, but no single, consistent approach is used across the sector.

At a basic level, productivity can be calculated using either single-factor or multi-factor measures. Single-factor productivity looks at one input at a time, for example, comparing the total value of housing completed to the number of labour hours required to build it. Multi-factor productivity, by contrast, considers a combination of inputs—such as labour, materials and capital—to assess how efficiently they contribute to overall output. In practice, different organizations apply these approaches in different ways. For instance, Statistics Canada uses a multi-factor method that combines labour, time and capital, and compares them to value added, while other national-level organizations collect more detailed inputs, such as hours worked.[14]

This lack of consistency makes it difficult to compare results across jurisdictions or over time. It also reflects deeper challenges in how construction activity is defined and measured. Outputs can be tracked in different ways, for example, by square footage or by completed units, which can produce very different results. A single “unit” may represent a small apartment or a large single-family home, leading to distortions in how output and productivity are understood. More broadly, existing measures often fall short of capturing important aspects of performance, such as build quality, energy efficiency or environmental impact, limiting the ability to assess the overall effectiveness of construction projects.[15]

These measurement challenges are particularly relevant for MMC. Many of the potential efficiency gains from MMC, including faster build times, improved quality control or reduced material waste, are not always well captured by traditional productivity metrics. Without more refined and consistent measures, it is difficult to assess whether these approaches are delivering the expected benefits.[16]

The availability and quality of data further complicate the picture. The construction sector in Canada is dominated by smaller firms, many of which lack the capacity or systems to collect detailed and consistent data.[17] As a result, much of the available information is fragmented or incomplete. Key inputs, such as hours worked, may also be underestimated due to the prevalence of informal or unreported labour, introducing additional uncertainty into productivity estimates.[18]

These limitations matter in the current policy context. Governments are making significant investments to increase housing supply and are placing emphasis on MMC as a way to improve efficiency. However, without reliable, comparable and comprehensive measures of productivity, it is difficult to track progress or assess whether these investments are achieving intended outcomes.

Defining modern methods of construction

Modern methods of construction (MMC) refers to a range of innovative approaches that can improve how buildings are designed, manufactured and assembled. These approaches often shift work from the construction site to a controlled factory environment through modular construction, prefabrication and other off-site manufacturing techniques. MMC is also supported by innovations in digital design such as building information modelling (BIM), and building materials such as mass timber or precast concrete. These innovations can improve efficiency, quality and sustainability for both conventional, on-site construction and off-site building projects. By streamlining the construction process, MMC can help reduce project timelines, lower material waste and ultimately increase housing supply (see discussion of key benefits below).

Throughout this report, MMC is predominantly used and refers to the range of innovations being introduced into the construction process, including new methods, building systems, materials, digital tools, and manufacturing techniques.

Industrialized construction is a closely related concept that describes the broader manufacturing-led approach used to organize and deliver these innovations. Industrialized construction applies principles commonly associated with industrial production, such as standardization, repeatable processes and integrated digital workflows to the construction sector.

Broadly speaking, the link between the two concepts can be understood as the innovation building blocks (MMC), and the production system that enables those innovations to be deployed efficiently, consistently and at scale (industrialized construction).

Textbox 1. Standards as a driver of productivity and industrialization

Standards are often viewed primarily as tools for safety, quality and interoperability, but they can also support productivity and innovation. A 2018 study of Nordic countries found that doubling the stock of standards in the construction sector was associated with a 6.9% increase in labour productivity.[19] By disseminating best-practice, reducing uncertainty, improving coordination and facilitating knowledge transfer, standards can help firms operate more efficiently and adopt new innovations more quickly.

Standardization is also fundamental to industrialized production. Manufacturing relies on repeatable processes, common specifications, and predictable requirements to achieve scale and efficiency. Standards help reduce variability and promote interoperability, enabling more efficient production and broader adoption of advanced manufacturing techniques.

The seven-category MMC framework (see Table 2) by the University of New Brunswick's Off-site Construction Research Centre provides an overview of the key elements of MMC.[20] While MMC is frequently used as shorthand for off-site or modular construction, categories in the framework below demonstrate its broader spectrum and applicability to conventional, on-site construction. For example, the use of advanced digital tools, choice of higher-efficiency materials or opting for pre-fabricated components to simplify installation are all available to conventional builders.

Table 2. Categories of modern methods of construction (MMC)

Category 1 — Volumetric (3D) modular construction
Fully finished building units are made in factories and assembled on-site.

Category 2 — Panelized (2D) structural systems
Flat elements like walls, floors, and roofs are prefabricated and assembled on-site.

Category 3 — Prefabricated components
Partial building elements (e.g., stairs, foundations) are built off-site and integrated into projects on-site.

Category 4 — Non-structural assemblies and sub-assemblies
Prefabricated systems (e.g., bathroom pods, façades, mechanical/electrical parts) simplify installation on-site.

Category 5 — Additive manufacturing
3D printing is used to build structures layer by layer, either on-site or off-site.

Category 6 — Product-led site productivity improvements
Improved materials and components (e.g., larger formats, simpler connections) speed up construction on-site.

Category 7 — Process-led site productivity improvements
Digital tools, automation, robotics, and lean practices improve site efficiency and workflows.

These categories are referred to similarly in the U.K. MMC framework.[21]

Each category in Table 2 includes approaches that have the potential to deliver benefits such as cost savings, improved sustainability, shorter project timelines, enhanced worker safety and increased productivity. For instance, BIM promises collaborative design methods, real-time data sharing, data analytics and precise construction. Similarly, prefabricated components and panelized structural systems constructed in a factory setting result in accurate fabrication, reduced construction timelines, decreased onsite labour requirements and increased worker safety. The range of potential benefits are explored in more detail below.



Textbox 2. Innovation spotlight: Vienna House

Vienna House is a seven-storey, 123-unit non-market housing project currently under construction in Vancouver, British Columbia. The project is expected to be the first in the province to use building information modelling (BIM) throughout its construction, enabling granular evidence-based performance reporting.[22] Through its use of mass-timber and prefabricated airtight panels, it is slated to be a net-zero emissions structure. The project demonstrates the benefits of mass timber and wood frame assemblies by leveraging the thermal properties of wood and its natural insulation characteristics for additional energy efficiency.[23]

Vienna House is constructed under BC Housing's Digitally Accelerated Standardized Housing (DASH) program, which uses BIM and standardized, permit-ready designs to streamline the delivery of mid-rise housing.[24] It is optimized for three- to six-storey buildings in the Lower Mainland, and provides architects and developers with pre-designed unit layouts and building configurations, reducing the time and cost associated with developing custom designs. By providing standardized, pre-vetted designs, the program creates greater consistency in permit submissions, reduces ambiguity for the authorities having jurisdiction (AHJs), and helps accelerate permitting and approval processes.

At its core, DASH uses a standardized "kit of parts" approach, connecting compatible prefabricated building components with a network of local manufacturers and suppliers. This supports more efficient project delivery, strengthens regional supply chains, and supports greater adoption of prefabrication and hybrid on-site/off-site construction. Through its BIM-enabled platform, DASH also generates evidence-based data that can be used for continuous improvements to projects, while supporting sustainability through more efficient manufacturing processes and improved building performance over the building's lifecycle.[25]





2.0 Benefits of Modern Methods of Construction

Compressed timelines

Off-site construction, including modular, prefabricated and panelized methods, can significantly shorten overall project timelines, by up to 50% in the case of modular construction.[26] This is due in large part to site-based activities, such as foundation work, that can proceed at the same time as building components are manufactured off-site, helping to compress project schedules. Prefabricated components, such as floor systems, can also reduce the time required for concrete curing before other systems are installed. Other elements of MMC, including digital tools, have also demonstrated significant time savings. BIM, for example, has been shown to reduce project timelines by an average of 20%, owing to better coordination and planning among project partners, while also reducing design errors by 30%.[27]

Cost certainty

Conventional construction is generally more exposed to material cost volatility because materials are purchased throughout the life of a project.[28] By contrast, modular and other highly prefabricated approaches typically secure most raw materials upfront, reducing exposure to market fluctuations that can drive cost overruns. As production scales, further cost savings may be achieved through manufacturing efficiencies, standardization and economies of scale.

Sustainability

Canada's clean growth priorities position MMC as a high-impact opportunity in the construction industry. Modular construction specifically optimizes material use and can result in waste reduction of up to 90%.[29] MMC methods are also highly energy efficient.[30] While traditional construction sites often rely on diesel generators for temporary power, factory-built units and components can use more energy-efficient systems within plant settings.[31] Volumetric modular construction can also support high energy efficiency by creating airtight building envelopes that reduce uncontrolled air infiltration and related heat losses.[32]

As demand for more sustainable construction grows, MMC creates opportunities to reduce environmental impacts through more efficient use of materials, optimized designs and lower-carbon construction solutions. A range of materials and building systems can contribute to these outcomes, with their environmental performance continuing to improve through innovation in manufacturing, material efficiency, reuse and recycling. Expanding MMC can also strengthen Canadian supply chains, create new markets for domestically produced construction products and technologies, and help advance both housing and climate objectives.



Labour force safety and inclusion

Modern methods can help improve worker safety in some cases by shifting activity to off-site, factory-controlled environments. This shift results in workers being exposed to fewer hazards like falls, which are one of the top causes of injury and fatality on construction sites.[33] Regulated safety protocols coupled with tighter supervision and structured processes in factory settings reduce overall risks and improve worker well-being. In addition, workers are protected from weather elements and therefore can conduct work year-round. This enables firms to increase efficiency and output per worker while avoiding labour hoarding (retaining employees despite lack of workload).[34]

As an added benefit of operating in a safety-controlled environment, off-site construction has the potential to expand workforce participation. Conventional construction is highly labour intensive, and has attracted a male-dominant workforce. However, in a factory setting, those of more varying degrees of physical strength and capacities can participate.[35] In addition, the growing use of technology and its broadened applications in factory-enabled construction could increase interest by young people in this type of work. Amid ongoing skilled labour shortages in the construction sector, this presents a valuable opportunity to broaden labour supply.[36]

Better productivity measurement and continuous improvement

Factory-based and manufacturing-led processes inherent in some MMC categories create opportunities for enhanced data collection and productivity measurement that are more difficult to achieve in conventional construction. Because production occurs within more controlled, standardized and repeatable processes, firms can collect detailed information on production outputs, workflow efficiency, material use, rework and project timelines. This can provide greater visibility into how work is performed and where inefficiencies occur, supporting continuous improvement.

Similar insights are often harder to obtain in conventional construction, where multiple trades operate in a highly interdependent environment and delays frequently cascade across subsequent activities. These interdependencies can contribute to project delays and productivity losses, while making it difficult to identify and quantify their underlying causes. An important caveat is that applying technologies like BIM (Category 7 of the MMC framework) to conventional construction can help to better coordinate this system and produce actionable data insights.

Overall, more robust and standardized data from all methods of construction can also support benchmarking, research, investment decisions and evidence-based policymaking, creating a stronger foundation for improving productivity across the housing sector.

Textbox 3. Build Canada Homes: A catalyst for scaling MMC

With a focus on factory-built housing and MMC, Build Canada Homes (BCH) has a unique opportunity to accelerate the adoption of more productive construction approaches across Canada.[37] Launched as a Crown corporation in September 2025, with an initial investment of $13 billion, BCH was mandated to expand non-market and affordable housing, support construction innovation, and provide financing for affordable housing in harmony with the Buy Canadian policy. Budget 2026 proposes an additional $13 billion over 10 years for BCH, significantly expanding its role in scaling non-market housing.[38]

BCH is well positioned to strengthen the broader MMC ecosystem. By aggregating demand across projects, facilitating access to land, and creating a predictable pipeline of housing production, BCH can help address one of the key barriers to MMC adoption—insufficient scale and demand certainty. This in turn can encourage investment in manufacturing capacity, workforce development and productivity-enhancing innovations.

BCH has identified MMC as a key enabler for housing productivity and innovation to accelerate delivery.[39] Its initial plans include the delivery of 4,000 factory-built housing units in Toronto, Ottawa, Winnipeg, Edmonton, Dartmouth and Longueuil, as well as 700 units through a partnership with the Nunavut Housing Corporation.[40] Earlier BCH investments were expected to support an additional 45,000 affordable housing units. The expanded mandate and capitalization announced in Budget 2026 substantially increases BCH's prospective role in aggregating demand, supporting non-market housing and creating a predictable pipeline for MMC.



3.0 Barriers to Modern Methods of Construction

While the Canadian construction sector has long been characterized by persistent productivity challenges and relatively slow rates of innovation, there are encouraging signs of change.

Recent industry surveys indicate that technology adoption, described as "low and lagging" in 2020, is beginning to gain momentum.[41] By 2025, more than half of surveyed firms (53%) reported prioritizing prefabrication and modular approaches, while a large majority (90%) recognized the value of advanced technologies such as AI, BIM and digital twins.[42] Notably, 87% of respondents also agreed that these approaches, many of which fall under the umbrella of MMC, will be essential to meeting future housing demand.

Industry forecasts likewise point to strong growth in MMC adoption. For example, the volumetric modular construction market is expected to grow at a compound annual rate of 5% between 2025 and 2029 to reach $6.4 billion, driven by rising demand for family housing.[43] Despite these promising projections and growing industry interest, several significant barriers remain that will ultimately determine whether MMC can scale successfully and deliver its anticipated benefits.

"Recent industry surveys indicate that technology adoption, described as "low and lagging" in 2020, is beginning to gain momentum."

Investment requirements

Many aspects of MMC require significant upfront investment, such as capital-intensive factories and equipment, and need a stable pipeline of projects to justify those investments. Without long-term demand certainty, firms are unlikely to assume the financial risk. Sustained and predictable demand signals are critical to encourage greater investment and advance industry modernization.[44]

Budget 2026 introduces two measures that could ease investment barriers: the Productivity Mega Deduction, allowing immediate deductions for eligible equipment, and Strategic Response Fund investments to expand industrial capacity and accelerate MMC adoption. These measures can help reduce the effective cost of investing in factory capacity and equipment, while predictable demand remains a key underlying factor in supporting broader adoption.

Regulatory and approval constraints

Regulatory approvals provide necessary and valuable safeguards, but inefficiencies can often produce constraints on construction productivity. Across jurisdictions, permitting delays, inconsistent interpretation of codes, fragmented inspection regimes and limited capacity within AHJs contribute to extended approval timelines. These delays are often driven by a combination of factors, including resource pressures in municipal departments, growing project complexity and the persistence of highly manual, paper-based or non-standardized approval processes. While these issues negatively impact conventional construction, they are especially consequential for MMC-driven projects. Because



off-site production can be completed in weeks, delays in approvals and permitting can exceed the time required to manufacture the building itself, effectively neutralizing the productivity gains these methods are intended to deliver.

A key challenge is ensuring that regulatory frameworks can accommodate innovation while continuing to uphold safety and reliability. Building codes necessarily evolve carefully, but this can create a gap between the emergence of new construction methods and their formal recognition within the regulatory system. Differences in how requirements are interpreted and applied across jurisdictions can add further complexity.

For instance, a key issue has been the inconsistent recognition of CSA A277, the procedure that enables accredited third-party certification bodies to verify that factory-built components meet applicable codes. Although the 2030 National Building Code is expected to strengthen its role, CSA A277 is currently referenced only as guidance, not as a code requirement. This has contributed to inconsistent adoption across provinces, territories, and even within municipalities of the same region.[45] Because building codes and approval processes vary, manufacturers that have already designed and approved modular products for one jurisdiction may face additional approvals or modifications when seeking to use those same products elsewhere. These requirements can increase costs and timelines, making it more difficult for firms to scale their products across the Canadian market.

Misalignment of procurement, financing and insurance

A third major barrier is the misalignment of procurement, financing and insurance systems with the needs of MMC. Traditional procurement structures and milestone-based financing favour sequential, site-based construction, whereas building methods such as volumetric modular require significant upfront expenditures during the manufacturing phase. The absence of standardized financing and insurance frameworks, as well as limited mechanisms for risk sharing, makes it difficult for these methods to scale.[46]

Industry fragmentation and capacity limitations

The industry's structure is a fourth challenge**.** The residential construction sector is highly fragmented, with firms employing fewer than 20 workers representing about two-thirds (66.1%) of industry employment.[47] This limits the capacity for investment in R&D, technology adoption and workforce training. The recently introduced Productivity Mega Deduction is intended to reduce the cost of investing in new technologies and equipment, including modular housing, an explicitly eligible business category. As the program rolls out, attention should be paid to ensuring SMEs can access and benefit from the incentive.

Further, smaller firms also face proportionally higher regulatory compliance costs and may lack the internal resources needed to navigate complex certification and approval processes. They also have fewer resources to engage in the often-necessary work of educating potential lenders, insurers and clients on new methods and how to align contracts and payment schedules accordingly.

Textbox 4. Innovation spotlight: Pop-up manufacturing facilities

Pop-up manufacturing facilities are temporary production hubs that can be established near major housing projects or development corridors. They allow building components, panels or modules to be manufactured closer to where they will be installed, reducing transportation costs and logistical challenges. For remote, northern or rapidly growing regions with limited access to permanent factories, they can help extend the benefits of off-site construction. They may also provide a lower-cost pathway for smaller firms to leverage prefabrication methods without investing in a dedicated manufacturing facility.

A recent example is Horizon Legacy, which partnered with ABB Robotics to deploy an on-site robotic manufacturing system within a 26-townhouse development in Gananoque, Ontario—the first such project successfully completed in Canada.[48] Rather than producing components in a distant factory, the system manufactured wall panels directly within the community being built, effectively creating a project-based micro-factory.

Lack of workforce and ecosystem readiness

Finally, workforce and ecosystem readiness remain important constraints. Factory-based construction is often framed as a potential solution to the persistent labour shortages in skilled trades, where approximately 700,000 workers are set to retire by 2028.[49] Some aspects of MMC may be more adaptable to a shrinking labour pool, given that much of the work can be completed in an efficient plant setting. However, there remains a need to expand skillsets and build expertise in new methods. Just as crucially, understanding of MMC across a broad network of professionals—including architects, engineers, inspectors, planners, regulators, insurers and lenders—is required to accelerate adoption. Gaps across this wider ecosystem slows uptake, underscoring the need for expanded education, skills training and capacity-building.

In all, these barriers suggest that the challenge of scaling productivity-enhancing innovations in construction is less about the potential of the technologies themselves, and more about the systems in which they are deployed.





4.0 Policy Pathways for Improving Construction Productivity

While MMC offers significant potential to increase efficiency, its success ultimately depends on the systems, institutions and market conditions that shape how housing is planned, approved, financed, delivered and evaluated. Productivity gains are therefore unlikely to come from any single intervention, but rather from a coordinated set of actions that strengthen the enabling environment for innovation and continuous improvement across the housing sector.

A recurring theme throughout this analysis is that productivity and innovation are difficult to scale without both certainty and evidence. Manufacturers, developers, lenders, insurers and workforce training providers are likely to remain reluctant to invest in new approaches without confidence that demand will be sustained over time. At the same time, governments and industry currently lack the standardized data needed to consistently measure productivity, evaluate outcomes and identify which innovations deliver the greatest value.

The recommendations that follow are designed to address these interconnected challenges.





Table 3. Recommendations summary

Policy pathway	Core problem addressed	Main action	Intended outcome
Build a national productivity measurement and benchmarking framework	Limited ability to compare productivity across projects, methods, firms and jurisdictions	Establish common KPIs, reporting templates and a national evidence base for housing construction productivity	Better evidence to assess what works and support continuous improvement
Advance regulatory harmonization and capacity building	Fragmented codes, inconsistent interpretation and limited AHJ familiarity with MMC	Accelerate harmonization, clarify compliance pathways, support guidance and training for AHJs, and enable repeatable approvals	Faster, more predictable approvals for both conventional and MMC projects
Align procurement, financing and insurance to support innovation	Traditional procurement, financing and insurance models are poorly aligned with MMC and factory-based construction	Use public procurement to create demand certainty; adapt contracts, financing, insurance and risk-sharing models	Stronger market confidence, investment and uptake of productivity-enhancing methods
Create the conditions for workforce and industry readiness	Firms and workers may lack the capacity, skills and confidence to adopt new methods at scale	Pair market-building measures with targeted workforce development, digital skills, manufacturing capabilities and broader ecosystem training	A more capable industry and workforce able to scale MMC and other productivity-enhancing innovations

Build a national productivity measurement and benchmarking framework

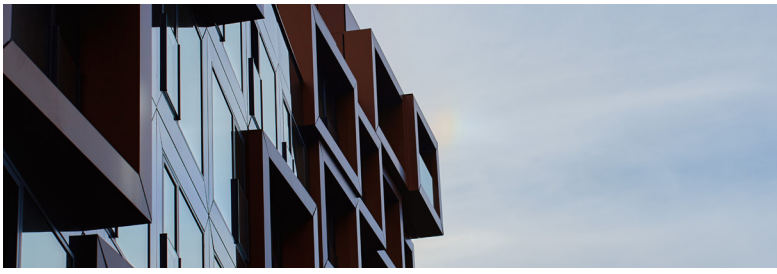
Canada's ability to improve housing construction productivity is constrained by the absence of standardized definitions, performance metrics and data collection practices. Without a common framework, productivity cannot be consistently measured, compared or improved across projects, firms and jurisdictions. As a result, the impact of innovations, construction methods and policy interventions has been difficult to quantify. There are encouraging developments on this front, however. The newly launched National Research Council's Centre of Excellence for Advanced Prefabrication and Digitalized Construction has begun work to develop standard metrics, collect and benchmark data, and provide insights to support productivity improvements that advance industry modernization.[50]

These efforts provide an important foundation for a broader national framework, which should be built around consistent productivity measures, project-level key performance indicators (KPIs) and reporting templates. These should capture project inputs, such as labour hours, material use, permitting timelines and construction methods, alongside outputs such as housing units delivered, project timelines, cost performance,waste reduction and quality outcomes. Standardized reporting could also support the creation of a national benchmarking framework, allowing governments, industry and researchers to better understand the factors that contribute to successful project delivery and productivity improvements.

Given the prevalence of small- and medium-sized firms in Canada's residential construction sector, reporting requirements should be accompanied by practical supports. Public funders could pair data collection requirements with standardized digital tools, streamlined reporting templates, technical assistance, and targeted funding for data collection and management. Particular attention should be paid to supporting firms with limited digital maturity, as many smaller builders may lack the systems, expertise and capacity needed to collect, manage and report performance data consistently. Providing these supports could help encourage broader participation in benchmarking initiatives, while minimizing administrative burden and strengthening industry-wide capability over time.

BCH is well-positioned to help advance such an effort. As a major investor in housing, BCH can require standardized productivity reporting as a condition of funding. It could also coordinate with other federal departments—including National Defence and Natural Resources Canada, which are actively investing in innovative building methods for housing—to expand and align data collection efforts. This could allow publicly supported projects to generate not only housing units, but also the data needed to evaluate performance and identify opportunities for improvement on a larger scale. Recent federal commitments reinforce the importance of this work. Budget 2026 includes $67.7 million over four years, and $101.2 million in future years, to improve housing data (as well as to support the development of common standards for MMC).

A centralized repository of data from publicly funded housing initiatives across Canada would further support rigorous comparisons of different building methods, with the National Research Council well positioned to house and maintain such a resource. Eventually, a national evidence base could help identify the types of construction approaches, technologies and innovations that ultimately produce meaningful productivity gains across different contexts.



Advance regulatory harmonization and capacity building

Prioritize harmonization

Regulatory harmonization is widely recognized as one of the more important levers for improving efficiency and productivity in housing construction, across both conventional approaches and MMC.[51]

In response, the Canadian Board for Harmonized Construction Codes (CBHCC) was established in 2022 as a federal/provincial/territorial body to develop and oversee Canada's National Model Codes.[52] Mandated to improve coordination, reduce unnecessary variation, and support more consistent and timely code adoption across the country, the CBHCC brings together governments to set strategic direction, while committees of technical experts develop code content.

CBHCC represents a significant step toward greater alignment, and early work under this model has produced updated national codes with a greater focus on harmonization. However, because provinces and territories retain authority over adoption and can modify codes to reflect local priorities, inconsistencies persist.

Harmonization efforts could be strengthened through a few different approaches.

First, federal housing and infrastructure funding could be linked to timely adoption of the National Model Codes, with minimal variation.

Another pathway could be to increase the use of "formal references" of standards and provisions in the National Model Codes, which are more likely to be adopted by provinces and territories, and reduce reliance on more informal guidance that can be interpreted inconsistently, as is currently the case with CSA A277 (see Textbox 5).

Textbox 5. Streamlining approvals for factory-built construction

CSA A277 establishes requirements for the certification and inspection of prefabricated buildings, modules and panels, helping ensure they meet applicable code, safety and performance requirements before leaving the factory. By reducing the need for duplicative inspections on site, the standard can streamline approvals and increase confidence in modular and prefabricated components.

However, inconsistent referencing across jurisdictions has limited its impact. To address this, a recently approved change to the National Building Code will enable CSA A277 to be recognized as a formal compliance pathway, providing building officials with clearer direction on how certified modular buildings can demonstrate code compliance. While this change will be included in the 2030 edition of the National Building Code, provinces, territories and other AHJs can recognize and apply the standard now, accelerating more efficient regulatory practices.





The CBHCC has already identified modular housing and other innovative construction approaches as priorities through its National Model Codes Committee on Housing Supply.[53] Accelerating this work and addressing remaining gaps—for example around design and volumetric modular units (see Textbox 6) or transportation of modules—could also help create more consistent regulatory pathways and support the federal government's commitment to modernize the National Model Codes and enable factory-built housing.[54]

Finally, as construction methods inevitably continue to evolve, building codes must also become more adaptable to accommodate innovation. Performance-based code provisions, which focus on achieving safety and performance outcomes rather than prescribing specific construction practices, can provide a useful mechanism for enabling emerging methods of construction while maintaining public safety. Performance-based codes have also been linked to potential productivity gains. For example, an Australian study estimated an increase of A$1.1 billion could be attained by expanding the use of performance-based solutions in the nation's building and plumbing industry.[55]

However, more flexible codes can also be perceived as creating greater discretion and therefore potentially more uncertainty, especially for AHJs unfamiliar with newer methods and technologies.[56] Canada has been gradually moving toward more performance-based codes. The success of this shift will depend on culture change across the regulatory system, including progressing beyond deeply entrenched prescriptive approaches, establishing clearer performance criteria, and investing in training and education for AHJs.

Textbox 6. CSA Z251, Design of volumetric modular structures

Volumetric modular construction has significant potential to speed up delivery of housing through repeatable multi-unit and multi-storey building designs.

CSA Z251 is intended to complement the National Building Code of Canada by establishing key approaches specific to the design of volumetric modular buildings. It helps address several areas specific to modular construction, including structural design, building services, environmental separation, fire protection, manufacturing and architectural considerations. Over time, integrating the standard into the National Building Code could provide greater regulatory certainty and support broader adoption of volumetric modular construction.



Invest in regulatory capacity

Improving regulatory harmonization across jurisdictions has the potential to meaningfully accelerate approvals by providing greater clarity and consistency for AHJs. However, even where codes are aligned, inconsistent interpretation, enforcement and inspection requirements at the local level can create de facto fragmentation.

Addressing this challenge requires investment in regulatory capacity. Canada's permitting ecosystem is already under strain, with a limited number of building officials—just 5,000 across the country. They face growing application volumes and pressure to complete their work more efficiently, all the while ensuring safety and mitigating liability issues.[57]

Tools that support greater consistency, training and digital modernization for AHJs are important enablers here. Through initiatives like the Housing Accelerator Fund and BC Building Permit Hub, federal and provincial governments are investing in digital tools and standardized inspection protocols. Most recently, Budget 2026 commits $100 million for municipal e-permitting and AI-enabled review. Collectively, these initatives aim to support more efficient approvals by reducing variability in submissions, improving consistency in code interpretation and ultimately accelerating decision-making by AHJs.

It is important that such programs take into account MMC, which face extra barriers from fragmented regulation and a general lack of familiarity among AHJs. For instance, as flagship initiatives like BCH continue to drive demand for prefabrication, the trend toward larger and more complex modular buildings could result in greater regulatory scrutiny from AHJs.[58] More tailored inspections could be required to ensure compliance, placing additional pressure on both manufacturers and building officials, and resulting in longer or duplicated approval processes.

A set of nationally consistent guidance documents for AHJs on modular and pre-fabrication construction processes, permitting requirements and inspection responsibilities across factory and site stages would provide needed clarity and help better secure potential efficiency gains.[59] Combined with a more harmonized regulatory environment, such efforts could even enable "repeatable approvals," where a factory-built unit or component is approved once (e.g., certified at the factory) and then accepted broadly without case-by-case reinspection. This could unlock scale at an entirely new level across the country.

Critically, enhancing regulatory capacity will also require targeted training for AHJs, who often have limited familiarity with key aspects of MMC, resulting in approval delays and inconsistent application of requirements. Training must not be seen as a complementary measure but a prerequisite for ensuring that efforts to harmonize codes translate into consistent, timely decision-making on the ground.

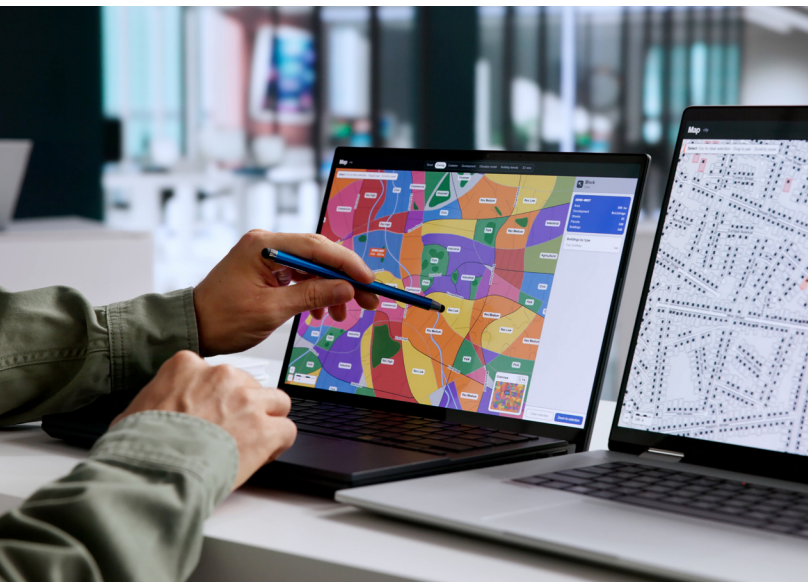
A coordinated, national training strategy could help address these gaps. This could involve expanding programming through organizations such as Alliance of Canadian Building Officials' Association and equivalent provincial associations to include MMC-focused modules, covering areas such as modular certification and factory inspection processes. Dedicated federal or joint federal/provincial/territorial funding would be critical to scale delivery and ensure consistent access to training across jurisdictions.

Align procurement, financing and insurance to support innovation

Use public procurement as a catalyst for demand

Public procurement is a critical lever for scaling MMC and achieving wider sector transformation. Construction demand is inherently cyclical, shaped by interest rates, material costs and broader market uncertainty. During downturns, developers reduce activity, causing orders for manufacturers to fall sharply. This volatility is especially challenging for many aspects of MMC, which rely on steady, predictable demand to justify significant upfront investment in factory facilities and equipment.

Governments, as large and consistent purchasers of housing and infrastructure, are uniquely positioned to counter this volatility. Through efforts at BCH, National Defence and Natural Resources Canada, the federal government is signaling long-term demand for more innovative and efficient housing construction approaches. This demand-shaping role is consistent with strategies adopted in other jurisdictions—including Germany, Australia, the United Kingdom, Singapore and Ireland—where public-sector-led housing programs are used to create a stable pipeline for MMC and industrialization of construction.[60]





One promising tool to further strengthen demand certainty is the use of offtake agreements.[61] Under current conditions, developers and manufacturers bear significant demand risk, while lenders require predictable revenue streams, particularly for MMC-driven projects with front-loaded costs. Offtake agreements, which commit a purchaser to buying future output in advance, have been widely used in infrastructure and energy to make projects financeable.[62] Applied to housing, the federal government (through BCH and/or by aggregating demand across multiple departments actively investing in MMC) could pilot multi-year offtake models. These models could create predictable pipelines for factory-built housing, reduce financing risk, and support cost efficiencies through scale and standardization.

To realize these benefits, procurement frameworks must also better align with MMC. Traditional approaches, particularly lowest-bid selection and sequential design-bid-build delivery, tend to favour conventional construction.[63] By contrast, integrated procurement models, such as design-build or alliance contracting,[64] emphasize early collaboration among owners, designers, contractors and manufacturers. This is especially important for volumetric modular construction, where decisions related to design, manufacturing constraints, logistics and assembly must be made early and in an integrated manner.

While new procurement models are being tested in pockets across Canada, they are not yet standard practice. Encouragingly, the Canadian Construction Documents Committee (CCDC) is working to adapt standardized contracts and guidance to better reflect MMC needs.[65] Public purchasers should actively track and adopt these evolving frameworks to support broader market uptake.

Similar consideration should also be given to small- and medium-sized enterprises. They make up most of the residential building industry, yet face higher barriers to entry and take on disproportionate risks through contracting requirements that are designed for larger players.[66] Building on initiatives such as the Federal Small Business Procurement Program, future reforms could focus on more balanced risk-sharing arrangements, updated contracts, and streamlined insurance and dispute resolution processes to further reduce barriers to participation for SMEs.

Looking ahead, public procurement could be additionally leveraged to accelerate wider sector transformation. Requiring or strongly incentivizing the use of MMC in other publicly funded projects (e.g., schools, long-term care homes and correctional facilities) can help build a more stable and diversified demand base. This, in turn, would support industry capacity, enable learning across asset classes and normalize MMC.

The United Kingdom's *Construction Playbook* offers a useful model. By positioning government as a "market maker," it uses coordinated procurement across national departments and arms-length bodies to aggregate demand, set targets for use of pre-fabricated and modular components, and embed digital standards such as BIM.[67] These measures help create the pipeline certainty and system-level alignment needed to unlock investment and scale.

Other jurisdictions, including Denmark, Germany and France, have also invested in extensive guidance frameworks and supporting resources to advance the uptake of BIM specifically. These efforts aim to both accelerate digital transformation in the construction sector and achieve better delivery of public infrastructure.[68] The United Kingdom and Quebec have gone a step further and introduced BIM mandates, requiring the use of BIM in select publicly funded projects.[69] Other provinces in Canada and the federal government could explore similar approaches through various housing investments. Rather than imposing a universal requirement immediately, governments could begin by mandating or incentivizing BIM on larger, repeatable or standardized housing projects. A more incremental approach would help build digital capability across the industry, while also generating the data needed to better understand how different methods and approaches impact productivity.



Adapt financing and insurance frameworks

Adapting financing and insurance frameworks to better reflect the realities of MMC is an active area of policy and market evolution in Canada. One notable development is the recent introduction of CMHC's Prefab Plus, a mortgage insurance program that improves access to financing for both single- and multi-unit housing by better aligning loan disbursements with the production timelines of factory-built units.[70] Major financial institutions are also beginning to reorient their offerings to support MMC. For example, RBC now offers a Multi-Unit Construction Mortgage Program that explicitly references modular construction methods.[71]

Still, many lenders and insurers remain unfamiliar with emerging construction methods, given they make up a relatively small portion of overall building in Canada. This uncertainty contributes to heightened risk perceptions and continues to result in more restrictive coverage and conservative lending practices.[72] Larger, more established firms are often better positioned to engage with lenders and insurers to secure favourable terms, while smaller firms with limited capacity face a clear disadvantage.

The federal government can play an important role by enabling greater clarity. Working through CMHC, and in collaboration with financial regulators and industry associations, it could develop a framework or advisory document outlining approaches to risk assessment, underwriting, and valuation specific to key aspects of MMC such as permanent, volumetric modular buildings. Such guidance would help build confidence among lenders and insurers, while reducing informational barriers that disproportionately affect smaller firms.



Create the conditions for workforce and industry readiness

The transition toward a more productive housing construction sector will ultimately depend on the industry's capacity to adopt and scale new approaches. While workforce skills and organizational capabilities are often identified as barriers to innovation, they are also a function of market conditions. Firms are unlikely to invest in workforce development, manufacturing facilities, digital tools, research and development, or process improvement without confidence that demand will be sustained over the long term.

The preceding recommendations are therefore important enablers of industry capability. More predictable demand through public procurement, greater regulatory certainty, improved access to financing and insurance, and a stronger evidence-base would provide firms with more confidence to make longer-term investments in people, technology and production capacity.

The growth of British Columbia's mass timber sector serves as a relevant example here. Sustained government support, market development efforts and growing project pipelines helped create sufficient demand for specialized training, contributing to the emergence of dedicated post-secondary programming and industry certifications.[73] MMC-relevant training opportunities could remain limited in many parts of Canada if adoption fails to reach the scale needed to support dedicated workforce pathways.

Targeted workforce development initiatives should nevertheless complement broader market-building efforts. As construction becomes more industrialized, automated and technology-enabled, workforce needs are likely to evolve. While industrialized construction may reduce demand for some tasks traditionally performed on site, it is also expected to increase demand for skills associated with digital design, advanced manufacturing, factory production, quality assurance, logistics, data management and modular assembly.[74] Rather than eliminating the need for skilled workers, these changes are likely to alter the mix of occupations and competencies required across the housing delivery system.

Training programs, apprenticeship pathways and workforce development initiatives will need to adapt accordingly. This includes supporting workers as they transition into emerging roles, while ensuring that new training opportunities remain accessible across the construction sector. Given that a significant portion of Canada's workforce operates outside traditional unionized training systems, workforce programs should be structured to reach workers and employers regardless of business model or affiliation. This would help ensure that productivity-enhancing skills, training opportunities and career pathways are available across the industry, rather than concentrated among a subset of firms or workers. As with previous technological and industrial transitions, policy should focus not only on attracting new talent, but also on helping existing workers adapt to changing industry needs.



Conclusion

Improving housing construction productivity is essential to addressing Canada's housing supply and affordability challenges. Modern methods of construction (MMC), including modular, prefabricated, digital and other approaches, offer important opportunities to build more efficiently, reduce waste, improve cost certainty and strengthen the evidence base for continuous improvement. However, these methods should not be viewed as a standalone solution or a replacement for conventional construction. Their value lies in expanding the range of tools available to deliver housing more quickly, consistently and at scale.

Realizing this potential will require action beyond the construction site. Canada will need:

- Better productivity measurement
- More harmonized and innovation-ready regulatory systems
- Public procurement efforts that generate predictable demand
- Financing and insurance frameworks that reflect the realities of factory-based construction
- Workforce strategies that prepare firms and workers for more industrialized and digitally enabled methods of building

The central challenge is not simply whether new methods can work, but whether the surrounding policy, market and institutional conditions are aligned to help them succeed.



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About CSA

Canadian Standards Association (CSA) is a not-for-profit organization dedicated to safety, social good, and sustainability. We are a leader in advancing standards that improve safety, health, the environment, and economic efficiency in Canada and beyond. Our mandate is to hold the future to a higher standard.

Through standards development, research, education, and advocacy, CSA brings together and works alongside more than 11,000 expert volunteer members who contribute their time, knowledge, and expertise to develop standards. Together, we help address society's evolving needs and shape better outcomes for Canada and the world.

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