



**NATIONAL  
HOUSING CRISIS  
TASK FORCE**

**CONSTRUCTION >>>**

**PRE-PURCHASING TO INCREASE  
MODULAR CAPACITY**

**ACCELERATOR  
FOR AMERICA**



DREXEL UNIVERSITY

**Nowak Metro Finance Lab**

Lindy Institute for Urban Innovation

# Pre-Purchasing to Increase Modular Construction Capacity

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## Summary

Modular construction has the potential to reduce residential construction costs by 20–30% and accelerate construction timelines by 30–50%. While [widely adopted](#) throughout the developed world, however, modular construction represents less than 5 percent of new construction in the U.S. Its adoption has been limited by a patchwork regulatory environment, risk-averse financing and development practices, and high upfront costs for manufacturing facilities. Furthermore, the economic benefits of modular construction diminish when homes must be transported great distances, necessitating strategic placement of factories near areas of housing demand.

Pre-purchasing agreements or financial guarantees by local governments offer a promising approach to solving these challenges. When local governments, housing authorities, or cooperative arrangements among multiple localities commit to purchasing a base level of modular homes, they generate sufficient demand to justify investment in local construction facilities. This approach diffuses risks, reduces cost, and establishes the necessary pipeline to expand the modular industry across broader regions.

## The Challenge This Tool Solves

Construction costs have [increased](#) at more than double the rate of overall inflation over the past decade across the spectrum of housing: for sale, for rent, market rate, and affordable. Contributing factors include national shortages of construction workers and skilled tradespeople, increased costs of raw materials including lumber, and regulatory requirements that make housing increasingly scarce and expensive. Modular construction addresses these challenges through economies of scale, improved efficiency in material usage, the ability to continue work independent of weather conditions, and accelerated construction timelines. Pre-purchasing agreements empower local jurisdictions to reduce modular manufacturers' risk, encouraging them to establish or expand production facilities in or near their jurisdiction, and making it more likely the potential cost savings from modular will translate into reduced production costs and greater housing affordability.

## Types of Communities That Could Use This Tool

The establishment of offsite manufacturing requires sufficient regional demand for new housing units of a similar type — whether single family, townhouses, small apartments, or larger apartment buildings. There are numerous transportation, regulatory, and labor issues to consider when communities choose to invest in a modular factory. Communities experiencing housing shortages that have available land for production, and a regulatory environment conducive to inspections and building permitting of housing units constructed off site are prime candidates for this tool.

## Expected Impacts of This Tool

In ideal conditions, [estimates](#) suggest that modular construction can reduce construction timelines by 30–50%, and overall construction costs by 20%. Investing in recruiting an offsite manufacturing facility can increase the pace of construction of housing in a region, while decreasing the per-unit costs over time.

## Background

Modular construction bridges traditional site-built construction and manufacturing, leveraging the best practices of each for greater efficiency. “Modular” [generally refers](#) to volumetric, three-dimensional boxes (modules) fabricated off-site, but also can refer to other off-site construction methods, such as the manufacturing of panelized and other smaller building components. Modular construction can be applied to single-family, multifamily, commercial, and industrial buildings. Modular structures may be permanent or relocatable.

Work at the physical construction site—where the completed final structure will ultimately be occupied—includes preparation, foundation work, and running of utilities. Building components like walls, floors, and roofs are fabricated simultaneously in a factory in an assembly-line like process. These modules are then transported and delivered to a site and integrated into the foundations to create the final structure. The integration may include connecting all building components like a set of Legos or placing a stand-alone turn-key structure delivered with completed mechanical, electrical, plumbing systems as well as interior finishes and fixtures.

Modular construction utilizes the same materials as traditional site-built construction. Modules are standardized to streamline the process but can be customized and designed to be architecturally indistinguishable from adjacent site-built structures. While some nations (Canada) and several states—[Montana](#), [Utah](#), and [Virginia](#)—have adopted modular building codes, the U.S. does not have a singular national modular building code. While manufactured housing built with a permanent chassis is subject to a building code promulgated by the Department of Housing and Urban Development (the “HUD Code”), all other buildings are regulated at the state and local levels.

Key benefits to utilizing modular construction methods include:

- **Accelerated Construction Timelines:** Simultaneous factory production and site preparation can significantly reduce timelines, minimizing costs related to financing, permitting, and temporary housing for workers. Moreover, since modules are built indoors, costly weather-related delays are minimized.

- **Mass Production & Economies of Scale:** Since modules are built in a factory setting, materials can be bought in bulk at lower costs, and labor can be utilized more efficiently.
- **Reduced Labor Costs:** Factory-based construction can reduce the need for expensive onsite labor. It also allows for a more controlled environment where tasks are standardized, potentially reducing labor costs.
- **Less Material Waste:** Factories can optimize material usage and more easily repurpose excess materials for future projects compared to traditional construction methods, where excess materials must be transported away from the assembly site.
- **Lower Site Preparation and Logistics Costs:** Because a large portion of the work is completed off-site, the need for extensive site work, storage, and staging areas is reduced, cutting down expenses on logistics and site management.
- **Standardization & Design Efficiency:** Modular homes often follow standardized designs that streamline production. This lowers architectural and engineering costs compared to custom-built homes. It can also help reduce maintenance costs for building operators, since it is easier to determine how to fix or replace certain components.
- **Energy Efficiency & Sustainability:** Modular designs often incorporate energy-efficient materials and construction techniques, reducing long-term operational costs for heating, cooling, and maintenance.

Despite these benefits, modular construction faces several obstacles limiting its adoption and deployment:

- **Logistics:** Modular requires transportation from the manufacturing site to the assembly site, with costs increasing based on distance traveled. Some modular structures may also be too big to transport without special planning and permitting; others will require special permits and inspections to travel across state lines. Finally, smaller streets and density in some American cities may complicate the delivery and installation of modular.
- **Perception:** Given the structure of housing development, where decisions are made by owners, general contractors, and architects, multiple parties need to be enthusiastic in choosing modular as the means of construction for a particular project. For owners, general contractors, and architects unfamiliar with modular and concerned about minimizing risks, it can be challenging to introduce new techniques and materials into the construction process. Organized labor may also resist the adoption of modular construction because it can reduce the reliance of builders on certain skilled trades.
- **Regulations and Compliance:** Without a national building code, modular is subject to the regulations of different localities. Because modules for development are built in one geography and delivered in another, the lack of a uniform building code can increase compliance costs for developers who need to work with building inspectors in the

jurisdiction where the housing will be built. Even minor differences in code requirements can require additional customization of modular homes, further increasing costs.

- **Upfront Costs:** The cost to build a volumetric modular factory is estimated at \$40-\$50 million—depending on size, location, and equipment used. This is a significant investment that many private manufacturers will be unwilling to make unless they are confident in a long-term pipeline of demand in a region. Modular manufacturers will typically require a down payment of 30–40% from the ultimate purchaser, higher than traditional suppliers of building materials.

## Proposed Solution: Pre-Purchasing to Increase Modular Construction Capacity

Pre-purchasing agreements represent a solution to these challenges by establishing a reliable pipeline of demand for modular housing in particular regions. These agreements aim to create a fly-wheel effect where initial investments to attract modular manufacturers to a region promote the broader adoption of modular construction methods by other developers, enhancing its overall impact on housing affordability.

While local governments traditionally do not procure housing (apart from Public Housing Authorities), they influence housing creation through public land disposition, developer incentives, and subsidies for specific populations. These mechanisms provide avenues for supporting modular construction, which in turn could reduce the need for other incentives by lowering overall development costs.

The City of Cleveland recently implemented this approach under the leadership of Mayor Justin Bibb. Cleveland's [Site Readiness Fund for Good Jobs Fund](#) (SRF) issued an [RFP](#) in December to attract an off-site construction manufacturer to help address the city's 15,000-unit housing shortage. The RFP seeks to identify and select a modular manufacturing partner who will site a new factory on a 20+ acre parcel of land. The RFP process consists of two rounds: the first will identify manufacturers who are the best fit for the initiative and city; the second will involve discussion, site visits, evaluation and negotiations, with the goal of selecting up to three developers who will construct a pilot to build 15 homes for direct purchase by SRF.

The city and its partners are providing a number of incentives and other forms of support to encourage manufacturers to respond to the RFP and increase the chances of long-term success. The city is securing base demand among nonprofit, governmental agencies, and for-profit developers, with a targeted commitment of 100-200 homes annually over ten years beginning in 2026. Prior to the release of the RFP, SRF partnered with the City of Cleveland, City Council, and the Cuyahoga Land Bank to identify 18,000 vacant lots ready for development (and on which modular homes could be deployed). Manufacturers will also be able to leverage the city's existing TIF and tax abatement tools, as well as state and local tax credits and incentives for projects

that lead to 50+ new jobs. The city is also committed to streamlining zoning, permitting, and inspections processes to accelerate the production and deployment of these new homes.

The city is focused on deploying the homes in a concentrated way to catalyze neighborhood revitalization, with the target of deploying up to 100 homes in one neighborhood or district annually. Neighborhoods will be selected by a combination of elected officials, staff, and CDCs. Selection criteria including neighborhood interest, the presence of a high concentration of vacant lots conducive for development, recent or planned infrastructure investments, and the presence of other organizations interested in investing in affordable housing. This approach will also allow the city to better target focused infrastructure improvements through TIF and other tools. Ultimately, the city ultimately aims to develop a redevelopment playbook that can be applied annually to improve efficiency and streamline future projects.

Notably, a new modular factory in Cleveland is expected to not just serve the city, but also the 2.5 million people in the broader metro area, as well as the cities of Columbus, OH, Toledo, OH, Pittsburgh, PA, Detroit, MI, and Buffalo, NY, which are all within three hours and have easy interstate access.

The Minneapolis Public Housing Authority (MPHA) has similarly leveraged modular construction for its [Family Housing Expansion Project](#) (FHEP, creating 84 units of public housing across 16 developments. The project comprises 26 two-bedroom and 58 three-bedroom homes in fourplex and sixplex configurations, all serving households at or below 30% of Area Median Income (AMI). Minneapolis Public Housing Authority (MPHA)—the developer, owner and property manager of the project—estimates these 84 new homes can serve approximately 420 families over the next 30 years.

To reduce costs and speed the development time, MPHA issued an RFP for a developer to design and build these units, selecting a consortium including Rise Modular, an existing Minnesota based modular construction company, Frerichs Construction, a general contractor, and DJR architecture. This approach reduced neighborhood disruption and accelerated delivery by 30% compared to conventional processes.

MPHA was able to provide 84 project-based vouchers to fully subsidize the units to achieve the project's deep affordability and made a significant contribution with a \$12.5 million dollar loan to the project. Additionally, the project benefited from a \$1.4 million Local Housing Incentives Account (LHIA) award from the Metropolitan Council, a \$500,000 award of Hennepin County's Affordable Housing Development Accelerator fund, and more than \$500,000 in equity through solar tax credits. The project was one [eighteen finalists](#) for the Urban Land Institute's 2024 Americas Awards for Excellence.

Another mechanism for expanding modular construction is cooperative pre-purchasing agreements between neighboring jurisdictions. Cooperative pre-purchasing, or [purchasing consortia](#), is already used in states, cities, and municipalities across the U.S. to get the best value, ensure favorable contractual terms, and encourage competition and innovation. For example, states including California, Illinois, Massachusetts, New Jersey, New York, Virginia, Ohio, Pennsylvania, Rhode Island [have established](#) “Community Choice Aggregators (CCAs)” to source cheaper electricity for local communities resulting in lower utility bills and more renewable energy sourcing. However, co-operative purchasing has rarely been used for housing.

The Department of Housing and Urban Development recently awarded the Boston-area Metropolitan Area Planning Council (MAPC) a \$3 million Pathways to Removing Obstacles to Affordable Housing (PRO Housing) grant to explore innovative ways to build and install modular housing in the Greater Boston region. The [grant application](#) specifically noted “that the lack of a manufacturing facility within 50 miles of Boston is the most significant barrier to the use of offsite construction due to the transportation and logistical challenges of transporting modules across state and country boundaries.”

Grant funding will help determine the best mechanism for the towns of Boston, Cambridge, Everett, and Newton to pool enough demand to locate a modular facility in the Greater Boston region, with the goal of producing 500 units annually by 2030. The initiative also engages labor representatives to ensure that off-site construction complements on-site work to strengthen the overall construction industry.

## Diffusion and Scaling of Modular Pre-Purchasing

To scale and encourage the widespread adoption of modular construction methods through pre-purchasing agreements and regional consortia, local and state leaders should consider the following actions:

**Assess the Current Modular Ecosystem in Your Community:** Many communities have facilities where prefabricated elements including windows, doors, trusses, panelized wood framing, timber and steel framing, precast concrete systems, curtainwall, and structural insulated panels are regularly incorporated into traditional construction techniques. These existing operations could potentially expand to produce additional building systems at scale with sufficient demand. For example, in a city with a need for and policies to support six-story mid-rise residential infill construction, demand may be pooled to incentivize a steel, timber, or mass timber supplier to produce the structural core of the buildings. In some jurisdictions, dwelling components like bathrooms could be prefabricated and delivered to the site ready for integration, but suppliers may need active participation by local government leaders to organize the necessary commitments from local developers.

**Create a Regulatory Environment which Facilitates Modular Construction:** [Local leaders should update zoning laws to accommodate modular construction in more areas, including mixed-use and infill sites.](#) They will also need to standardize and clarify building codes specific to modular homes to prevent delays and inconsistencies. They could also potentially implement a fast-track permitting process for modular home projects. While the International Code Council's [modular codes](#) have created greater harmony in industry, broader structural reforms to building codes are necessary for modular to reach its full capacity and impact the housing crisis at scale.

**Incentivize Suppliers to Site or Expand New Factories:** The economic benefits of modular construction diminish with transportation distance, making local production facilities essential. Communities can offer incentives such as tax abatements or programs like Cleveland's SRF to attract manufacturers. Before pursuing this strategy, localities should confirm sufficient demand to justify the substantial capital investment (\$40-\$50 million) required for factory development.

**Support Workforce Development and Engagement with Labor:** Meet the housing demand using any means of construction will require significant investment in workforce development. Where modular factories exist and where new ones will be built, cities and municipalities can pool a new, modern workforce and work with labor representatives to find new ways of working with manufacturing partners.

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