Advanced Prefabricated Housing Tackling the U.S. Housing Shortage

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Buying a home in the United States is now more difficult than ever before. Home prices have skyrocketed, and housing construction has stagnated due to inflation-driven increases in labor costs and building materials, coupled with severe labor shortages. The result is a persistent shortage of millions of homes across the country[1].

The shortage of "affordable housing" (defined as housing where costs, including utilities, are less than 30% of total income[2]) is particularly acute. This trend makes the path to the American dream of homeownership increasingly challenging for younger generations and low- to middle-income households.

In recent years, "advanced prefabricated housing" has emerged as a promising solution to this crisis. As conventional housing construction struggles to keep pace with demand, prefabricated housing achieves efficiency and quality improvements through industrialization, offering a viable new path forward.

*Photo above: Scott Turner, Secretary of the U.S. Department of Housing and Urban Development (HUD), delivering a keynote speech at an event held by the National Manufactured Housing Institute (Source: Champion Homes[3])

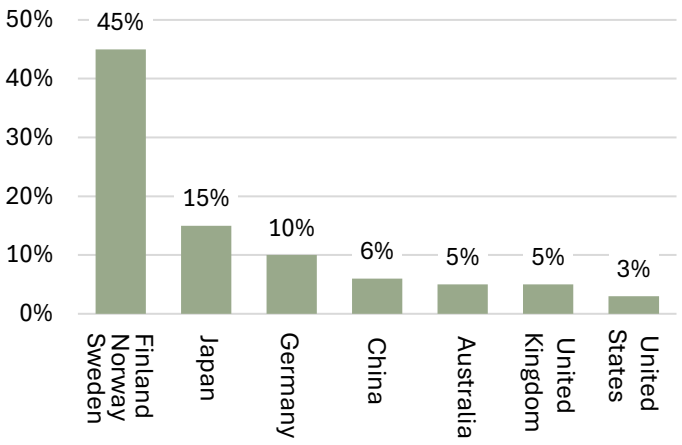
*Photo below: HUD Secretary Scott Turner inspects a single-family manufactured home produced by Champion Homes (Source: Manufactured Housing Institute[4])

The Slow Start of Housing Industrialization in the U.S.

In the U.S. housing market, on-site construction using the "2x4 method" (stick framing with dimensional lumber) has long been the standard. Several factors have hindered the advancement of "prefabrication", where components are manufactured in factories and assembled on-site: vast land areas across the country, varying building codes across states and municipalities, and cultural preferences for traditional construction.

The U.S. Department of Housing and Urban Development (HUD) report "Offsite Construction for Housing: Research Roadmap", published in January 2023[5], highlights that while prefabricated housing is widely adopted in Nordic countries and Japan, the United States continues to lag significantly behind.

Percentage of Offsite-Built Housing in National Housing Markets※



Source: HUD[5]

※Year unknown

However, in response to the recent housing crisis, attention is increasingly turning toward offsite construction and prefabricated housing, which holds significant potential for large-scale supply of affordable housing. The share of advanced prefabricated housing in new U.S. homes expanded more than threefold, from just 2.14% in 2015 to 6.64% in 2023[6].

The U.S. federal government has also begun emphasizing the importance of advanced prefabricated housing. HUD Secretary Scott Turner has publicly supported offsite construction as a source of affordable housing. In May 2025, he visited the facilities of industry leader Champion Homes, demonstrating a proactive policy stance[7]. Furthermore, momentum for comprehensive housing legislation is building in the U.S. Congress, with deliberations on a major housing package proceeding for the first time in nearly a decade.

Basic Structure and Types of Prefabricated Housing

Prefabricated housing refers to homes built using a construction method where some or all components are manufactured offsite in a factory and then assembled on-site. Key characteristics include maintaining consistent quality, reducing labor costs, shortening delivery times, and cutting costs, all achieved by manufacturing components in a controlled factory environment.

In the United States, prefabricated housing was once strongly associated with mobile homes and carried significant stigma. However, today diverse construction methods like modular and panel construction are being adopted, bringing a wider range of advanced prefabricated housing types to the market.

Types and Overview of Prefabricated Housing

Type	Overview
Manufactured Housing	• A method where the entire house is constructed in a factory and transported to the site • Manufactured in compliance with the HUD Code, the sole federal building code
Modular Housing	• A method where components called modules, manufactured in a factory, are transported to the site and assembled • Manufactured to comply with the building codes of the state and municipality where the construction site is located
Panel-type Housing	• A method where factory-manufactured roof trusses, wall panels, and floors are assembled on-site
Prefabricated (Kit) Housing	• A method where factory-cut components are assembled on-site. Homeowners may sometimes assemble the home themselves

Source: Based on information from HUD[5] , etc., compiled by Washington Core

Image of mobile homes


Source: Next Modular[8]

Even within the prefabricated housing category, there are clear regulatory differences: manufactured homes comply with HUD codes (federal standard), while modular homes adhere to state and local building codes at the construction site. This regulatory framework is a critical factor for companies entering the market and formulating strategies, while also adding complexity to the U.S. prefabricated housing market.

The Evolution of Advanced Prefabricated Housing Driven by Technological Innovation

In recent years, advanced prefabricated housing has dramatically overcome its historical image as "cheap but inferior in quality." Behind this transformation lies technological innovation advancing across multiple fronts.

Digitalization and Evolution of Manufacturing Processes

The evolution of offsite construction conveys a significant leap forward. The adoption of Building Information Modeling (BIM), which manages entire buildings digitally, combined with 3D printing technology, has increased design flexibility and improved manufacturing efficiency for modular products. This simultaneously reduces construction time and labor requirements, contributing to accelerated housing supply.

Modular housing using 3D-printed components by Azure Printed Homes

Source: Business Insider[9]

Sustainable construction that reduces environmental impact

Environmental innovations are also noteworthy. Factory production improves material efficiency, minimizing construction waste. The adoption of eco-friendly new materials, such as recycled materials and high-performance insulation, is advancing. Furthermore, the integration of renewable energy sources like solar panels enables energy-efficient homes with reduced CO_2 emissions. Prefabricated housing is evolving into environmentally friendly, sustainable living spaces that appeal to modern homebuyers.

Bensonwood's panelized homes achieve airtightness, insulation, and soundproofing


Source: Bensonwood[10]

Disaster-Resilient Homes

Advanced prefabricated housing is gaining attention for disaster resilience. The United States faces risks from natural disasters like hurricanes, tornadoes, and earthquakes. Modern modular and panel-style homes can be designed with enhanced wind and earthquake resistance. The evolution from "cheap and poor quality" to "safe and resilient homes" holds significant potential to transform consumer perceptions.

Geoship's fire, hurricane, and earthquake-resistant Modular Housing


Source: Geoship[11]

Diversification of Design and Lifestyle

Improved design aesthetics are crucial to market acceptance. While prefabricated housing was once strongly associated with uniform, basic designs, today's options range from minimalist tiny houses to spacious luxury residences, offering sophisticated designs across all price points. Increased flexibility allows customization of floor plans and exteriors to meet diverse customer needs and preferences. Prefabricated housing is shifting from simple dwellings for low-income groups to attractive lifestyle homes appealing to a broad demographic.

Avram Inc. combines traditional A-frame shapes with a modern design, featuring a fully customizable kit home

Source: Avram[12]

As multiple innovations advance simultaneously, prefabricated housing is not only addressing the social challenge of housing shortages but also providing new value as "next-generation housing" that improves quality of life across environmental, safety, and design dimensions.

The Institutional and Perception Barriers Facing Prefabricated Housing

While prefabricated housing offers significant promise as a solution to the U.S. housing shortage, several major challenges hinder its widespread adoption.

One of the biggest barriers is the varying building codes and complex zoning regulations across states and municipalities. Some jurisdictions make permits for manufactured homes relatively straightforward, while others prohibit construction entirely in specific zones. Additionally, modular homes must comply with building codes at the construction site, meaning modules manufactured in one state's factory require strict inspections when delivered to another state. These intricately intertwined regulations form a major bottleneck for nationwide adoption.

Transportation challenges also cannot be overlooked. Delivering large modules or manufactured homes to sites requires sufficient road width and bridge strength, with logistics infrastructure constraints driving up costs. In rural and mountainous areas, transportation becomes particularly complex, potentially counteracting efforts to keep housing prices down.

Transportation and Installation of Manufactured Homes

Source: Regional Homes (left) [13] , Clayton (right)[14]

Despite significant improvements in technology and quality, prefabricated housing still faces perception challenges, such as beliefs that prefabricated housing is "cheap" or "diminish property values". These deep-rooted perceptions fuel opposition movements known as NIMBY (Not In My Back Yard). Such a lag in societal recognition and institutional barriers remain major obstacles to unlocking the full potential of prefabricated housing.

Future market expansion will require buy-in across sectors: governments easing and harmonizing building codes, federal and state programs that encourage prefab adoption, advocacy efforts to shift perceptions, and companies taking the lead in showcasing quality and value.

Initiatives addressing these challenges are emerging. A prime example is"CrossMod Homes(CrossMod)"[15]. Launched in 2019 by the Manufactured Housing Institute, CrossMod manufactured housing intends to bridge the gap between factory-built homes and site-built homes. These homes have interior finishes, exterior appearances, and overall living comfort that more closely resemble conventional houses than typical manufactured homes[16].

CrossMod homes are installed on permanent foundations, so they are affixed to the land rather than being moved or set on temporary supports. They also incorporate site-built elements such as porches, garages, and other custom features that are finished on-site after the home is placed. Because of these design and construction features, CrossMod homes are eligible for conventional mortgage financing through Fannie Mae's MH Advantage program and Freddie Mac's CHOICEHome program.

CrossMod Housing

Source: Manufactured Housing Institute[17]

The Potential for Housing Innovation Connecting Japan and the U.S.

As traditional housing prices continue to rise, advanced prefabricated housing is filling the affordability gap while evolving into high-quality homes that combine sustainability, resilience, and attractive design. Advanced prefabricated housing in the U.S. is poised to increase its market presence as both a solution to the housing shortage and a new type of dwelling that accommodates diverse lifestyles.

Prefabricated housing has long been widely adopted in Japan, where housing manufacturers have accumulated advanced prefabrication technologies over many decades. Their expertise in areas such as enhancing resilience against natural disasters and optimizing energy efficiency is highly applicable to the U.S. market. Indeed, in recent years, Japanese housing manufacturers have been actively entering the U.S. market.

For Japanese firms, the United States represents not only a vast market but also an ideal stage to promote Japan's strengths in prefabricated construction. It is anticipated that Japanese companies will help lead the adoption of advanced prefabricated housing in America, utilizing their accumulated technology and expertise to deliver new value to the U.S. housing market.

Footnote

1. https://www.uschamber.com/economy/the-state-of-housing-in-america
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4. https://www.manufacturedhousing.org/news/hud-secretary-delivers-keynote-address-at-mhi-congress-expo/
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10. https://bensonwood.com/
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15. https://www.multivu.com/players/English/84813513-clayton-unveils-ten-new-crossmod-floor-plans-for-home-buyers/
16. For more details on cross-modular and manufactured homes, refer to the Washington Core insight article "Manufactured Homes Changing the Future of 'Housing' in the U.S." (November 2025) (https://www.wcore.com/the-future-of-affordable-housing/)
17. https://www.manufacturedhousing.org/news/crossmod/