





# OUTSIDE

# THE BOX

AS CONSTRUCTION'S LABOR SHORTAGE PERSISTS, COULD THIS FINALLY BE MODULAR BUILDING'S MOMENT?

By John Caulfield, Senior Editor

Since early 2016, Zarrilli Homes' phones haven't stopped ringing. "Business has been great," says owner Anthony Zarrilli about his 13-year-old modular home building company in Brick, N.J., which was on pace to complete 36 homes in 2017. Martinsburg, W.V.-based Express Modular, which markets its homes and construction services exclusively over the internet and has built in 41 states, expected to complete more than 50 modular houses in 2017. President Ken Semler says his company gets more requests for work than it can handle.

And Champion Home Builders, which ships around 1,700 modular homes annually from 22 of its 28 factories, is in expansion mode. In 2016, it acquired Excel Homes, including five plants. Champion is also one of the manufacturers (Idaho-based Guerdon Modular Buildings is another) that supplies modules to hospitality giant Marriott International, which in 2017 expected to sign 50 hotel deals whose construction incorporates preassembled guest rooms or bathrooms.

Clearly, demand for residential modular and prefab construction is increasing. More stick builders, frustrated by their

**The interiors of a New Hampshire home by fabricator Bensonwood feature salvaged yellow pine posts; no-VOC finishes; wide-plank hardwood flooring from Vermont; and abundant windows for natural daylighting, ventilation, and connection to the outdoors.**

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## [INNOVATION]

inability to find skilled labor, are dipping their toes into modular's stream, with codes and regulations that limit modular and prefab construction showing signs of receding.

### OPTIMISM, DESPITE PAST LETDOWNS

Finish Werks, a Savage, Md.-based builder, completes eight to 10 modular homes per year, ranging from 1,100 to 9,000 square feet, and from \$350,000 to \$900,000 (excluding the cost of land). Its big push is on quality and energy efficiency. "Better performance equals better marketing," explains owner Harris Woodward.

The sales pitch is simple: With money cheaper to borrow these days, Woodward asks buyers to give him \$10,000 to make their home's envelope more efficient. "That works out to \$55 more per month on their mortgages, but will translate into \$150 monthly in savings on their utility bills," he says.

Woodward speculates that it's only a matter of time before "somebody big" enters modular production as a game changer, as Elon Musk is trying to do with solar-powered batteries.

Bob Bender, COO of Commodore Corp., the Goshen, Ind.-based supplier of HUD-code and modular houses, says that Commodore produces modular homes from six of its plants and works with a network of 500-plus builders and retailers in more than 30 states. Commodore ships an estimated 1,500 modular homes per year. Over the past four years, it has "dramatically expanded" two plants, and has acquired two others, to keep up with demand, Bender says.

"There's a phenomenal opportunity for modular to grow in the U.S.," says Kristopher Megna, who in 2009 started Dreamline Modular Homes, in Lexington, Mass. His company expected to complete 35 modular houses in Massachusetts and Rhode Island in 2017, a 35 percent increase over 2016.

But wait a minute, say some industry watchers: Haven't we heard all this before, only to watch modular slump back into its tiny corner of the housing market?

Skeptics will point out that labor shortages also affect modular production and construction. The industry's current production capacity couldn't handle a significant surge in demand, and most manufacturers are not disposed to invest in new plants. And modular still suffers from an identity crisis with homebuyers who can't or won't distinguish modular houses that are as stylish and sturdy as anything that's stick

**Above:** Gable walls on a hoist at a Champion Homes factory. **The company ships around 1,700 modular homes per year from 22 of its 28 facilities. Below:** Set day for a house by Finish Werks, a modular builder based in Savage, Md., that constructs about 10 homes per year. The builder's big push is on energy efficiency.





Fabricated by Bensonwood, this 3,063-square-foot custom home in New Hampshire includes a high-performance building shell, low-E windows, radiant-heat flooring, a heat recovery ventilation system, LED lighting, and many locally sourced materials.

built from the container-like double-wides that populate mobile-home parks.

Fred Hallahan, a modular expert and consultant who is president of Hallahan Associates, in Baltimore, says multifamily and commercial sectors are imperative for modular builders and factories to survive. He points out that it's a "tough sell" for a single-family modular rancher to compete on price with a HUD-code or stick-built house in rural America.

There's money to be made from modular construction, concurs Robert Dietz, chief economist for the NAHB, whose Building Systems Council includes modular and prefab builders. "But how you do it, and where, are the questions." Answers to those questions lie in where the modular industry is right now.

## INDUSTRY SNAPSHOT

There are about 80 manufacturers of HUD-code, modular, and prefab houses and components operating more than 200 factories in the U.S. While factory-built modules are being set and completed within subdivisions, it's still very much a scattered-lot business and highly fragmented among hundreds of mostly small builders. "It's more like a bunch of factories making the same thing than it is an industry," quips Semler of Express

Modular, whose company works with more than 20 manufacturers and a network of general contractors.

But modular manufacturing is humming. In 2017, for the first time in five years, modular-home shipments approached 15,000, or 8 percent more than in 2016, according to estimates by Hallahan Associates, which collects shipment data for the National Modular Housing Council (NMHC). What surprised Fred Hallahan was the activity in the Midwest and West, where demand for modular homes has historically been weak. Multifamily construction drove a 17 percent increase in modular shipments in the Midwest and a 13 percent gain in the West, he says.

The Mid-Atlantic and South Atlantic still account for the greatest demand for modular homes. Hallahan's numbers show that demand in the normally strong Northeast fell off last year, but he's quick to note that this region's future pipeline looks promising.

Dietz, though, remains skeptical that modular or prefab construction can make a much bigger splash, especially given Census Bureau estimates that show modular hovering between 2 percent and 4 percent of annual housing starts from 1992 through 2016.



This energy-wise home in New Jersey, from Unity Homes' Tradd platform, is 3,418 square feet. Unity ships throughout the Northeast from its New Hampshire plant and eventually plans to bring production to the Northwest, Mid-Atlantic, and Colorado.

## LABOR IS THE DRIVER

So why the optimism among builders and suppliers, when arguments in favor of modular and prefab construction haven't inspired buyers?

It's the housing industry's ongoing shortage of skilled labor. While employment of residential building and specialty trade contractors has risen, finding enough subs and laborers to meet production goals at wages a builder is willing to pay is a pressing issue. It's prompting a rethinking of how to complete enough homes to meet sales objectives. For some, factory-built modules have become a starting point. "Can you imagine what going from 13,000 to 36,000 homes would mean to this industry?" Zarrilli asks.

But modular construction also depends on skilled labor, in the factories and in the field. Gary Fleisher, who writes the blog [Modularhomecoach.com](http://Modularhomecoach.com), recounts a visit last summer to a factory that had been producing between 12 and 15 modules per week. It had cut back to seven per week because "it doesn't have enough people." Fleisher notes that turnover at some factories is as high as 160 percent.

Megna of Dreamline Modular Homes says the houses his suppliers (predominantly Excel) deliver to jobsites are typically 60 percent complete. Based on buyer demand, his company could be doing more than double the number of houses

it currently builds, "but not all of them turnkey," he cautions, because it couldn't find the skilled labor for that much work.

Jerry Folger, sales and marketing manager for Stratford Homes' 44,000-square-foot factory in Rathdrum, Idaho, says his plant's builder base has shrunk by 50 percent, to only around 20, since the recession. Travis Willman, director of sales and marketing at the company's 110,000-square-foot plant in Stratford, Wis., adds that "labor is the No. 1 concern" among the 50 to 60 builders that his plant works with.

## RELIEF IN AUTOMATION?

Several industry insiders say that automation will be the next step in modular and prefab production. "I don't know how we solve the labor shortage otherwise," consultant John Burns told Bloomberg News.

Some modular manufacturers in Europe and Asia—such as Sweden-based Lindbäcks, whose 194,000-square-foot automated factory delivers more than 20 apartments per week, and Toyota, which is a leading modular home supplier in Japan—have successfully integrated automation into their production processes.

In the U.S., Blueprint Robotics is deploying robots from Germany in its 200,000-square-foot Baltimore facility to prefabricate walls, roofs, and floors for homes that



The kitchen in this energy-efficient home in Easton, Conn., from Unity Homes' Värm platform, features a subway tile backsplash, quartz countertops, a stained concrete floor, and a convertible chimney range hood.

are assembled, like giant Legos, in the field. Tedd Benson, president of Walpole, N.H.-based prefab component maker Bensonwood, admires what Blueprint Robotics is attempting and laments that most U.S. modular and prefab manufacturers are "10 to 15 years behind the rest of the world in automation."

For 43 years, Bensonwood has made high-performance timber-frame components for high-end homes. In 2012, it spun off a subsidiary, Unity Homes, to provide more affordable high-performance houses using the same wall, roof, and floor components that had been developed by Bensonwood.

The supplier's two plants in Walpole and Alstead, N.H., make components for 50 and 70 Bensonwood homes per year; Unity produces components for about 30 homes per year. In November, Bensonwood and Unity began producing panels in a new 104,000-square-foot factory in Keene, N.H., which will increase the company's production capacity fourfold.

But is automation sophisticated enough to provide the kind of customization that homebuyers demand? Los Angeles-based mnmMod operates a 10,000-square-foot factory in

Vernon, Calif., that prefabricates steel-framed extruded polystyrene wall panels that are completely customizable, says Tryggvi Thorsteinsson, who founded the company in 2007 with his partner Erla Dögg Ingjaldsdóttir. MnmMod has its own designers and also works with outside architects.

## LOOKING TO THE FUTURE

Production capacity is one of modular's speed bumps, as is finding suitable lots. Zarrilli says he fills out far more paperwork for modular construction than for stick-built, with two employees who do nothing but handle permits.

Builders also say that some banks, appraisers, and inspectors still don't understand modular, and thus make it harder for buyers to secure construction loans. "Codes and regulations are expanding faster than modular itself," Bender says. And some states and municipalities seem modular-phobic. Connecticut, for example, prohibits modules from being transported at night; in Chicago, construction unions prevail.

Despite these obstacles, resilient modular advocates see their industry

gaining traction. Just about everyone agrees, though, that the industry's greatest challenge remains educating consumers about the benefits of modular houses. Clayton Homes' website includes information about its building process and commitment to quality and durability. Clayton and another large supplier, Ritz-Craft, feature an array of images that showcases their products' designs, styles, and materials.

NMHC recently launched a consumer awareness campaign to explain the differences between modular and manufactured housing, and to get modular onto more homebuyers' radar screens. But changing buyers' minds will take patience and perseverance. A longer-term strategy may be what's needed to influence Millennials, many of whom have so far been indifferent about purchasing any house.

"We believe the next generation of homebuyers will have less of a perception issue about homes built indoors," predicts Commodore's Bender, fingers crossed. **PB**

To read more on modular and prefab building, go to [probuilder.com/modulars-moment](http://probuilder.com/modulars-moment).