DCI structural engineer Dean Lewis, left, and Scott MacLellan, principal at Gurnet Point

TODD JOHNSON

Mass timber's growth moment in California

As engineered wood projects aim for new heights, a push to revive state's lumber industry

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California has a tree problem, and proponents of mass timber think they have a solution.

As the state races to address a string of devastating wildfires fueled by overgrown forests and trees colliding with power lines, those with an interest in wood products are seizing the moment to try to revive California lumber production.

"What if we used the trees that are going to fuel these forest fires for products that you can put back into buildings?" asks Dean Lewis, a structural engineer in the San Francisco office of DCI Engineers. "There's kind of this synergy."

If that sounds like a tough sell in a state famous for its long history of timber wars that have pitted environmentalists against loggers, the prospect might not seem as far-fetched when considered in the context of the rapidly expanding world of engineered wood products. Collectively referred to as mass timber, the category encompasses an alphabet soup of variations like Cross-Laminated Timber (CLT), Nail-Laminated Timber (NLT), Dowel-Laminated Timber (DLT) and Mass Plywood Panels (MPP), all of which employ varied off-site manufacturing techniques and high compression to make wood panels, beams or posts fused by glue, nails or dowels.

To its advocates, mass timber is essentially lumber 2.0. Though old-school stick-built construction is now often cast as a crude, highly flammable instrument, its cousin mass timber is gaining a following with Bay Area engineers for its strength and precision. Underwriters also like mass timber for its potential to reduce on-site labor costs and shorten construction timelines, and green building evangelists see it as one of many promising experiments underway with renewable materials–especially with several looming building code changes poised to bolster mass timber's appeal.

"People are always trying to find better ways of doing stuff," Lewis said, noting a recent Renaissance in modular building companies like Factory OS and Rad Urban. But there's a key difference: "All of these are proprietary, and you're stuck with one supplier. Mass timber differentiates itself because it's not just one product type."

Long popular in Europe and growing in Canada, mass timber has been slower to gain a foothold in the U.S. market. That's been changing of late, with some 660 mass timber projects now planned or complete nationwide, according to industry group WoodWorks. The states of Washington and Oregon were the first to adopt new building codes that allow for eight, 12 and 14 story buildings with mass timber, but California could soon see similar changes as the International Building Code adds its own provisions to increase seismic durability by up to 100% for buildings over 85 feet.

One key to whether mass timber can capitalize on those shifts will be how the rapidly expanding engineered wood supply chain evolves. Most California developers currently import mass timber from factories in Canada or the Pacific Northwest, and while in-state production would reduce both costs for transportation and the material's carbon footprint, political red tape still looms large.

State legislators, encouraged by California logging lobbyists, have in recent months proposed new laws to make it easier to fell trees on federal forest lands that have for years been minimally managed. At the same time, San Francisco-based utility Pacific Gas & Electric is in the process of cutting down or trimming millions of trees that it says are currently too close to spark-prone power lines. Those moving parts will need to align for any California mass timber production to take off, Lewis said.

"It's really hard because these factories are expensive," Lewis said. "The facility itself is anywhere from $20 million to $30 million. They just laugh at me and say, 'California is no tax haven.'"

As it stands, Lewis said just 5-10% of his current projects at DCI use mass timber in some form, including a half-dozen projects currently underway in San Francisco, Oakland and the East Bay.

"Owners in the Bay Area, to be frank, still see it as bleeding edge, depending who you're talking to," Lewis said. Though mass timber does require more up-front coordination, there are often benefits once it comes time to put the pieces together on site – and when it's time to pay the tab. "It's saved us a good 30-40% on our foundation costs," he said.

In the meantime, mass timber projects here and elsewhere are getting more ambitious. WoodWorks Vice President of Operations Bill Parsons name checks the minimalist, eight-story glass and mass timber Carbon12 residential project in Portland, which has been praised as a prime example of the potential to employ mass timber on taller, high-design projects. In the Bay Area, where there is even more pent-up demand for dense, faster-to-build multifamily housing, supporters argue that mass timber could be part of the equation for reducing project costs and timelines, while still delivering a product that looks presentable.

"There are a whole range of performance benefits, but it's also about aesthetics," Parsons said.

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