

Case Study: Oregon Mass Timber Coalition - Two Years After the Build Back Better Regional Challenge Winner Award

In September of 2022, the Economic Development Administration (EDA) awarded under the Build Back Better Regional Challenge (BBBRC) a total of roughly \$1 billion to 21 regional coalitions across the country. Created through the American Rescue Plan Act of 2021, the BBBRC solicited proposals from communities across the country aimed at transforming local economies through collections of complementary and integrated projects. Among these is the Oregon Mass Timber Coalition (OMTC), which is strengthening and extending the value chain to simultaneously mitigate damage from increasingly frequent forest fires in the Pacific Northwest, increase economic vitality among legacy timber communities, address the nation's acute housing shortage, and expand mass timber construction in the United States.

1. Background

Oregon's economy has long relied on its vast natural resources—particularly, its forests. Currently spanning 30.5 million acres, or nearly half the state, Oregon's forests constitute an area larger than the entirety of Pennsylvania.¹ Driven by the country's westward expansion and the accompanying railroad system, Oregon's timber industry quickly became one of the states most important economic drivers. An 1888 article in the *Oregonian*, a daily newspaper based in Portland noted that the industry was “the wheel which sets all other wheels in motion.”²

By the late 1930s, Oregon had become the United States' leading producer of lumber, and in the 1970s its timber harvest totaled more than 8 billion board feet, or nearly 700 million cubic feet. At that time, the state's timber industry was of critical economic importance. Employment reached 80,000 workers and accounted for one-in-ten of all private-sector workers, and total output comprised 12% of Oregon's gross domestic product (GDP).³ Workers in the industry enjoyed wages approximately 30% above the average across the state.⁴

Yet towards the end of the 1970s, a national recession, high inflation, increased competition from sawmills in Canada and the American South, and advances in automation severely altered the structure of Oregon's timber industry and led to a marked slowdown in housing construction.⁵ Lumber prices in the three years following 1979 decreased 48%, and numerous mill closures drove the unemployment rate to over 25% in many resource-dependent rural communities.⁶ In turn, this led to negative spillovers throughout local economies in the form of decreased tax bases and business revenue decline.⁷ Most of the 48,000 timber jobs that were lost during this period did not return.⁸

¹ “About Oregon's forests.” Oregon Department of Forestry. Available at www.oregon.gov/odf/forestbenefits/pages/aboutforests.aspx.

² Gail Wells. “The Oregon Coast—‘Forists and Green Verdent Launs’: Mining, Lumbering, and Shipbuilding.” Oregon History Project. The Oregon Historical Society. Updated 2014. Available at www.oregonhistoryproject.org/narratives/the-oregon-coastforists-and-green-verdent-launs/development-of-the-coastal-economy/mining-lumbering-and-shipbuilding/.

³ Josh Lehner. “Oregon's Timber History; An Update.” Oregon Office of Economic Analysis. 10 October 2017. Available at www.oregoneconomicanalysis.com/2017/10/10/oregons-timber-history-an-update/.

⁴ Ibid.

⁵ Ibid.

⁶ Wells. “The Oregon Coast.”

⁷ Ibid.

⁸ Ibid.

Increased environmental regulations to protect federal forests accelerated these tectonic shifts. By the 1970s, such forests had overtaken private land to become the source for the majority of timber harvests.⁹ The Northwest Forest Plan, which was implemented in 1994 and continues to dictate federal forest management in Northern California, Oregon, and Washington, was established to protect up to 80% of old-growth forests and led to a 1.25 million-acre, or 16%, increase in the total size of these forests on federal lands within its first year of implementation.¹⁰

This increase was partially achieved through an annual harvest cap of 1.2 billion board feet—roughly 70% less than annual harvest levels two decades prior.¹¹ While arguably critical to ensuring the sustainability of Pacific Northwest forests, this tradeoff between economic stabilization and environmental protection fundamentally altered the economies of historic timber towns, and efforts to stabilize employment and income among displaced workers were largely ineffective.

Just prior to the onset of the COVID-19 pandemic, Oregon’s economic landscape looked markedly different compared to decades prior. Overall, lumber and wood products manufacturing as a share of total private-sector output in the state of Oregon was 10.5% in 1980 but had shrunk to just 1.0% in 2020—a total decrease of \$4.35 billion in 2020 dollars.¹² From a geographic perspective, this decline similarly overlaps with a shifting landscape of opportunity.

Despite past economic strength, the economies of rural Oregonian communities show signs of vulnerability. The state’s rural communities struggled to recover from the Great Recession by 2020, with employment hovering less than 1% above its December 2007 level. Urban areas, on the other hand, experienced significant employment growth; the Portland metropolitan statistical area (MSA) saw a 15.5% increase over the same period, while combined employment in the rest of the states MSAs increased by 10.1%.¹³ In 2020, just 13% of Oregon’s total GDP was produced in nonmetropolitan areas despite them representing 17% of the state’s population—a 30% underrepresentation.¹⁴

Compounding these economic inequality issues is Oregon’s low stock of affordable rental housing units, which is continuously threatened in rural areas by the increasing frequency of catastrophic wildfires across the state. Overall, Oregon lacks roughly 103,000 affordable rental homes—a deficit that disproportionately harms lower-income populations who have few other options.¹⁵ In total, the state contains just 26 available and affordable rental units per 100 extremely low-income renter households—the sixth least affordable rate in the country.¹⁶

⁹ Ibid.

¹⁰ Valerie Repp. “Northwest Forest Plan—the first 10 years (1994-2003): first decade results of the Northwest Forest Plan.” Forest Service. U.S. Department of Agriculture. 2008. Available at www.fs.usda.gov/research/treesearch/29319.

¹¹ Gail Wells. “The Oregon Coast.”

¹² Author’s calculations of “Gross Domestic Product by State.” U.S. Bureau of Economic Analysis. Available at apps.bea.gov/regional/histdata/releases/0323gdpstate/index.cfm. Note that data used the North American Industry Classification System (NAICS) replaced the Standard Industrial Classification (SIC) in 1997, and publicly available data from each classification do not overlap perfectly.

¹³ Josh Lehner. “Economic Trends of the 2010s (Graphs of the Decade).” Oregon Office of Economy Analysis. 31 December 2019. Available at www.oregoneconomicanalysis.com/2019/12/31/economic-trends-of-the-2010s-graphs-of-the-decade/.

¹⁴ Author’s calculations of “County and MSA gross domestic product summary.” U.S. Bureau of Economic Analysis. Available at www.bea.gov/itable/regional-gdp-and-personal-income.

¹⁵ Andrew Aurand, Matt Clarke, Ikra Rafi, Dan Emmanuel, Machenzie Pish, Diane Yentel. “The Gap: A Shortage of Affordable Homes.” National Low Income Housing Coalition. March 2024. Available at www.nlihc.org/gap.

¹⁶ Ibid.

2. The Oregon Mass Timber Coalition

Recognizing the realities of contemporary macroeconomic forces, the acute housing crisis, and climate change's direct impacts on communities across the state, the Oregon Mass Timber Coalition's (OMTC's) application to the Build Back Better Regional Challenge presented a bold vision to address all three issues simultaneously. By sustainably leveraging the state's natural resources; integrating cutting-edge technologies into harvest and construction methods; and working alongside frontline climate-affected communities, the coalition developed a comprehensive, whole-of-supply-chain approach to equitable and long-term economic development.

In concert with the Biden-Harris Administration's Housing Supply Action Plan to Close the Housing Supply Gap, the OMTC sought to establish a mass-timber modular housing cluster in the state of Oregon.¹⁷ Mass timber construction—a method that utilizes layers of overlapping wood and high-strength adhesives to replace traditional steel and concrete structural building components—has been utilized across Europe since the mid-1990s but is relatively novel in the United States. Widespread adoption of this technology has the potential to help address housing affordability and climate change challenges and decrease the overall carbon footprint in the construction industry, but several barriers need to be addressed concurrently.

The OMTC's vision begins in the state's forests. While wildfires are a part of forest ecosystems, over a century of fire suppression, past management practices, and climate change have produced larger and more destructive blazes in recent years. The problem presented by the coalition laid out the prohibitive cost of removing highly flammable small trees and brush from millions of acres of forests and the potential of creating viable markets to convert this material to mass timber for affordable housing. As such, the first step to realizing sustainable forest management necessarily involves aligning the financial interests of the private sector to support important public values that forests provide. Accordingly, the OMTC proposed investing in research through Oregon State University (OSU) to modernize the logging industry and to create commercial uses for historically low-value, small-diameter timber that would help offset the costs of forest restoration on a large scale.

To accompany increasing demand for mass timber, the OMTC also proposed via the Oregon Department of Forestry facilitating Good Neighbor Authority (GNA) agreements with the U.S. Forest Service and private-sector firms to restore forest health. Additionally, in recognizing the decline in the workforce capable of carrying out these tasks, the coalition laid out a plan to train and reskill for occupations in the timber industry. Critically, the coalition provided intentional avenues for historically marginalized communities to participate in trainings for what promises to be high-paying careers, as the timber industry has historically been a white- and male-dominated field.

Due to its infrequent usage within the United States, mass timber construction is not fully incorporated into building codes in many municipalities due to a lack of familiarity with its structural, fire-behavioral, and acoustical properties. Through Corvallis-OSU, the OMTC proposed to evaluate mass timber fire resiliency with the construction of a new fire testing facility, while through the construction of the University of Oregon's Oregon Acoustic Research Laboratory (OU's OARL) it proposed testing acoustics properties of mass-timber floor-ceiling assemblies. The Oregon Department of Land Conservation and

¹⁷ "President Biden Announces New Actions to Ease the Burden of Housing Costs." White House Briefing Room. 16 May 2022. Available at www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/.

Development (DLCD) aimed to partner with wildfire-prone communities to update zoning laws to allow for modular mass-timber housing to be built in additional communities.

Finally, the OMTC set out to significantly ramp up the supply of mass timber housing through the design, and validation of modular prototypes designed by UO faculty, both for new housing and retrofits for energy and seismic resilience for existing light-wood frame multi-family units, constructed and tested at OSU. Additionally, the coalition began developing a mass timber and housing innovation campus at the Port of Portland's Terminal 2. In total, the coalition presented a holistic and well-conceived vision of what contemporary and inclusive place-based economic development can look like. By leveraging its historical assets, intentionally working with marginalized communities, and embracing forward-looking technologies, it is aiming to reshape the housing market not just in Oregon but across the United States as well.

3. Year-Two Marker

Two years into the implementation of the Oregon Mass Timber Coalition's vision, there are clear signs of significant victories. Reinventing an existing industry is not easily done, yet promising developments and increased private-sector interest in the mass timber industry point to real long-term industrial viability.

Firstly, the Oregon Department of Forestry (ODF) is demonstrating how the growing mass timber market supports more resilient federal forests. In partnering with the Willamette National Forest, ODF is preparing a series of Good Neighbor Authority timber sales that improve forest health. ODF pioneered the use of contracted categorical exclusions to provide required information on the condition of the forests and ultimately enabled the successful offer of one GNA timber sale in January 2024, valued at more than \$2 million. This initial sale is anticipated to produce nearly 7 million board feet of timber and support nearly 80 jobs in the South Santiam Canyon, while future sales will continue to build on these figures.

Research is also well underway to improve efficiency and expand opportunities in the timber industry. Oregon State University has developed enhanced methods for conducting forest inventory analyses and produced human exoskeleton prototypes that will ultimately improve safety for loggers and open up career pathways for a wider range of potential workers. Robust outreach to communities who have not traditionally been involved in the timber industry is ongoing, with representatives of the coalition having so far presented education and training curricula to over 1,000 students and nearly 70 teachers. Encouragingly, students have begun enrolling in apprentice training programs and continue to engage with new forest management technologies such as virtual reality mapping tools.

The University of Oregon and OSU collaborate via the TallWood Design Institute (TDI), which is focused on advancing engineered timber products. Based at OSU's Emmerson Advanced Wood Products Laboratory, TDI maintains a cutting-edge research facility to advance mass timber manufacturing and testing. UO has constructed an initial mass plywood panel house prototype in the Emmerson Lab and is planning for a second iteration to be constructed outside at the lab. Additionally, planning is underway to construct a three-story façade retrofit prototype to upgrade energy and seismic resilience to existing light-wood-frame houses. In late 2023, the Oregon State Legislature allocated \$20 million in funding to provide grants or loans to modular manufacturing firms; \$20 million in support of a workforce and affordable housing loan guarantee fund; and \$5 million to support housing and community development capacity for local governments across the state.

Design and construction planning are progressing for the Oregon Acoustic Research Laboratory and the Oregon Fire Testing Facility, with project completions scheduled for 2027. The Oregon Department of Land Conservation and Development is spearheading the Code-Up program to help localities update their

zoning laws to allow additional sites for modular housing and is engaged with communities across the state. To date, the City of Gates has held a hearing to implement code updates and, critically, DLCD is also near completing its Modular Model Code and Audit Workbook to equip communities with the tools and information needed to update zoning laws on their own. Additionally, a private-public development partnership has committed to building a pilot cluster of UO's prototype mass timber housing units in the City of Burns.

Finally, efforts are well underway to redevelop a former marine terminal into an industrial park at the Port of Portland's Mass Timber and Housing Innovation Campus at Terminal 2. A renovated warehouse for building modular housing is nearly complete, additional funding has been secured for critical infrastructure, workforce training programming is in development, and leases for additional spaces and new research and development facilities are nearing approval. Soil stabilization work is expected to begin at the site in 2025 and finish in 2026, with vertical construction to follow. The Port has attracted a private developer interested in investing about \$200 million to help complete the campus, with up to seven new mass timber buildings planned—including a mass timber modular housing factory.

The Economic Development Administration and other funders have seen significant potential in this project. In addition to awarding the coalition a \$41.4 million award through the Build Back Better Regional Challenge award, the EDA designated the two-state region (Oregon and Washington) as a Tech Hub for mass timber. The designation recognizes the region's potential to be a global leader in advanced wood products manufacturing within ten years.

Similarly, the National Science Foundation (NSF) recognized the transformative potential of mass timber in their Regional Innovation Engines program. NSF 2022 launched its Regional Innovation Engines program to support innovation ecosystems and economic development in regions across the United States. Through this program, an NSF Engines Development Award: Advancing mass timber technologies (OR, WA) was granted for an effort led by UO, in collaboration with OSU and Washington State University, which, in addition to including \$1 million in funding, indicates a strong signal to the private sector that the ecosystem is well-positioned to create significant advances in its technology focus area.

4. Conclusion

The Build Back Better Regional Challenge intentionally allowed communities to envision the form regional and industrial development would take. It proactively sought compelling, locally led visions of economic transformation, and the Oregon Mass Timber Coalition exemplifies what is possible when the federal government empowers community leaders in their pursuits of economic development. As the BBBRC reaches this important milestone, the OMTC continues to make significant returns on the initial federal investment and is proving that ecosystem development—especially in an area as complex as the intersection of sustainable timber and housing—is achievable with the right tools.