

# Mass Timber Prefabricated Panels for Affordable Housing Prototype Development



AWARD AMOUNT:

**\$2,000,000**

NON-FEDERAL MATCH

**\$500,000**

## Why prototype development?

Mass timber panels offer significant potential to advance the creation and renewal of affordable housing due to efficient digital workflows using prefabrication in factory settings. They also improve energy efficiency and seismic resilience. These materials are relatively new to the US market and have been largely deployed in multi-story projects, replacing steel and concrete. Mass timber panels have yet to enter the market when competing against light-wood-frame construction due to the larger amount of wood fiber required in a solid panel.

Mass plywood panels offer a solution. Mass plywood panels (MPP) can be produced in 2" and 3" thicknesses and insulated panels can be manufactured and transported as "flat-packs" for rapid field assembly, creating thermally efficient envelopes with high seismic resistance. This project will provide built prototypes with verifiable costing models—a necessary "proof of concept" for potential builders and developers.

## Planned actions

- 1 Retrofit for Existing Housing Research and Testing:** Research and testing of the retrofit panelized system for upgraded energy and seismic resilience of existing light-wood-frame multi-family housing stock is currently underway. Research and testing included structural and performance design, digital to physical workflows and construction methods. This project will produce a three-story prototype via fabrication by commercial contractor and will test validity of design, scanning techniques, fabrication and construction methods, and cost models resulting from the initial prototype construction, for commercialization of designs for immediate adoption.
- 2 Workforce Housing Prototype:** Initial prototyping of the new house design will take place in TDI's Lab at OSU. A mock-up of a single-family two-bedroom unit will be constructed to test structural, acoustical, and mechanical system performance design, including energy modeling for whole life carbon net zero emissions. A fully assembled prototype of the two-bedroom unit will be built via fabrication by commercial contractor. The construction process will test construction means and methods, including evaluation of shipping efficiency and field assembly, and document costing of materials and labor.



**Oregon  
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Coalition**



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