

EMERGING HOUSING AND BUILDING TECHNOLOGY

Why Modular Delivers All Three

Affordability · Fire Resilience · Energy & Water Efficiency

Fortified Structures



STARTING POINT

What Modular Actually Is



It is

- Permanent housing built to the same IRC/IBC code as site-built
- Engineered to survive transport — stronger than code minimum
- Inspected continuously, including work hidden after close-in
- Architect-designed and configurable, not a fixed catalog



It isn't

- A mobile or HUD-code manufactured home
- A temporary or lower-grade building
- Limited to identical, repeated floor plans
- An unproven technology — the constraint is policy, not capability

Same code. Same permanence. Different place of assembly — and that changes everything downstream.

PILLAR ONE

Affordability: Time Is the Cost



30–50%

Faster to occupancy

Typical schedule reduction versus comparable site-built construction.



Parallel

Two schedules at once

Site and foundation work proceed while the home is being built indoors.



Fixed

Priced before production

Costs lock in early; weather and rework don't reopen the number.

A shorter schedule is not a convenience. It is less construction-loan interest, fewer weather delays, less rework, and one crew doing the same task hundreds of times instead of once.

PILLAR TWO

Fire Resilience: Built In, Not Bolted On



Ignition-resistant as standard

Class A roof, non-combustible cladding, and ember-resistant vents specified once, then repeated on every unit.



Verified before it's hidden

Assemblies are inspected at the stage where defects are still visible — not after drywall closes them in.



No gaps in the envelope

Eaves, soffits, and joints are built on a jig. Ember intrusion points are designed out, not caulked later.



Tested assemblies repeat exactly

A wall assembly that passes once passes every time. Field improvisation is where resilience usually gets lost.

Wildfire performance depends on the weakest detail. A factory is the only place that detail is built the same way twice.

PILLAR THREE

Energy & Water: The Factory Advantage



A tighter envelope, consistently

Indoor conditions and jig-built framing produce blower-door results that repeat unit to unit.



Dry materials, less waste

Nothing sits in the rain. Offcuts are optimized across many homes instead of landfilled per site.



All-electric ready

Heat pumps, induction, and pre-wired solar and battery — installed on a bench, not in an attic.



Water designed in, not added on

Efficient fixtures standard and pre-plumbed paths for greywater and rainwater capture.

High-performance building is precision work. Precision is cheaper indoors.

What Still Needs Solving



Financing and appraisal

Draw schedules and comparable sales still assume a site-built timeline. Deposits come due before there's a building to inspect.



Approval reciprocity

A state-approved module still meets local plan review and inspection process that wasn't designed for factory production. 3rd party inspections would be a great first step.



Transport and set logistics

Route, crane access, and site conditions drive more cost than most people expect — and they cap what geography we can serve.



Decisions move up front

Design locks before production. That discipline saves money, but it's a real change for owners and architects used to late changes.

None of these are engineering problems. They are financing, permitting, and logistics problems — which means they are fixable this year.

THE TAKEAWAY

**Affordability, fire resilience, and efficiency
aren't competing goals.
They're manufacturing problems.**

WHAT WOULD MOVE THIS FASTER

- Reciprocal state approval so an inspected module isn't re-reviewed jurisdiction by jurisdiction
- Appraisal and lending guidance that recognizes factory-built as permanent construction
- Permitting and utility timelines that match a build measured in weeks, not months

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