

Rethinking Housing Delivery with Scalable Timber Systems

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WoodWorks | The Wood Products Council

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



Course Description

Housing shortages, evolving land-use policies, and the need to reduce the environmental impacts of construction are driving demand for innovative timber building systems and more resilient supply chains. This session will explore two complementary approaches to scaling timber construction: a developer-led off-site housing platform that leverages standardized timber systems for deployment across diverse regulatory environments, and Scotland's collaborative effort to develop a homegrown mass timber industry through research, product innovation, and commercialization. Looking at real-world case studies, attendees will examine how standardized design, prefabrication, integrated project delivery, and regional material sourcing can improve construction efficiency, building performance, and sustainability while reducing project risk. Participants will leave with practical strategies for advancing scalable timber construction, strengthening local supply chains, and delivering safe, high-performance buildings that respond to changing housing and environmental needs.

Learning Objectives

1. Describe how standardized off-site timber construction, integrated project delivery, and supportive public policies can improve housing delivery, construction quality, and occupant health, safety, and welfare.
2. Explain how regional timber supply chains, product innovation, and collaborative partnerships among industry, government and academia support the development and commercialization of sustainable timber building systems.
3. Identify strategies for integrating prefabrication, standardized design, and locally sourced timber products to improve construction efficiency, reduce project risk, and support high-performance buildings.
4. Evaluate how scalable timber housing platforms and regional mass timber manufacturing initiatives can enhance environmental performance, strengthen supply chain resilience, and expand the use of timber construction in diverse markets.

Rethinking Housing Delivery with Scalable Timber Systems

Panelists:



Founder & Principal
Schiller Projects



Manager Built Environment –
Smarter Transformation
Edinburgh Napier University

Moderator



Director MassTimber@MSU
Michigan State University

Mass Timber+
October 7, 2026

This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board.



MASS
TIMBER
@MSU



MassTimber@MSU leverages research, education, outreach, communications, policy, and partnerships to advance sustainable mass timber construction and manufacture in Michigan, the Great Lakes region and beyond.

canr.msu.edu/masstimber/
[#MIMassTimberMomentum](https://twitter.com/MIMassTimberMomentum)



PRESENT U.S. HOUSING GAP

The Low End – According to Moody's

X10

But up to 20MM

Chart 1: A Housing Deficit of 2 Million Homes

Over/undersupply of housing units, mil



Sources: Census Bureau, Moody's Analytics

Moody's Analytics: Bringing the Housing Shortage Into Sharper Focus (July 2025)
<https://www.economy.com/bringing-the-housing-shortage-into-sharper-focus>

The Washington Post
Democracy Dies in Darkness

Business Economy Economic Policy Media Personal Finance Future of Work Technology Business of Climate

Why nobody really knows the scale of the U.S. housing crisis

Experts say the U.S. needs an additional 2 million to 20 million homes to fix the shortfall, underscoring the challenge of meeting the nation's housing needs.

February 4, 2026

<https://www.washingtonpost.com/business/2026/02/04/us-housing-shortage-millions/>

GLOBAL NEED FOR HOUSING

**2 Billion
New Homes
by 2100**

World Economic Forum

<https://www.weforum.org/stories/supply-chains-and-transportation/the-world-needs-to-build-more-than-two-billion-new-homes-over-the-next-80-years/>



WOOD & TIMBER HOUSING IN U.S. & SWEDEN

SINGLE-FAMILY UNITED STATES (2025)

95%

U.S. Census
<https://www.census.gov/construction/charts/current.html>

MULTI-FAMILY UNITED STATES (2025)

68%

U.S. Census
<https://www.census.gov/construction/charts/current.html>

SINGLE-FAMILY SWEDEN (OVERALL)

90%

Hurmekoski, E.,
Pykäläinen, J., Hetemäki,
L., et al. (2015).
<https://ideas.repec.org/a/eee/tefoso/v99y2015icp181-196.html>

Sikkema, R., Styles, D.,
Jonsson, R., Tobin, B., &
Byrne, K. A. (2023).
<https://doi.org/10.1016/j.scs.2022.104370>

MULTI-FAMILY SWEDEN (2020)

19%

Image: dezeen | Kajstaden Tall Timber Building

Sikkema, R., Styles, D., Jonsson, R., Tobin, B., &
Byrne, K. A. (2023).
<https://doi.org/10.1016/j.scs.2022.104370>

Image: Timberlab | Ascent

TIMBER HOUSING POLICIES & INCENTIVES



Finland/Helsinki



New York State/New York City



Canada

FINLAND/HELSINKI

Helsinki

- Under a Wood Construction Program and an Urban Housing Program
 - Zone-Specific Wood Construction Mandates and Land Allocation Policies
 - New Urban Development Areas, e.g.
 - Myllypuro
 - Kuninkaantammi
 - Honkasuo

Finland Wood Construction Programme

- Technical Assistance, Fire Code Updates, Marketing
 - Goal: 45% of public buildings wood by 2045



NEW YORK STATE/NYC

New York City

- **NYC Mass Timber Studio**
 - Cohort 3 – Focus on multifamily housing
 - Underpinned by “Block-by-Block” the City’s new plan to build 200,000 affordable units in 10 years
- **NYC C-PACE Includes Embodied Carbon, Mass Timber**
 - Qualified low-carbon materials up to 50% loan financing
 - Mass timber does not have to meet EPD requirements

New York State

- **The F.R.A.M.E. (Facilitating Resilient Affordable Mass Timber Expansion) Act (Introduced)**
 - 25% credit against purchase cost of MT materials
 - Additional 10% for materials sourced from approved NY forests



CANADA

Build Canada Homes

- **National Corporation to Streamline Affordable Housing Delivery**
 - Goal: 500K homes per year (double current production)
 - Specifies factory-built, modular, and mass timber methods as priorities
 - Buy Canadian policy:
 - Specifies domestic lumber and mass timber





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Connect with me on LinkedIn!



Mobilizing research, education, outreach, communications, policy, and partnerships to advance sustainable mass timber construction and manufacture in Michigan, the Great Lakes region and beyond.

masstimber.msu.edu

@MassTimberatMSU



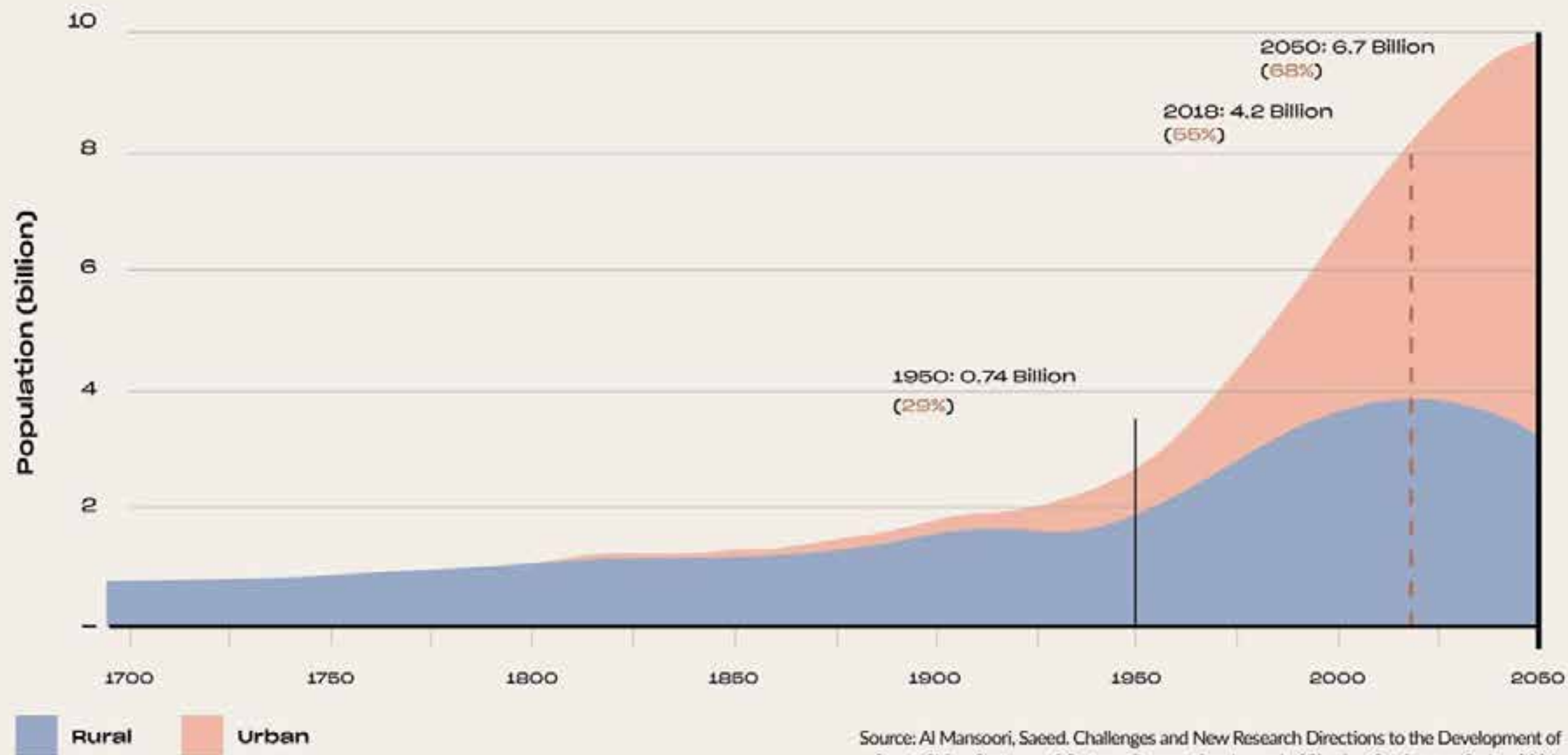
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Housing opportunity as a response to policy.

How prefabrication, supply chains, and regional manufacturing
~~might could should~~ can scale swifter housing solutions.

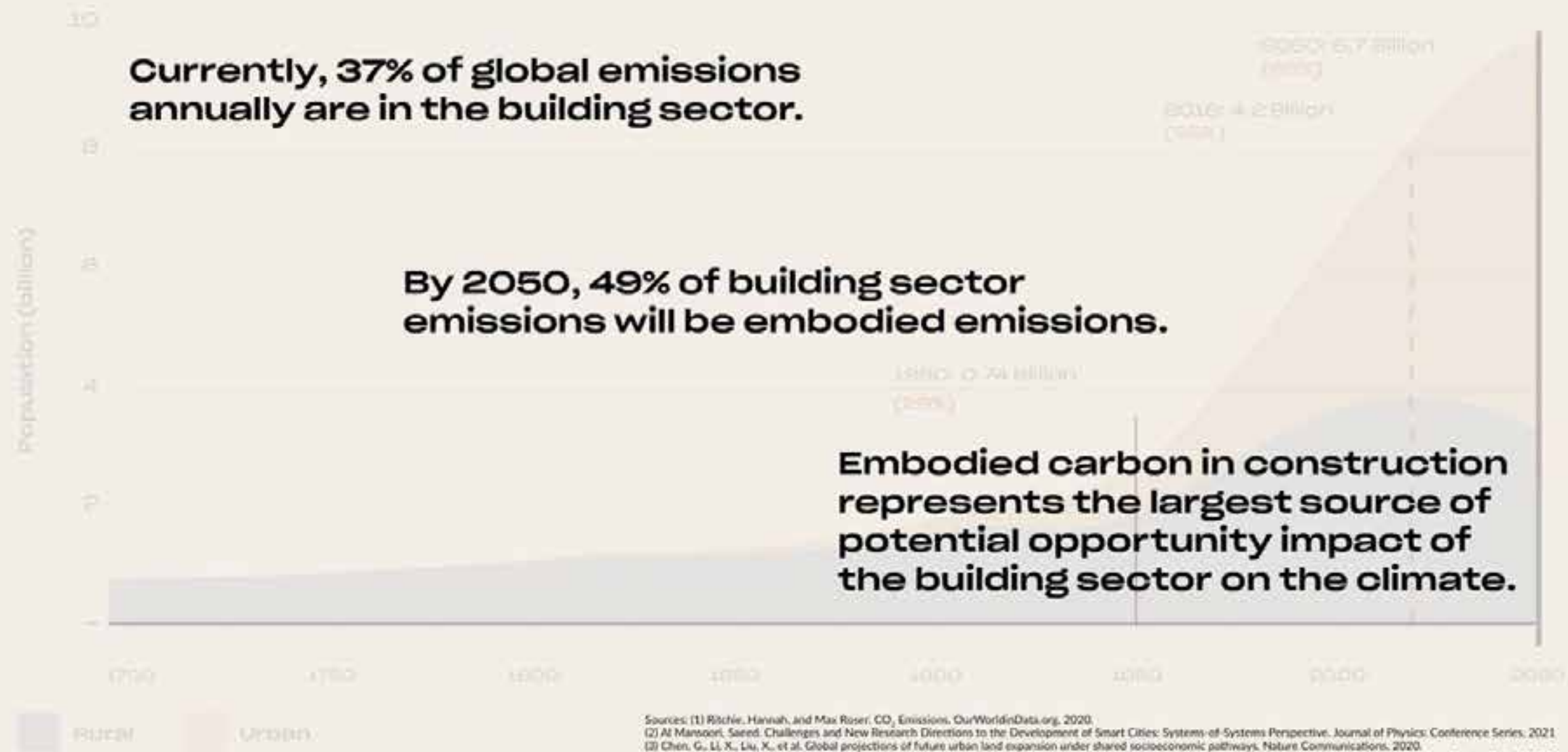
This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board.

Global Housing Demand Will Increase By ~2 Billion by 2050



Source: Al Mansoori, Saeed. Challenges and New Research Directions to the Development of Smart Cities: Systems-of-Systems Perspective. Journal of Physics: Conference Series, 2021.

Global Carbon Impact of Housing Growth Through 2050



Sources: (1) Ritchie, Hannah, and Max Roser. CO₂ Emissions. OurWorldinData.org. 2020.

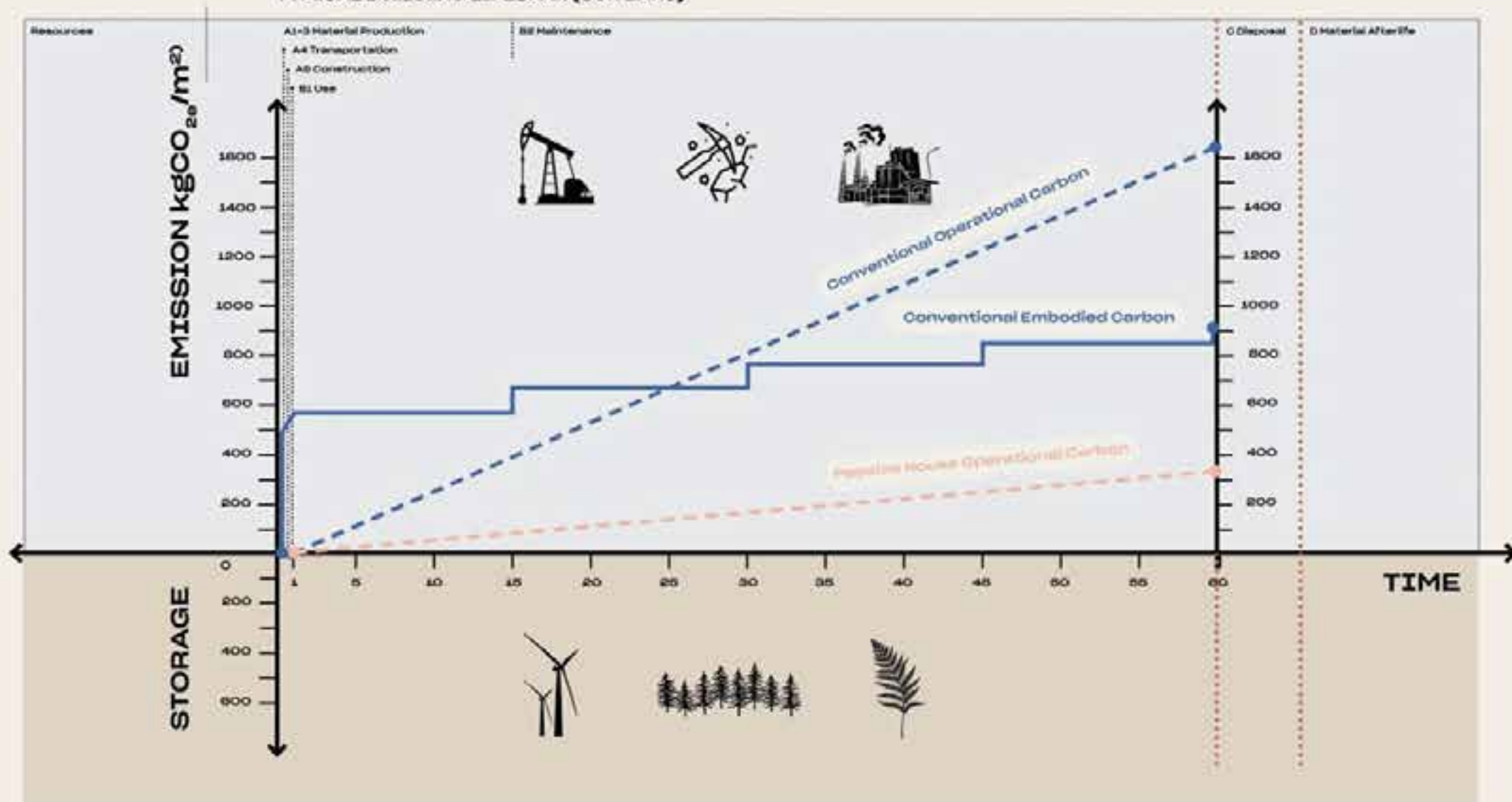
(2) Al Mansoori, Saeed. Challenges and New Research Directions to the Development of Smart Cities: Systems-of-Systems Perspective. Journal of Physics: Conference Series. 2021.

(3) Chen, G., Li, X., Liu, X., et al. Global projections of future urban land expansion under shared socioeconomic pathways. Nature Communications. 2020.

(4) UNEP. Global Status Report for Buildings and Construction: Beyond Foundations: Mainstreaming Sustainable Solutions to Cut Emissions from the Buildings Sector, Nairobi, 2024.

The largest carbon contribution to a building's lifecycle over 30 years is the act of building it.

TYPICAL BUILDING LIFESPAN (60 YEARS)



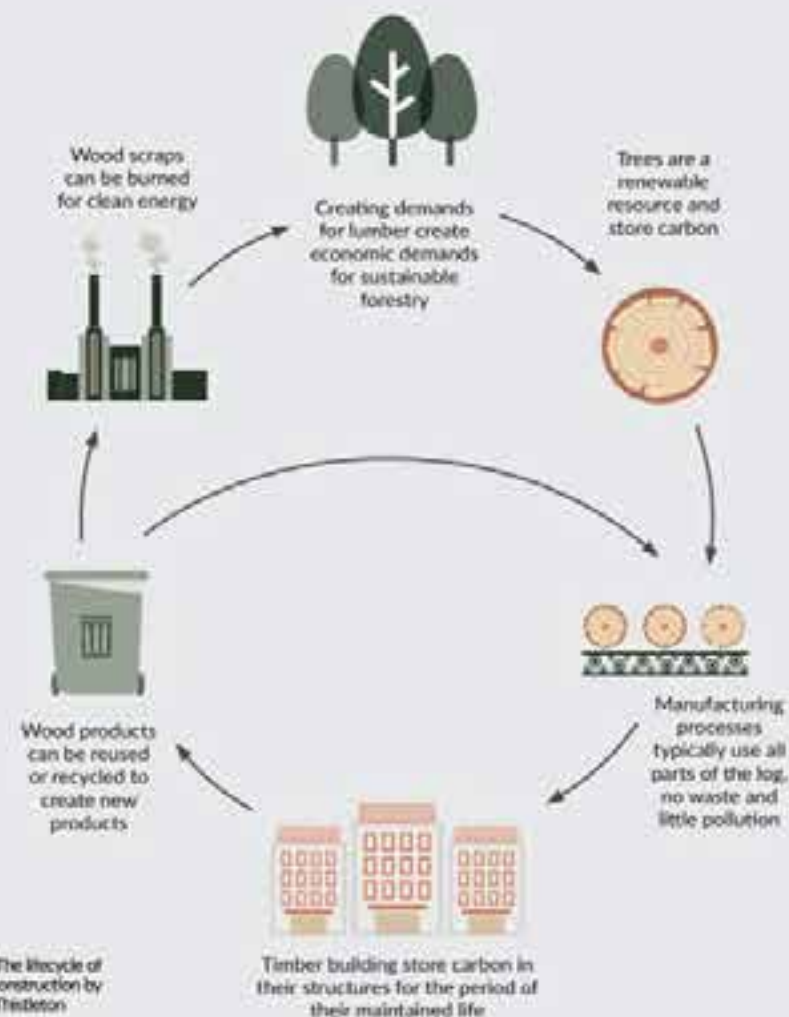
- The embodied carbon of construction sets the zero point for all operational carbon

Sources: (1) LETI. (2020). Embodied Carbon Primer: Supplementary guidance to the Climate Emergency Design Guide. London, UK: The London Energy Transformation Initiative.

(2) De-Carbonizing Design, from CARBON: A Field Manual for Building Designers, Kuitinen, Organschi, Ruff.

Mass Timber as a Delivery System for A Renewable/Regenerative Supply Chain

1 Circular Demand Materials: Mass Timber As a Structural System



2 Circular Building Materials Are a Vastly Broader Category Than CLT

A: Biogeological Material Deposition

Horsetail
Equisetum

Ferns

Calaraites



B: Extractive Mineral-Based Materials

Concrete



Glass
Curtainwall



Polystyrene
Insulation



Plastics



Steel

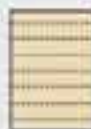


Asphaltic
Membranes



C: Bio-Based Materials

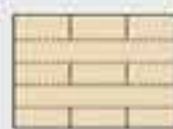
Glulam



Bamboo



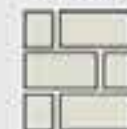
CLT



Bio-Masonry



Mycological
Materials



D: Circular Materials

Carbon-Cured
Concrete

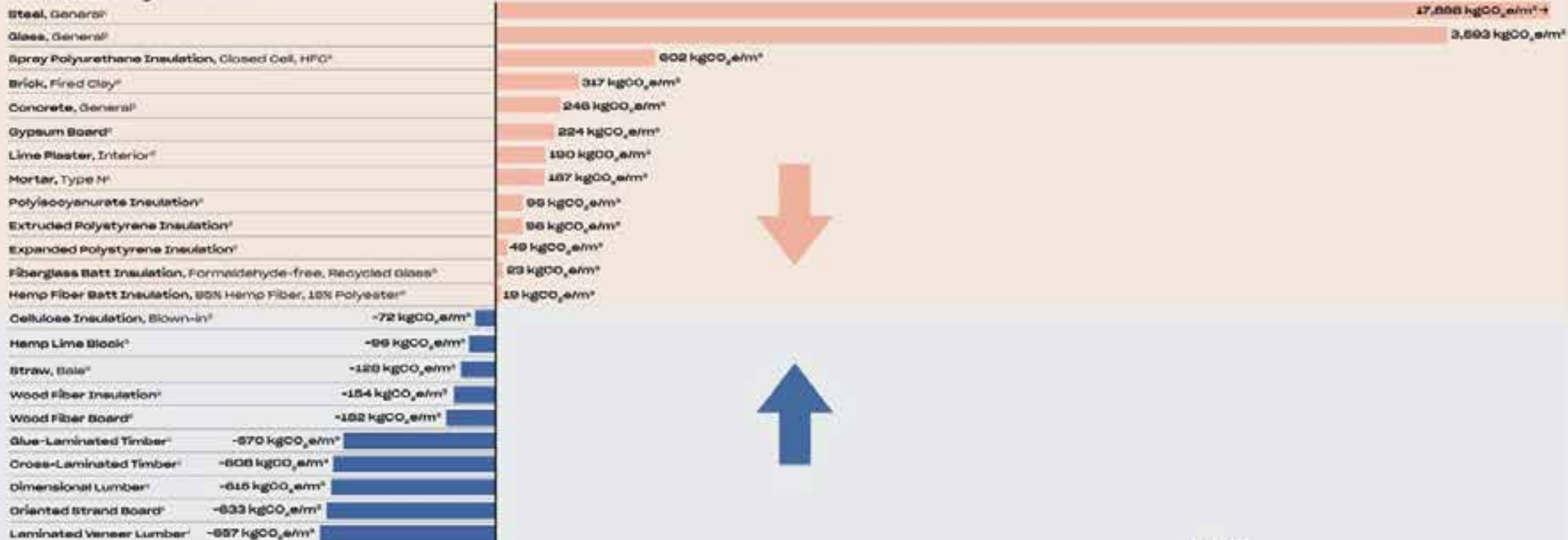


Re-Used
Masonry

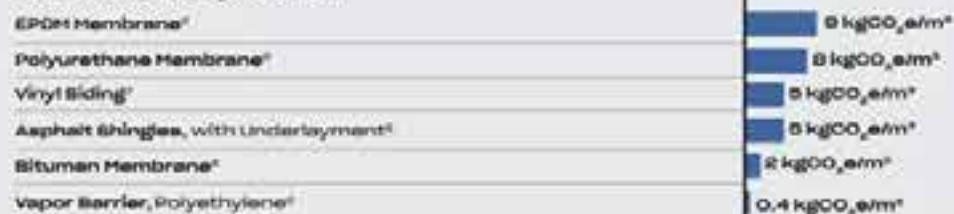


Mass Timber As A Delivery System

Materials by Volume



Materials by Area



Sources:

- (1) Inventory of Carbon and Energy, version 3.0, 2019 <https://circularecology.com>.
- (2) Okobaudat, <https://www.okobaudat.de>
- (3) BEAM Estimator, <https://www.buildersforclimateaction.org>
- (4) INBAR, Technical Report #35, <https://www.inbar.int>
- (5) Hemljunga Terrazzo, <https://www.epd-norge.no>
- (6) Sikalastic-618, <https://www.lgbe.ie>
- (7) Vinyl Siding Institute - Industry Advantage, <https://www.vinylsiding.org>
- (8) Asphalt Roofing Manufacturer's Association - Industry Advantage, <https://www.asphaltroofing.org>



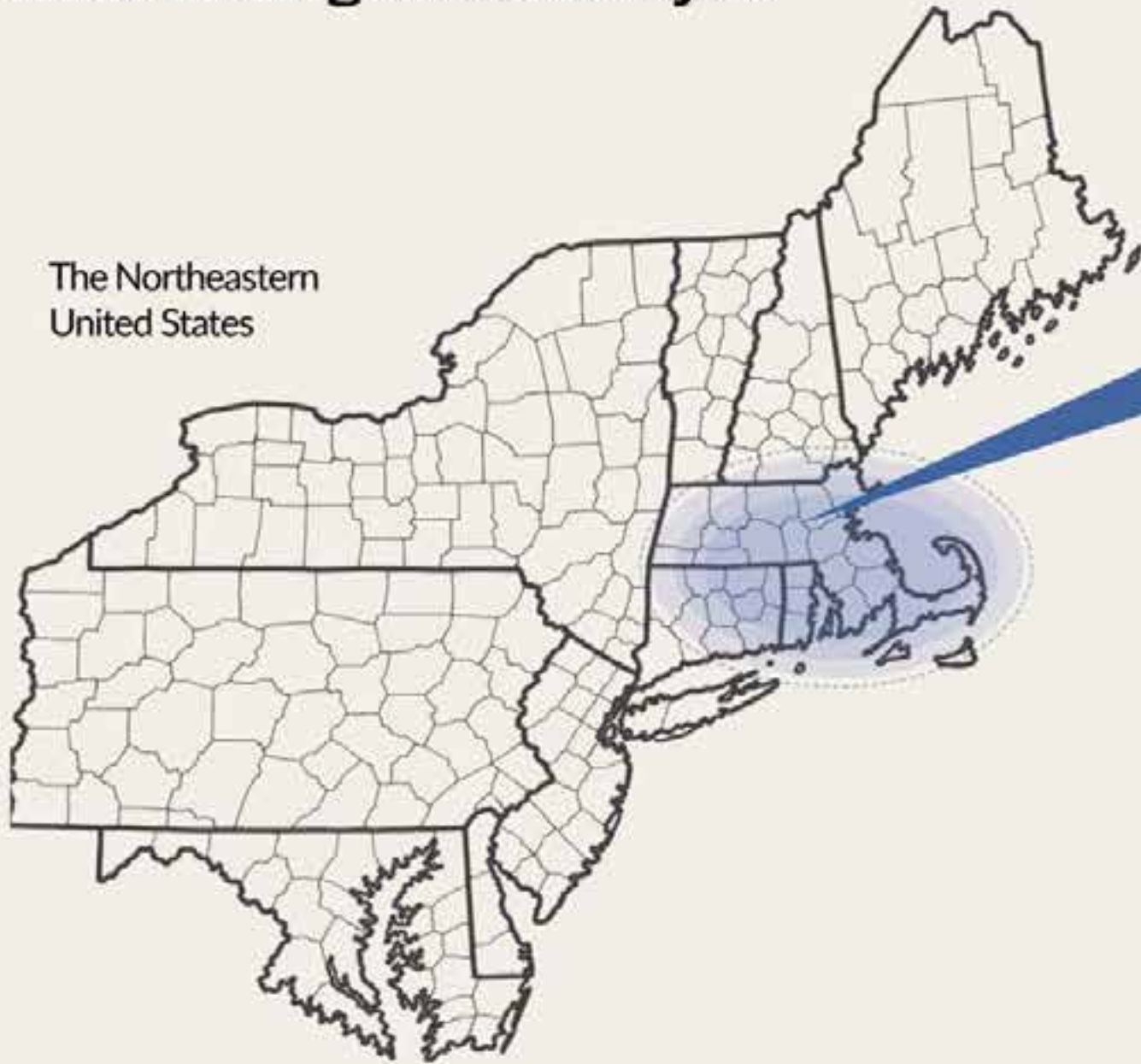
A coordinated regulatory response creates opportunities.

An industrial response re-orientes supply chains and generates impact.

Both require more stimulus than what exists in the marketplace today, however there are growing pockets of opportunity.

Small Buildings Case Study 01

The Northeastern
United States



State of Massachusetts

Small Buildings Case Study 01



State of Massachusetts



AREAS WITH AN INFLUX
OF ADU APPLICATIONS, 2025

The 2024 Affordable Homes Act changed how we viewed the Massachusetts market.

The Affordable Homes Act enabled ADUs by right in single-family zones statewide. This policy change redefined the addressable market overnight.

- Scale: ~1.44 million single-family parcels statewide (potential hosts, not buildable sites).
- Near-term forecast: 8,000–10,000 ADUs over five years (state estimate).

The gap:

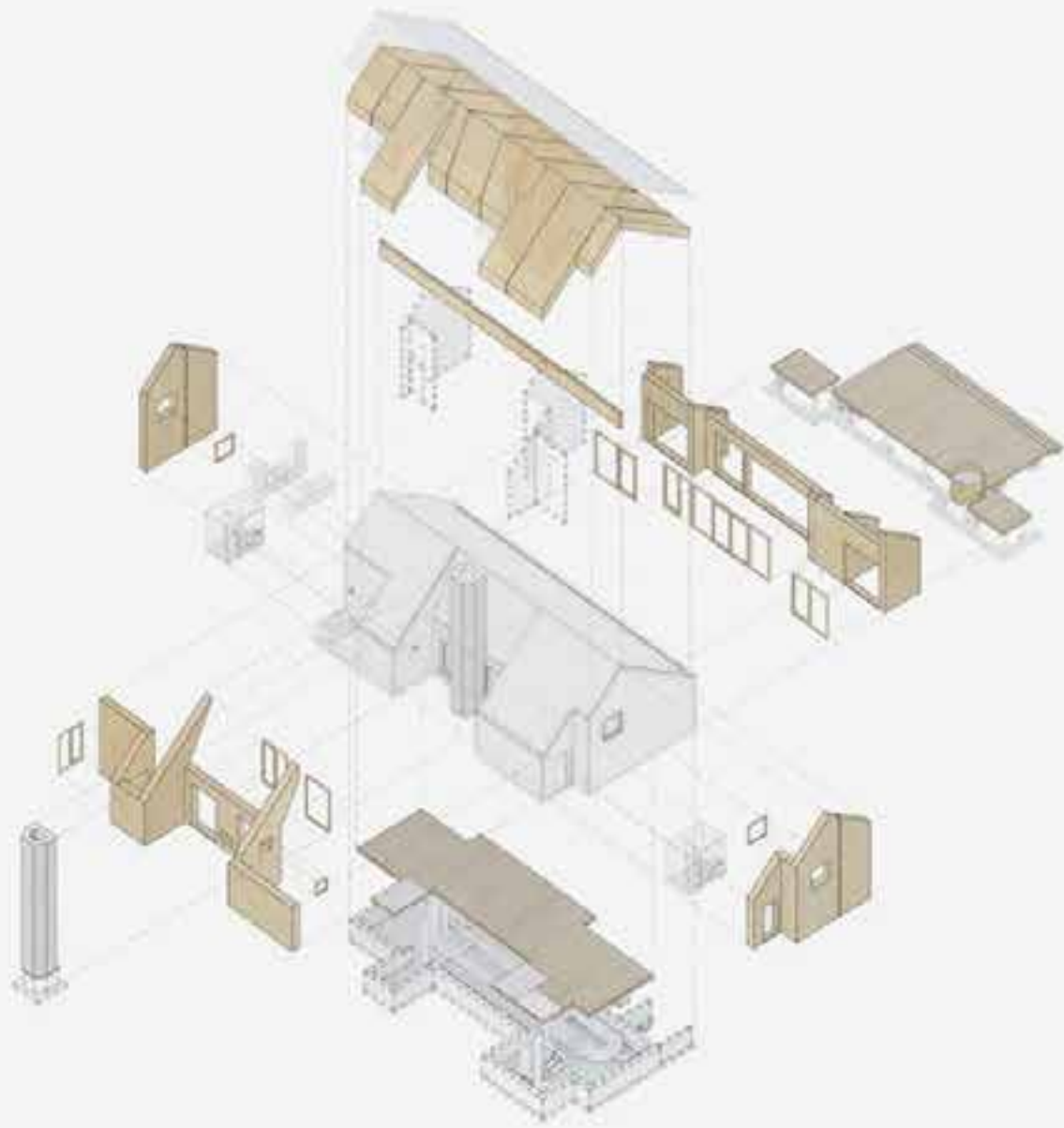
- Permission ≠ housing.
- Feasibility financing, design, and contractor labor capacity determine real production.

Source: Mass.gov

Policy Creates Product Opportunity



Salthbox V1, 900 SF
Location: Martha's Vineyard



Components of a 900SF V1 Saltbox

VERSION 1

900SF



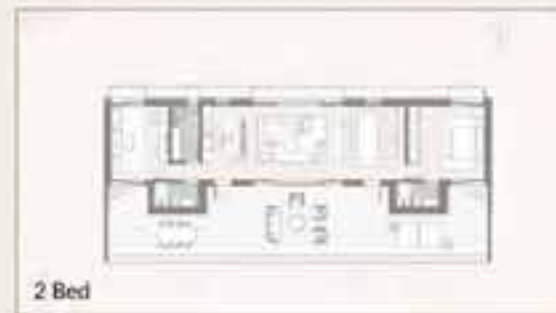
2 Bed



2 Bed

VERSION 2

1200SF



2 Bed



2 Bed

Includes:

- CLT shell as primary structure & interior finish
- Triplepane windows and doors
- High-efficiency packaged MEP systems in progress
- Pre-attached wood-fiber insulation, water resistive barrier (WRB) and strapping for easy siding attachment
- Coordinated electrical and plumbing routes for ease of follow-up trades



Residential properties are the initial example.



Religious institutions, schools, camps, clubs...



**hospitality and other institutional landowners
represent a broad potential product market.**





Customer Journey: Mass Timber as a Prefabricated/Product System



WWW.SALTBOX.SPACE

DESIGN - PHASE 1



DISCOVERY



INFORMATION



INTRODUCTORY CALL

**Concept*

Customer Journey: Mass Timber as a Prefabricated/Product System



WWW.SALTBOX.SPACE

DESIGN - PHASE 2



TYPOLOGY



SIZE & FLOORPLAN



EXTERIOR FINISHES

+CLADDING
+ROOFING
+GUTTER

**Concept*

Customer Journey: Mass Timber as a Prefabricated/Product System



WWW.SALTBOX.SPACE

DESIGN - PHASE 3



KITCHEN



FLOORING



BATHROOM

**Concept*



TYPICAL DESIGNER TO PRODUCT RELATIONSHIP:

DESIGN CONCEPT → HUNT FOR SOURCING

VS.

HOW DESIGNERS SHOULD BEGIN TO APPROACH THE RELATIONSHIP:

UNDERSTAND SUPPLY CHAIN → DESIGN TO OPTIMIZE IT

Conventional Process: Methodology Agnostic

Design leads, sourcing reacts.

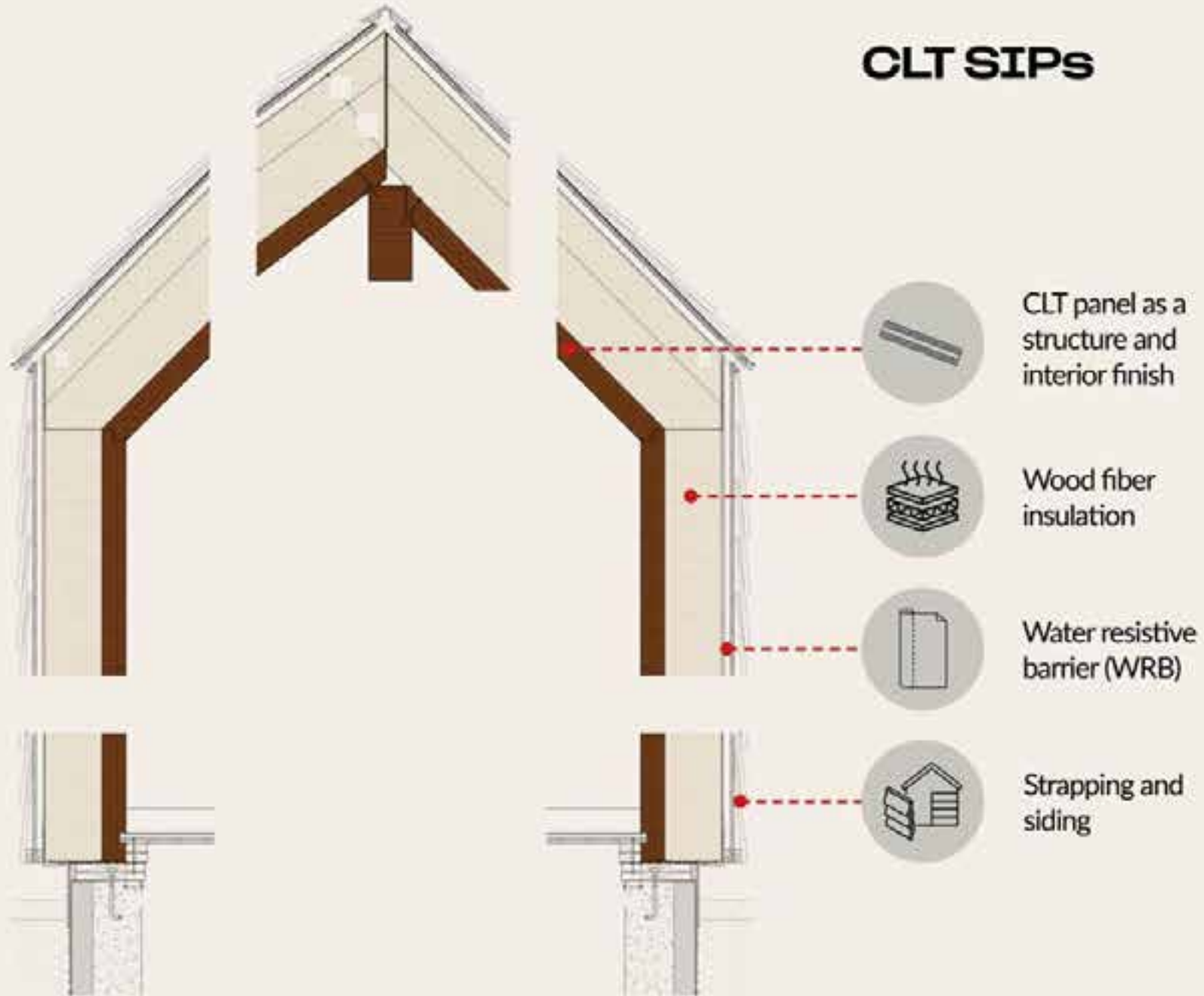


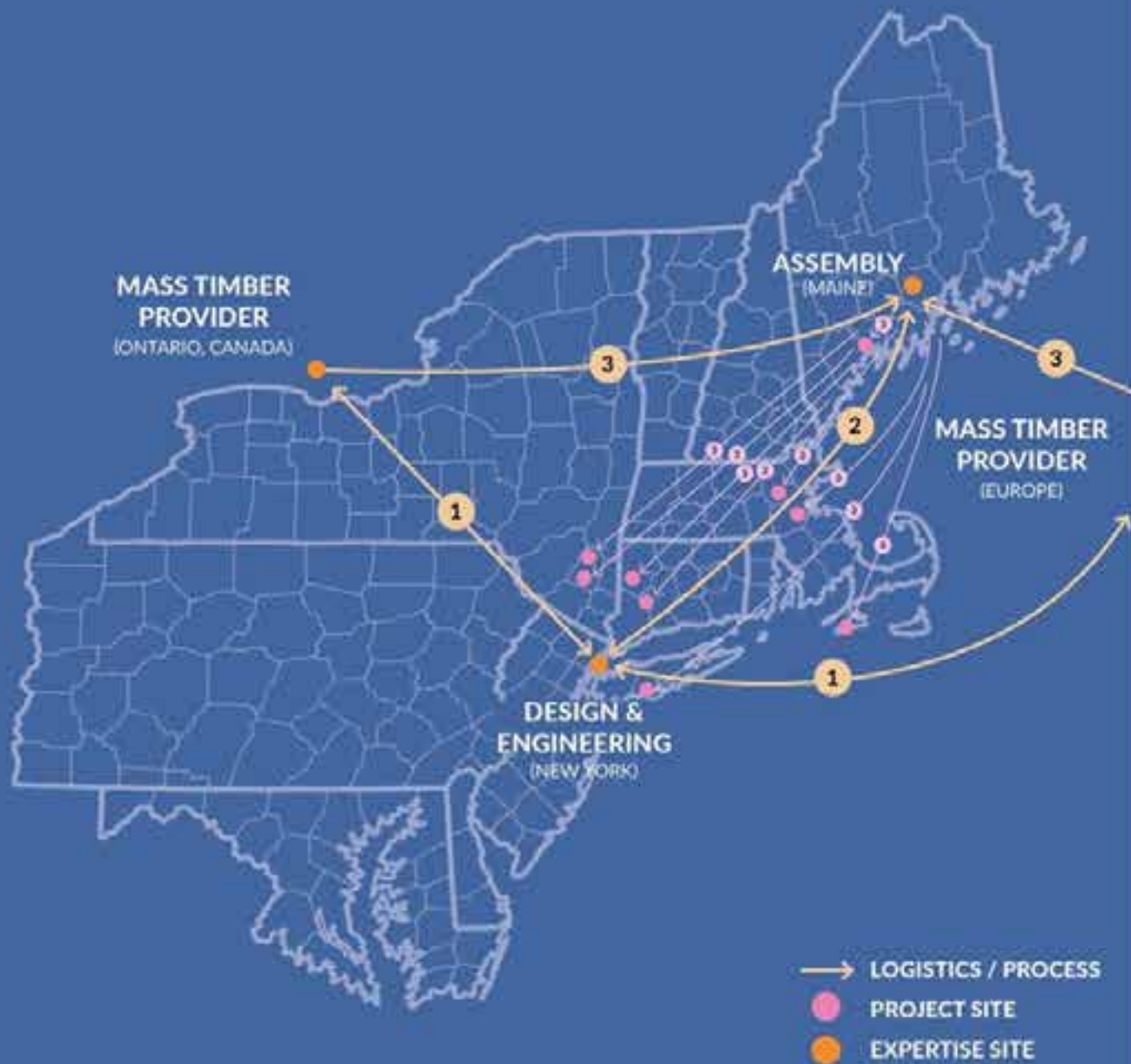
Proposed Process: Mass Timber Example

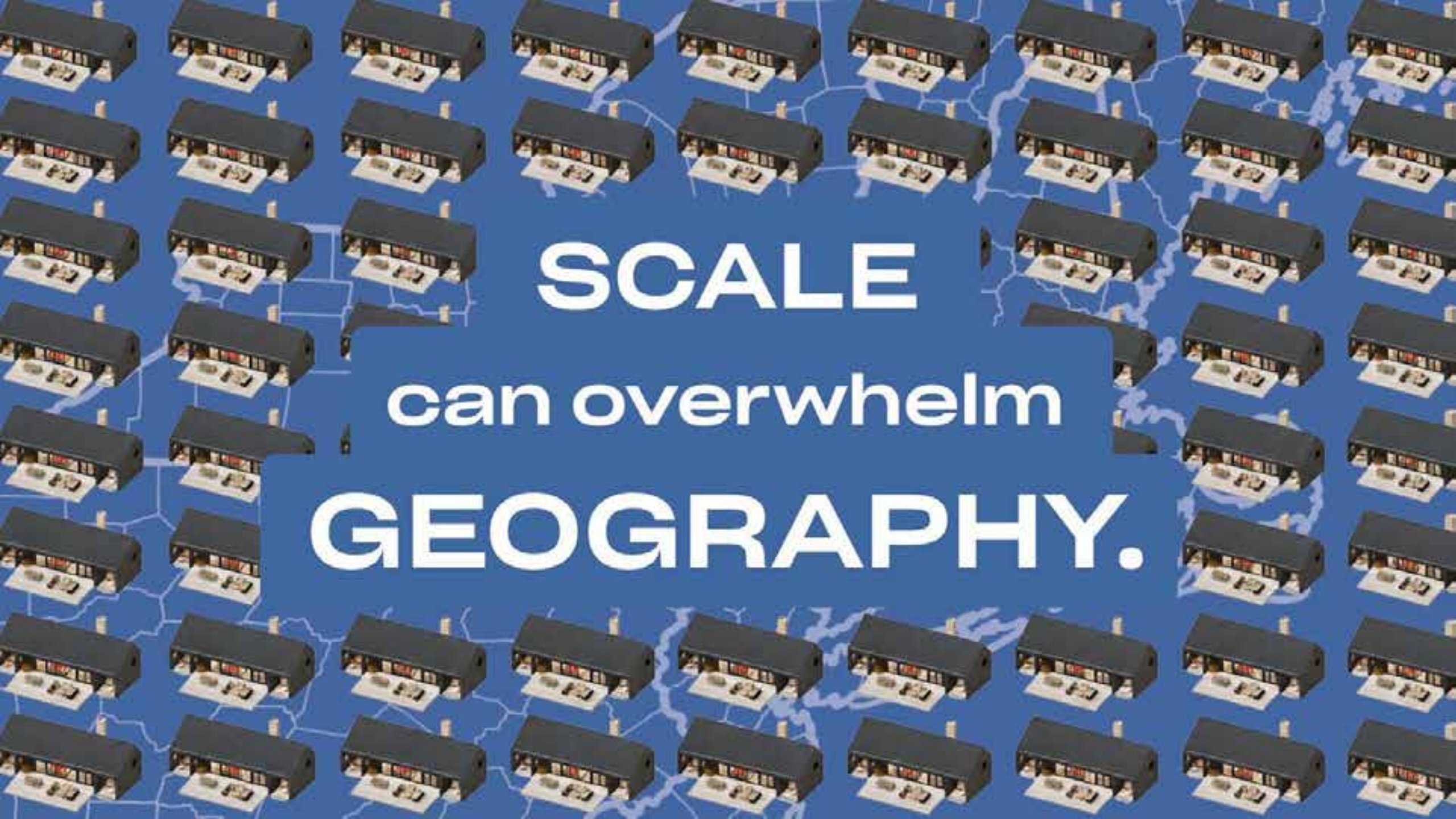
Supply chain informs design.



CLT SIPs





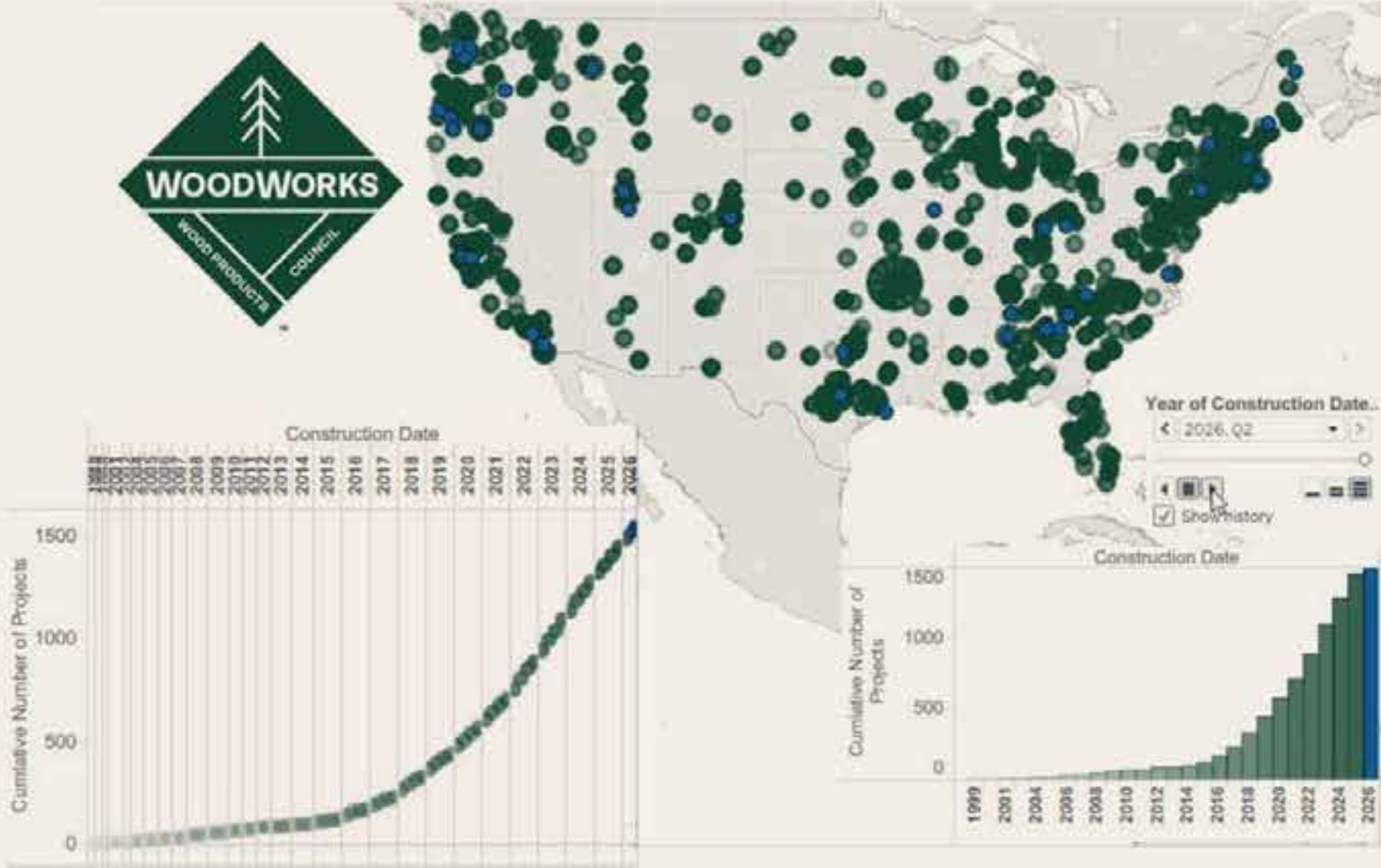


SCALE
can overwhelm
GEOGRAPHY.

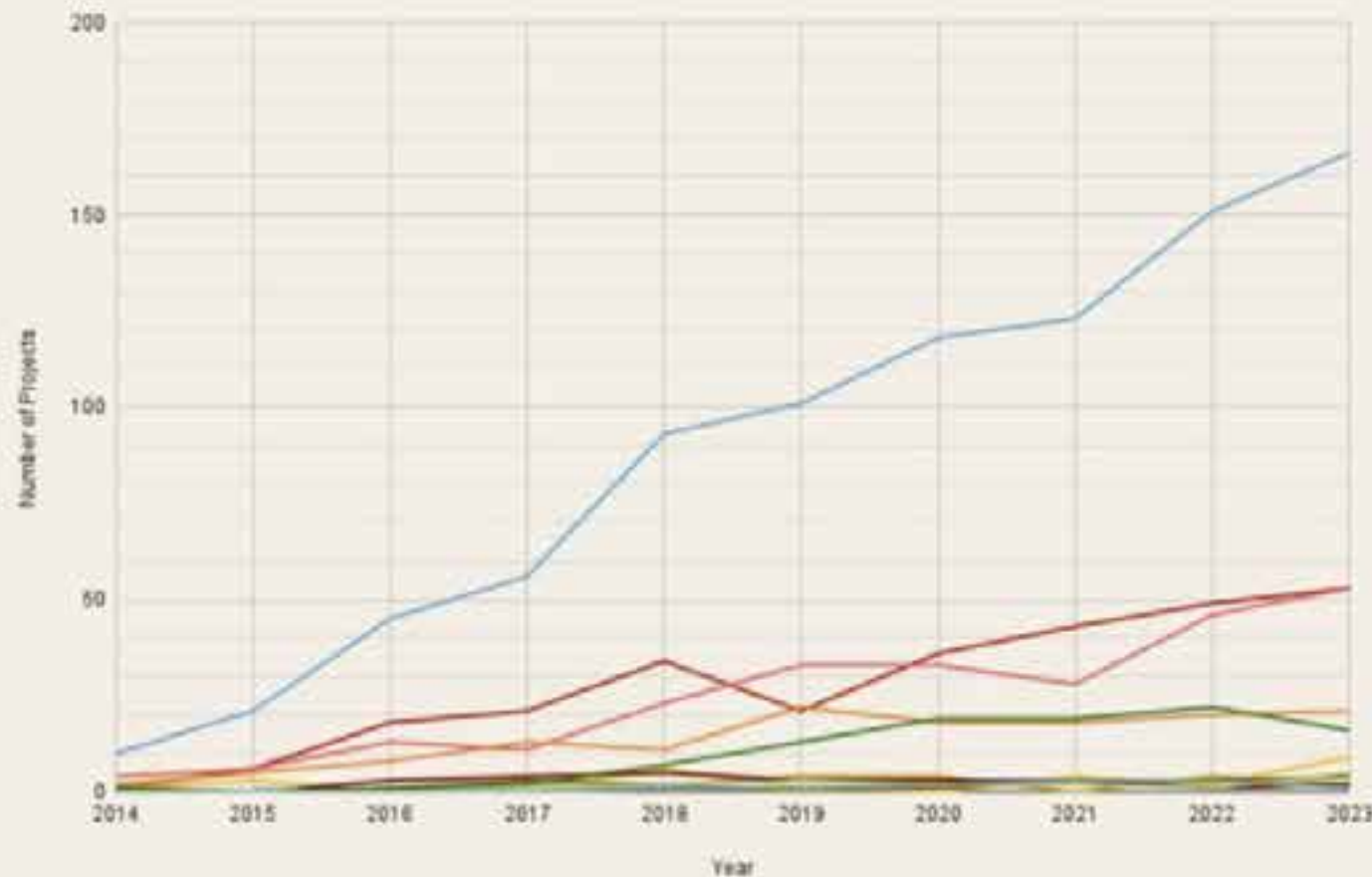
Current State of Mass Timber Projects Over Time

US Market Q2 2026

- In Design
- Construction Started / Built



Source: WoodWorks, Mapping Mass Timber



Mass Timber's Market Growth

- Mass Timber projects are growing at an annual avg. of 12.5%
- Largest sectors: Assembly, Business & Education typologies, Warehouse, Data Centers, and Student Housing
- Cities like New York (Local Law 97) and Vancouver are introducing financial penalties for high-emission buildings



DATA POINTS

FOREST COMPOSITION



■ HARDWOOD ■ SOFTWOOD

ACRES OF FOREST LAND*

16.6M

CURRENT MASS TIMBER PRODUCERS

4

MASS TIMBER BUILDINGS IN DEVELOPMENT†

10

MASS TIMBER BUILDINGS COMPLETED

~10



Public Suppliers	Local Suppliers
- Alaska Timber - Idaho Timber - Montana Timber - Oregon Timber - Washington Timber	- Alaska Timber - Idaho Timber - Montana Timber - Oregon Timber - Washington Timber
Local Suppliers	Local Suppliers
- Alaska Timber - Idaho Timber - Montana Timber - Oregon Timber - Washington Timber	- Alaska Timber - Idaho Timber - Montana Timber - Oregon Timber - Washington Timber
Local Suppliers	Local Suppliers
- Alaska Timber - Idaho Timber - Montana Timber - Oregon Timber - Washington Timber	- Alaska Timber - Idaho Timber - Montana Timber - Oregon Timber - Washington Timber

How can we align regional product development with available forests to connect forest management, manufacturing, and end-use demand?

Pennsylvania has forests, mills, and access to construction markets, but the CLT ecosystem remains softwood-dominated and out-of-state.

- **The gap:** PA forests are 90% hardwood. Recent standards (Yellow Poplar in 2025 PRG-320) now enable hardwood CLT.
- **Near-term reality:** Harvest and mill locally, ship to regional manufacturer (e.g., Sterling Structural, IL), and bring panels back for construction.
- **Current work:** Working with DCNR, Team PA, and the Great Lakes Mass Timber Collaborative to align forest management priorities with emerging markets.

Source (top): Great Lakes Mass Timber Collaborative: A Regional Vision, MassTimber@MSU

Source (bottom): Cambium Mass Timber Catalog, 2026

CLT As Inventory

Phased regional production of standardized CLT blanks: finish-pressed panels held as inventory to support localized project-specific cutting or milling.



1. Existing supply chains and new regional harvesting supplies timber.



2. Existing network of pressers continues operating from current supply chain and sourcing new regional timbers (including hardwood).



3. Existing presses - A limited family of engineered blanks shipped to customer-facing storage facilities to establish regionally available supply / inform engineering / design opportunities.



4. Regional assembly with modest fabrication capacities turn stock blanks into specific building parts.



5. Aggregate smaller projects to drive demand / supply chain.



Existing Supply Chain



Existing Network of Pressers



Engineered Blanks



Aggregate Smaller Projects



Existing Supply Chain

New regional harvesting supplies timber.



Existing Network of Pressers

continues operating from current supply chain and sourcing new regional timbers (including hardwood).



Engineered Blanks

Shipped to customer-facing storage facilities to establish regionally available supply / inform engineering / design opportunities. Regional assembly with modest fabrication capacities turn stock blanks into specific building parts.



Aggregate Smaller Projects

To drive demand / supply chain.





To create comfortable pillows (and necks), we had to go to the moon.

- Memory foam wasn't invented to make pillows. In 1966, NASA wanted a material that could absorb impact without getting rock-hard in zero gravity
- Engineer Charles Yost created a soft, open-cell foam that bounced back slowly, spreading pressure evenly. It was perfect for aircraft seat safety
- Companies realized that they could take the technology and apply it to mattresses and pillows, making memory foam part of everyday sleep
- The memory foam market is poised to be worth **23.6 billion USD** by 2030



Source: NASA

Source: Strategic Market Research, Segment Revenue Estimation, Forecast, 2024-2030



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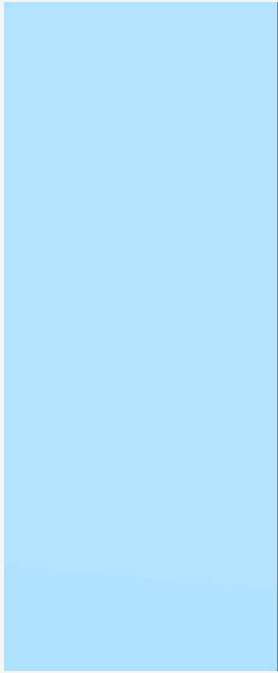
This concludes The American Institute of Architects Continuing Education Systems Course.

Mass Timber+ 2026

Rethinking housing delivery with scalable
timber systems

Name: Louise Rogers
Date: 7th October 2026

Built
Environment
—
Smarter
Transformation



Who are we?

Built Environment – Smarter Transformation is Scotland's national innovation centre for construction and the built environment.

UK housebuilding

Residential construction at a glance



Housing stock distribution

England 84% | Scotland 9% | Wales 5% | Northern Ireland 3%

79%
Houses

Brick & block*
Low-rise residential

21%
Apartments

Concrete/steel frames*
Typically for developments >18m

*(Typical construction)

Timber use in construction

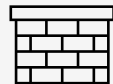
across the UK & Ireland

Uptake is generally low. On average, the UK builds 23% of homes using stick framing

Negative perceptions:



Durability



Strength

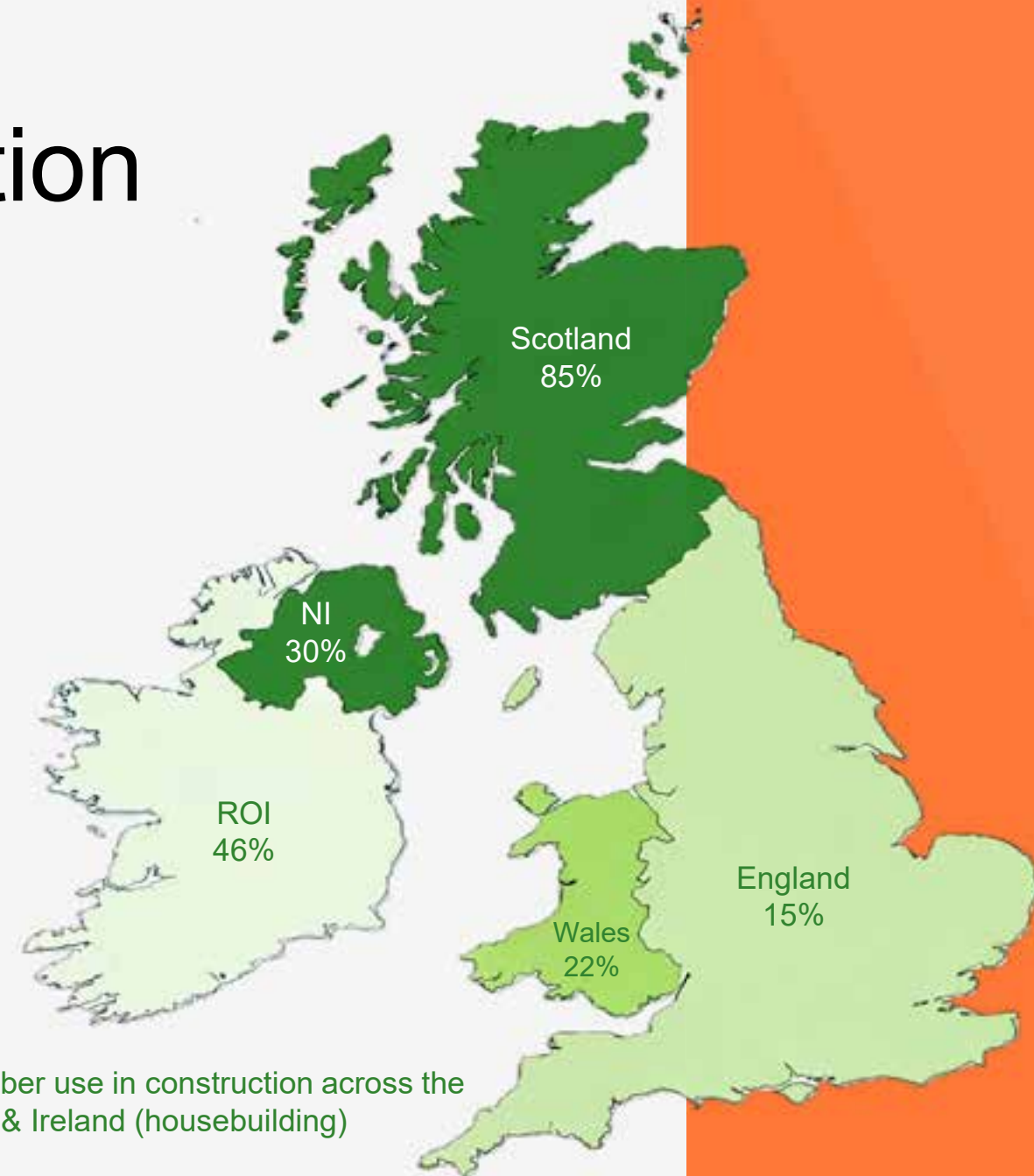


Fire performance



Cost

Timber use in construction across the UK & Ireland (housebuilding)



Using homegrown timber

80% of the timber used in construction is imported

Common perceptions:

- Not as strong as imported material
- Only suited to pallets, fencing & decking
- Lower perceived quality

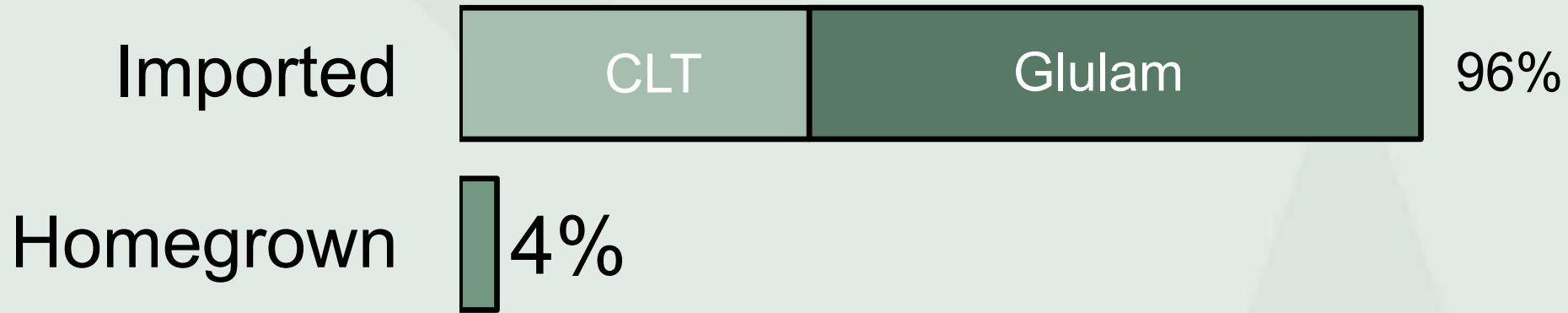
Research & innovation are proving homegrown timber works in high value construction products



Mass timber in the UK

96%

of UK mass timber is imported



Around 75,000m³ mass timber annually

Barriers to mass timber adoption

01 Fire

High profile fires have tightened regulation around the use of combustible materials

11m height threshold

02 Moisture

Moisture remains a significant construction and operational risk.

Poor understanding of in use maintenance and repair.

03 Insurance

Limited historical data



Greater uncertainty



Higher premiums



Higher project cost

So, what do we do?

Focus on what we can do within
these constraints

T Transforming ↑ Timber

Re-engineering the future of the UK construction industry.

£1.5m Innovate UK–funded consortium project to commercialise UK-grown mass timber.

The programme delivered structural, acoustic, thermal and fire performance testing of homegrown mass timber products, alongside a full-scale demonstrator and a robust business case for commercialisation.



Homegrown Mass Timber Trial Manufacture



Drying to 12% moisture content



NLT Ceiling Panels
(using beech nails)



New GLTP Solution



UK's only large format vacuum press



12m x 3m x 100mm CLT Wall Panels



Fire testing



Structural testing

Project examples



Nest House - Social Bite Village



Milestone Bus Shelters



Study Pods



GenZero Classroom



Coastguard Centre



SNRC Retrofit – BE-ST

How we move from R&D to scale

01 - Build capability

Develop the skills to deliver mass timber at scale

|

02 - Build the evidence

Turn R&D into proven, repeatable solutions

|

03 - Build the ecosystem

Create the conditions for widespread adoption

From proving what works → to making it standard practice.



Thank you

lrogers@be-st.build
www.be-st.build



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