



WoodWorks™
WOOD PRODUCTS COUNCIL

Environmental Benefits of Mass Timber

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Course Description

The building design and construction community is facing an unprecedented confluence of challenges driving change. Demands for urban development continue to rise, as do land costs, and many cities are adopting sustainability-driven goals for carbon reduction. At the same time, building codes are evolving in significant ways to recognize new materials and technologies that allow mass timber and wood-frame buildings at heights and scales previously unattainable. Meanwhile, an especially catastrophic wildfire season has drawn attention to the value of forest thinning and timber utilization, while the COVID-19 pandemic creates even more pressure to provide cost-effective, efficient solutions.

With an emphasis on the western half of the country, this online symposium will combine market data, project examples, and practical knowledge on the design and construction of modern wood buildings. Among the highlights, mass timber developers will share financial deal information on their projects publicly for the first time; ULI will highlight its perspectives on sustainability and resiliency; and mass timber and innovative light-frame project design teams will discuss the elements that must be carefully planned and implemented for projects to be successful. Join us for a dynamic mix of speakers and panel topics tailored to developers, building designers, contractors and sustainability consultants. Learn from project case studies, and get the knowledge you need to utilize innovative wood systems.

Learning Objectives

1. Discuss how utilizing wood in construction can reduce the carbon footprint of the built environment.
2. Explore how creating a market incentive for forest thinning and other landscape restoration efforts that support healthy and resilient forests can be achieved in the western US.
3. Highlight how developers are capitalizing on the value of mass timber buildings, including shorter construction schedules, the aesthetic distinction of exposed timber (which can lead to leasing velocity and/or premiums), and the environmental benefits that resonate with tenants.
4. Use case study presentations to illustrate innovative and code-compliant examples of mass timber and wood-frame construction in various projects in the western US.

Global Population Increase

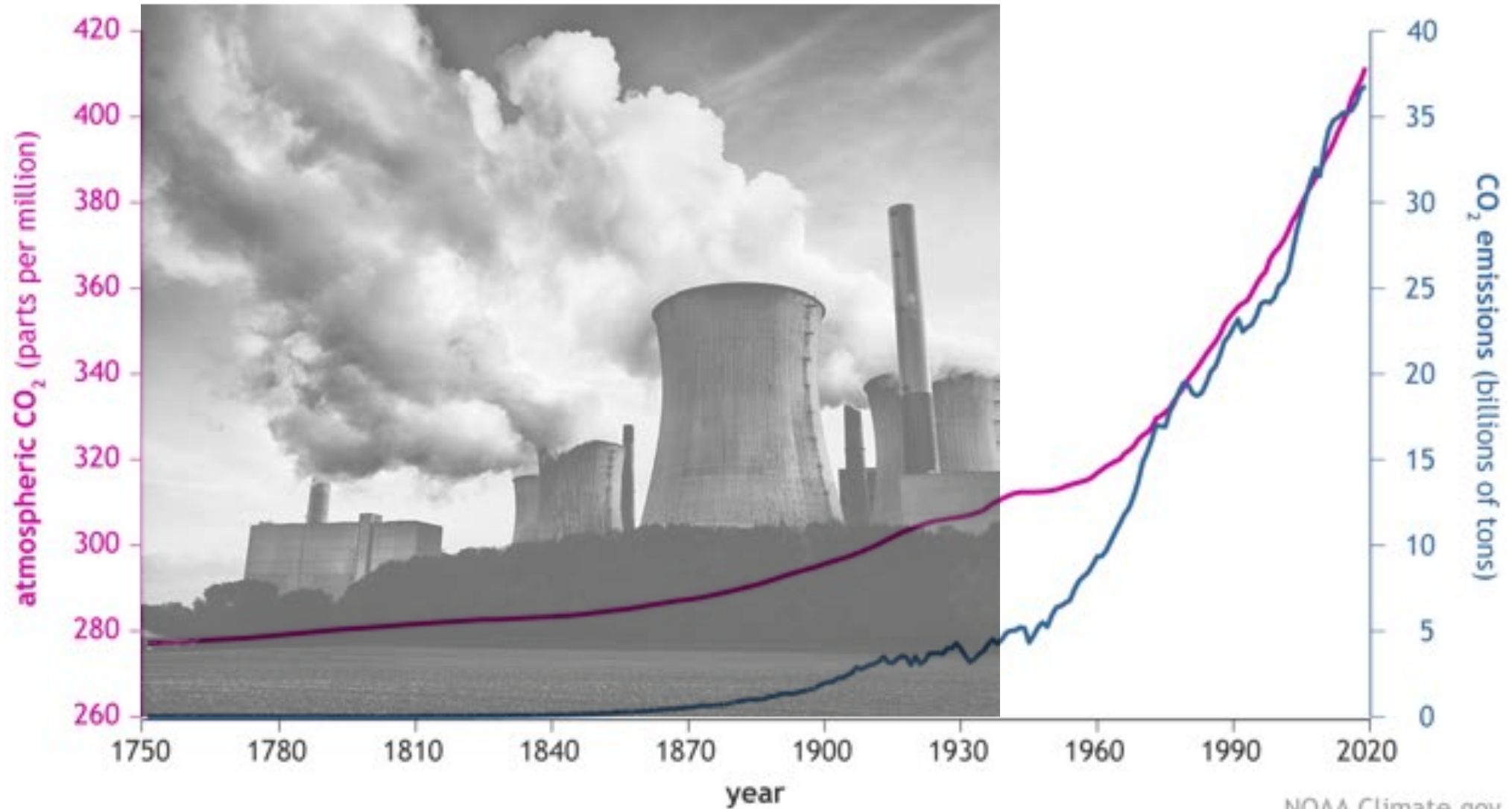
2019 = 7.7
billion people



2050 = 11.2
billion people

Carbon / Greenhouse Gas Emissions

CO₂ in the atmosphere and annual emissions (1750-2019)



NOAA Climate.gov
Data: NOAA, ETHZ, Our World in Data

Rising Temperatures and Melting Glaciers

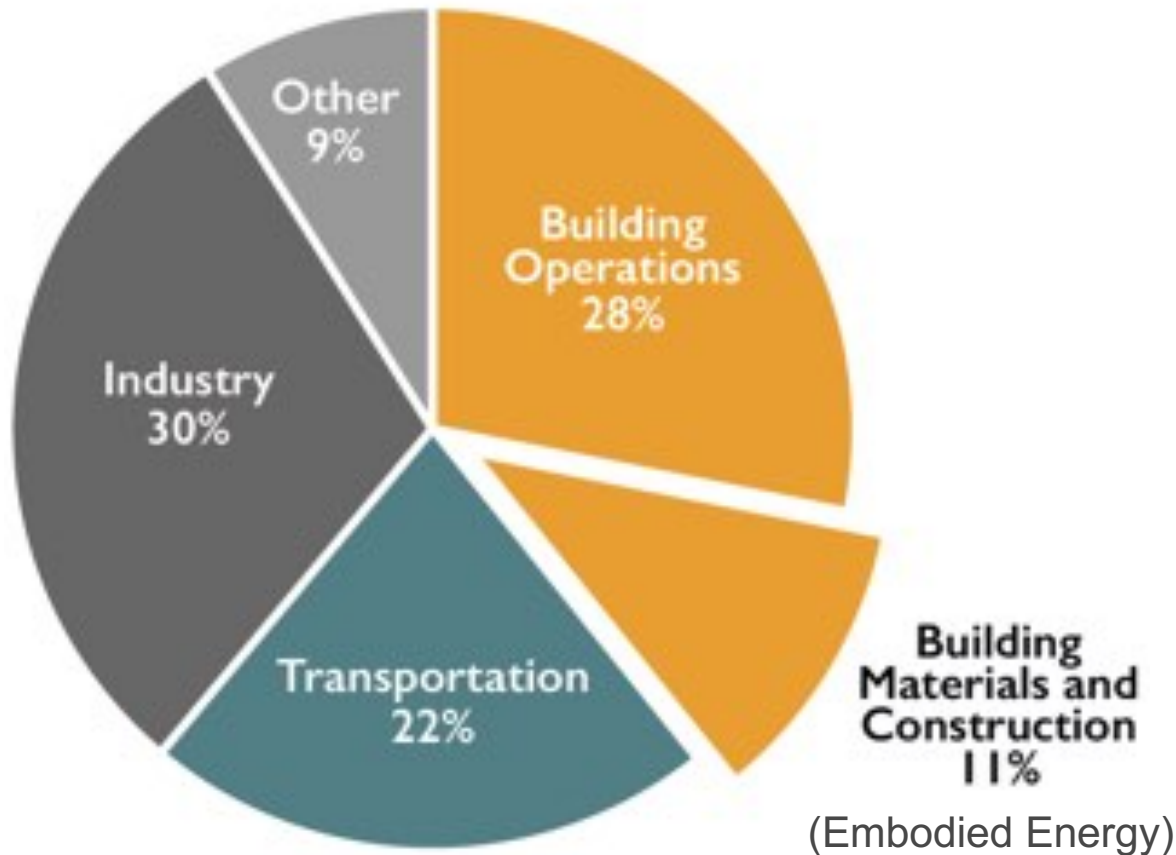


Climate Change – From Rising Waters to Increasingly Catastrophic Wildfires



New Buildings & Greenhouse Gasses

Global CO₂ Emissions by Sector



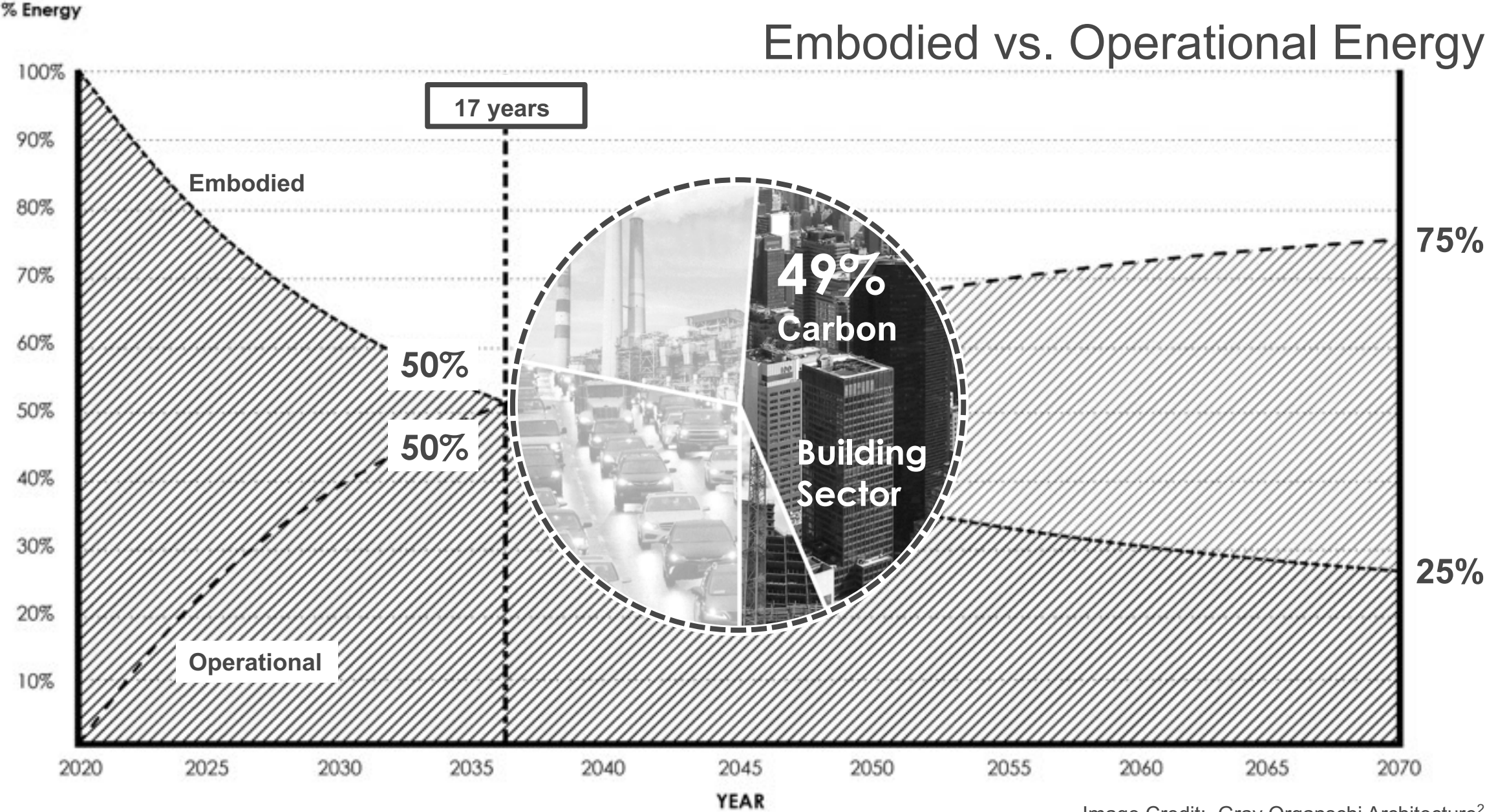
Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

Buildings generate nearly 40% of annual global greenhouse gas emissions (*building operations + embodied energy*)

Embodied Energy (11%): Concrete, iron + steel produce approximately 9% of this (Architecture 2030)

Embodied Carbon

Embodied vs. Operational Energy



Low Embodied Carbon Building with Wood

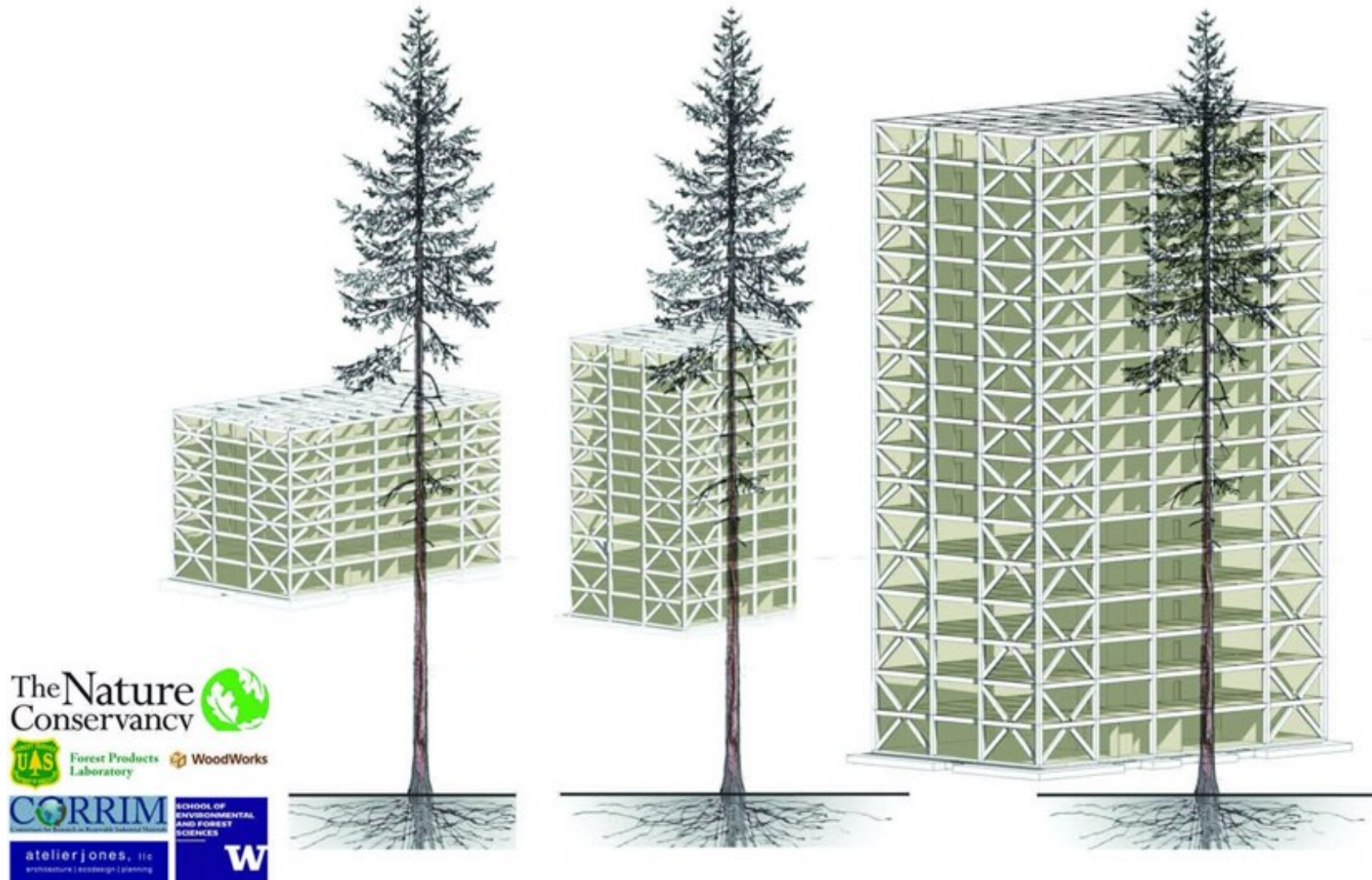
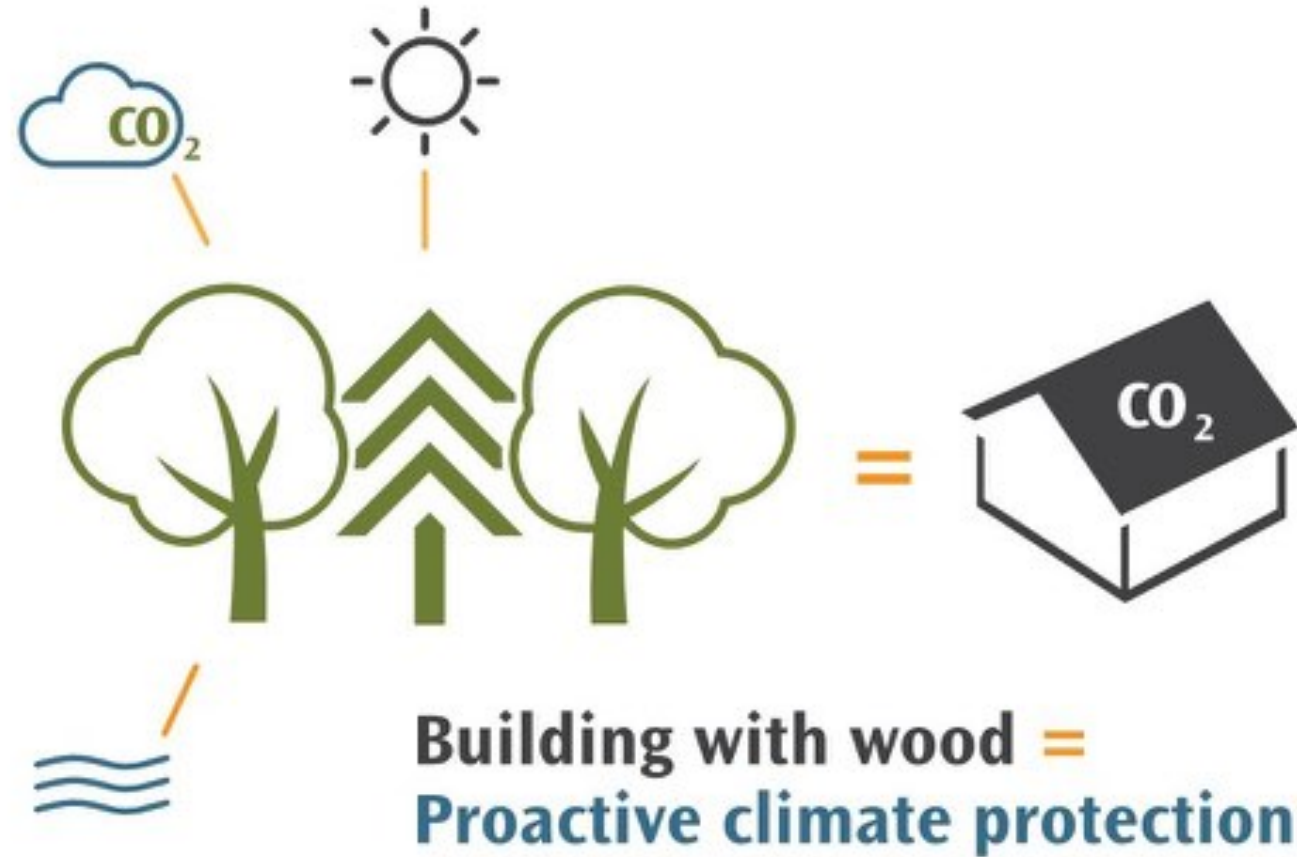


Image: atelierjones llc

Carbon Sequestration

Wood Buildings Store Carbon



Carbon Storage

Wood \approx 50% Carbon (dry weight)



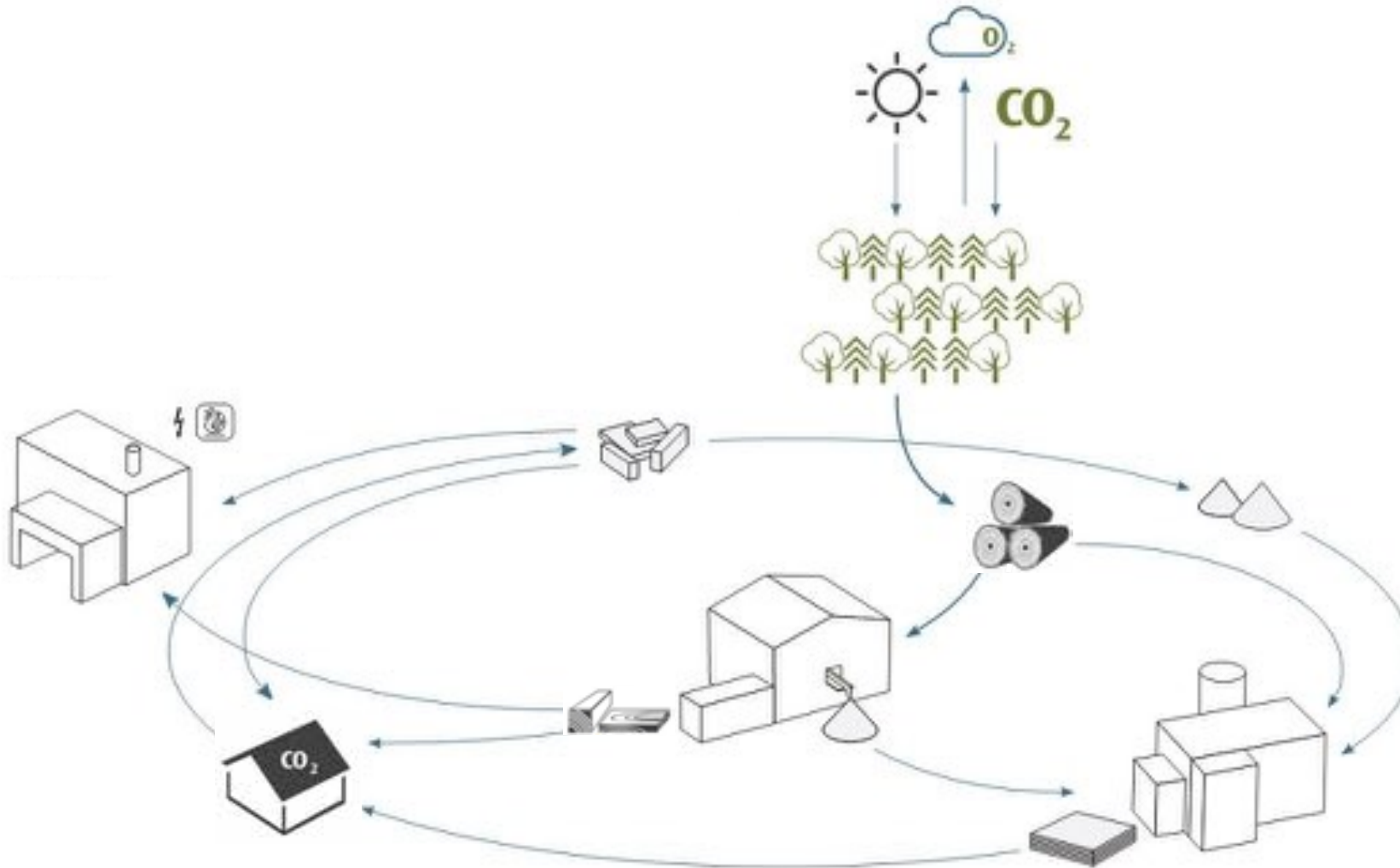
Image: Kaiser + Path



Image: Lever Architecture

Circular Economy & Carbon Benefits







Renewable Resource | Carbon Sequestration



Source: Building with Wood – Proactive Climate Protection, Dovetail Partners, Inc.¹

Long-Term Positive Effects

Renewable Material | Carbon Storage

		Energy effect	Carbon effect	Value-added effect
	Forest	Stores solar energy	Removes C from Atmosphere	Increases forest value; supplies timber
	Timber	Often local, short transit	C in raw material	Strengthens rural economies
	Lumber	Low embodied energy	Stores C; replaces materials w/ greater C impact	Supports energy independence; strengthens US Forestry
	Wood structure	Low thermal conductivity & bridging	Stores C; reduces insulation / GHG emissions	Cost effective & healthy indoor environment
	Modernization, refurbishment, urban densification	Lightweight & easy to transport	More C storage	Increasing use of prefab; saves resources & retains value
	Demo, recycling, energy recovery	Low energy recycling or emissions neutral energy recovery	Extended C fixation due to recycling	Innovative solutions for circular economy

Source: Building with Wood – Proactive Climate Protection, Dovetail Partners, Inc.¹

Candlewood Suites

Redstone Arsenal



Photos: IHG Army Hotels, Lendlease

Lendlease Military Hotel:

- 37% faster overall
- 40% fewer construction workers
- **Trained unemployed veterans**

Carbon benefits

- Carbon stored in the wood
1,276 metric tons of CO₂
- Avoided GHG emissions
494 metric tons of CO₂
- **374 cars** off the road for a year



Trees

Forests



Lower Carbon Footprint Renewable Resource

Ponderosa Commons, UBC
Concrete Structure



Brock Commons, UBC
18 Stories Mass Timber



THANK YOU FOR JOINING US – WE HOPE YOU ENJOY TODAY’S SYMPOSIUM!

Keep your **regional staff member** in mind for questions and support:



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