RECYCLE COLORADO

Buildings Born Again

Bringing a Second Life to Building Materials

Speakers

James Gaspard

Biochar Now

Lindsay Law

CO Stud Company

Aschley Yanda

Urban Machine

Will Lepry

CO Mass Timber Coalition

Emily Freeman

City of Boulder

Biochar Now

James Gaspard, CEO

OMRI certified

USDA Bio-preferred

TSCA Listed*

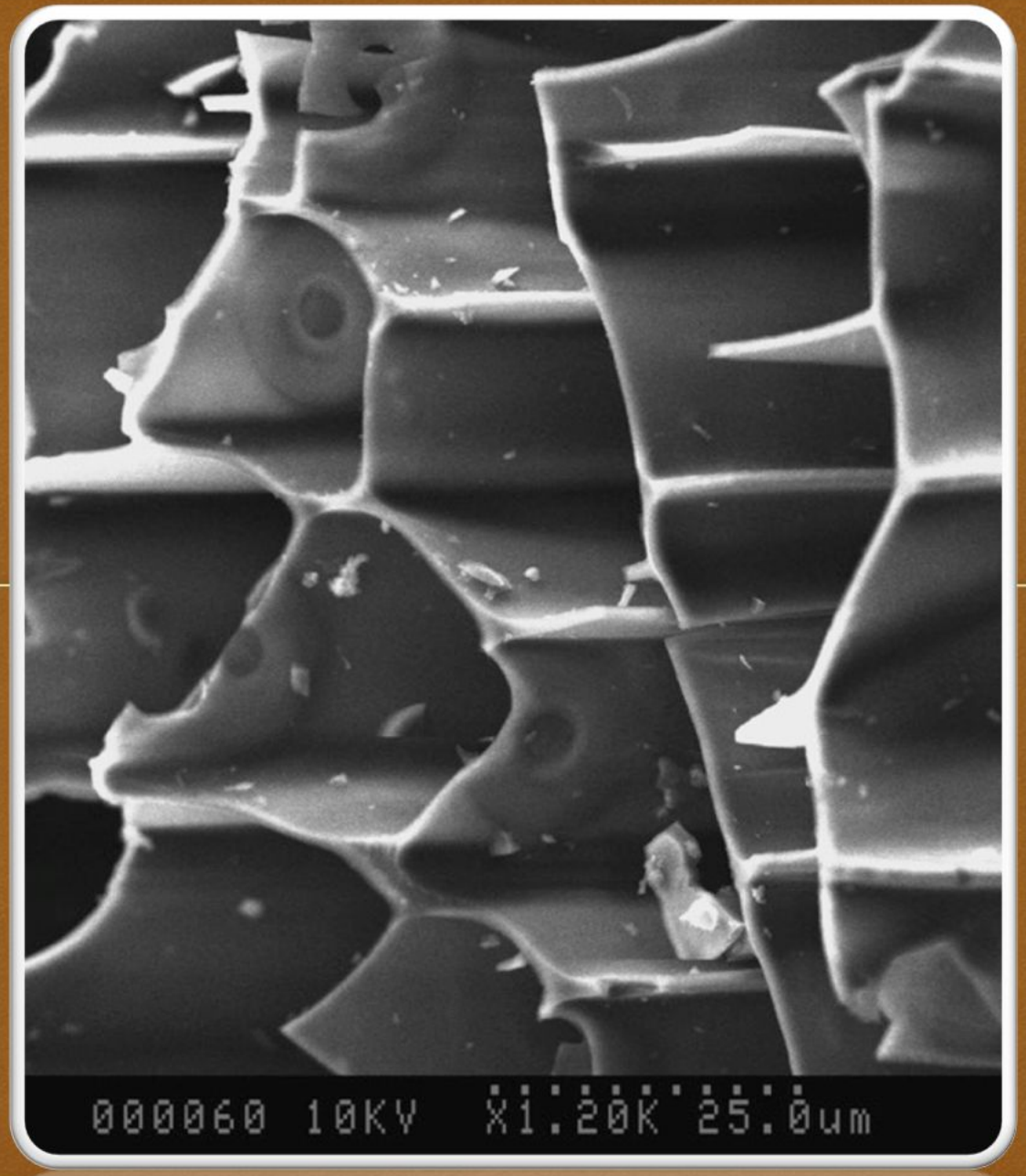
(* only biochar in industry approved by US EPA for unrestricted use)

What is Biochar Now Biochar?

- Specially created carbon with unique properties made from wood.
- Created in an oxygen-deprived vacuum environment at high temperatures and held for over 10 hours in a patented kiln.
- No liquid or solid waste streams.
- It is a carbon-negative product. We create 3.2 tons of CO2 carbon removal credits for every 1 ton of biochar we produce.

Biochar Now

1200X



Patented Manufacturing

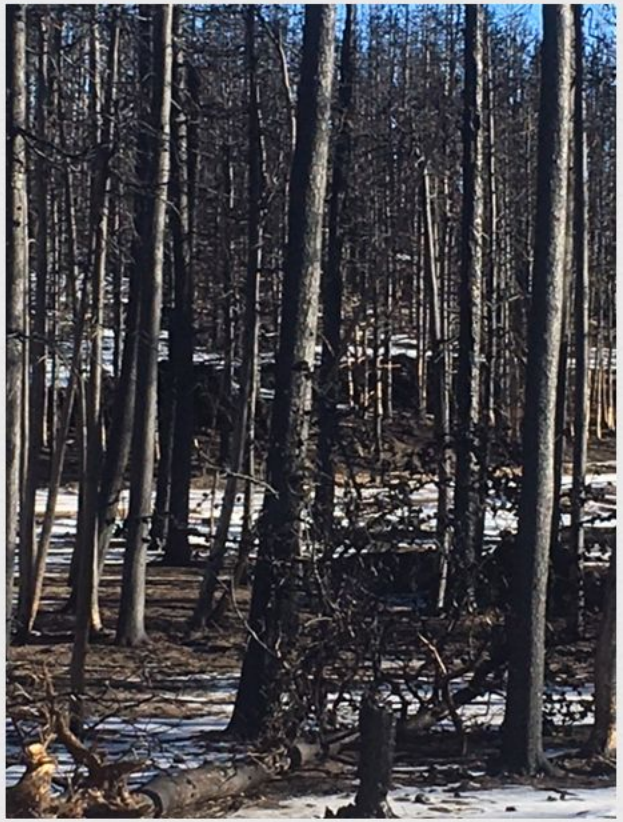
- Biochar Now has developed a patented, cost-effective, computer-controlled high temperature, slow pyrolysis batch kiln that converts non-merchantable wood waste into a high-quality carbon with proven unique properties.

Patented Manufacturing

- 17 patents awarded
- Over $40 million invested to date to develop technology and customer base
- Competitors have invested billions to date in their carbon production technologies. They do not produce similar carbon.

Possible Raw Feedstocks for Biochar Now Technology

Forest fire waste



Shredded slash

Shredded slash

Saw mill waste

Shredded pallets and crates

Shredded Landfill diversion wood

Railroad ties

Treated Wood

Painted Wood

Utility poles

Major Markets Available

Biochar Now testing completed in each market below

Proven Markets that Biochar Now has testing completed

- Nitrate and Phosphate pollution removal
- Oil & Gas remediation
- Lithium Processing
- Animal Feed Additive
- Lawn and landscape
- Graphene production feedstock
- Plastic filler
- Specialty Ag (hemp, fruits, vegetables)
- Biochar manure and fertilizer pellet
- Drought relief
- Superfund and Brownfield Reclamation
- Activated Carbon Replacement
- Asphalt and concrete filler

- Biochar Now currently has over $4 billion in orders in our sales pipeline from customers that have completed years of testing.
- Contracted approx. $90 million in pre-sold carbon credits with a major oil company

James Gaspard

james.gaspard@biocharnow.com

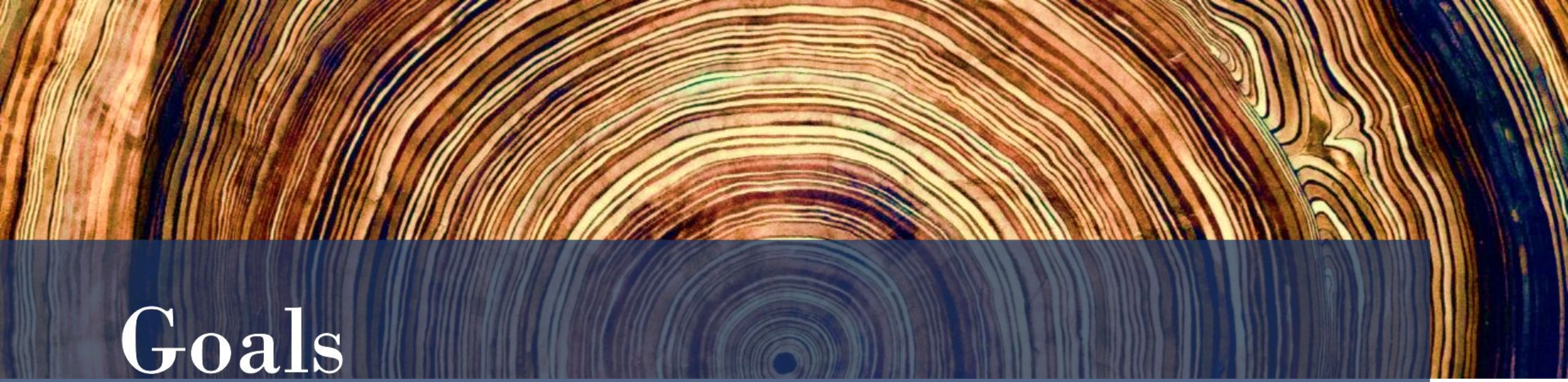
Lindsay Law

chief administrative officer

COLORADO
STUD COMPANY


There has to be
a way to utilize
this material


KUBOTA



Goals

- (10-12) 40-yard roll-offs needed each day
- Divert 1,732 tons per month
- Save 69,000 trees each year
- Increase efficiency to 70,000 board feet per day

Joints must test greater than > 2x the strength bearing of individual sections used

Certified to be used in any type of assembly, including fire-rated

IBC
section 233.1.1
section 2306.1
section 2307.1
NDS section 4.1.6

Challenges/Opportunities

Our Place in the Circular Economy

- Keep product in Colorado market
- Create awareness of the value of using recycled building material and engineered lumber

Recyclable Material

- Explore best end use for the approximately 1/3 raw material not viable for finger-jointing
- Expand sourcing of raw material for feedstock

Expansion

- Add automation to improve sorting and grading
- Infrastructure to accommodate future growth
- Create relationships to utilize our dust and shavings

Products and Services

1

LUMBER SALES

Following current lumber market prices

2

ROLL-OFF PICKUPS

Offering a cost-effective alternative to landfill tipping fees

3

SCRAP SALES

Selling unusable material for use as playground surface

4

DUST UTILIZATION

Exploring outlets for fine dust such as: industrial absorbent and use in MDF type products

When Our Powers Combine…

❖Kurt Skott

President: tireless enterpriser

Kurt.Skott@costudco.com

❖Chad Anderson

Vice President: head of purchasing and sales

Chad.Anderson@costudco.com

❖Nik Skott

Director of Operations: innovative implementer

Nik.Skott@costudco.com

❖Brett Curtsinger

Logistics Director: educated & versatile collaborator

Brett.Curtsinger@costudco.com

❖Lindsay Law

Chief Administrative Officer

Lindsay.Law@costudco.com

❖Cory and Gavin

Mechanical geniuses

970-786-8550

At Colorado Stud Company we are committed to sourcing cast-off material, producing a premium product of straighter, stronger framing lumber and enhancing the circular economy in our beautiful state.

lindsay.law@costudco.com
900 Lone Tree Lane
Nunn, CO 80648

970-786-8550

urban machine

Urban Machine

Converting 37 million tons of wood waste into premium lumber products

urban machine

The Problem
We are Solving

- **37M Tons** of lumber wasted annually
- **In 60 years** all landfills will be full
- Lumber price volatility
- Lumber Shortages

urban machine

How?

Make it Circular

A circular economy focuses on salvaged materials–giving that resource a second life as a part of a new project.

the forest

The Solution

Robots for removing metal contaminants from the lumber so it can be used again. Once metal is removed reclaimed lumber is higher quality and can be processed the same as virgin lumber.

Patent Issued

SYSTEM AND METHOD FOR AUTONOMOUSLY REMOVING FASTENERS EMBEDDED IN WOOD PRODUCTS, **U.S. Pat. No. 11,806,853**

urban machine

Robotics & AI

The Machine

- Precision end effectors
- High speed gantries
- Vision systems to remove nails, screws & staples

Our Target Customers

C&D and Demolition

We are targeting the $120B / year global C&D Waste Industry via C&D Processors and Demolition Contractors.

Traditionally, processing lumber is a cost

Cost → **Revenue**

With Urban Machine, it can become

Demolition contractors pay

$35-$125

per ton

Reclaimed lumber sells for

$200-$1000

per ton

C&D processors can get

+/- $20

per ton for ground wood

Cities Mandating Building Deconstruction

Portland
2016

Mandates Building Deconstruction

Seattle
2016

Mandates Building Deconstruction

Vancouver
2016

Mandates Building Deconstruction

Milwaukee
2018

Mandates Building Deconstruction

Baltimore
In Progress

To Mandate Building Deconstruction

Boulder
2021

Adopted Law to Mandate Building Deconstruction

Palo Alto
2020

To Mandate Building Deconstruction

San Antonio
2023

Adopted Law to Mandate Building Deconstruction

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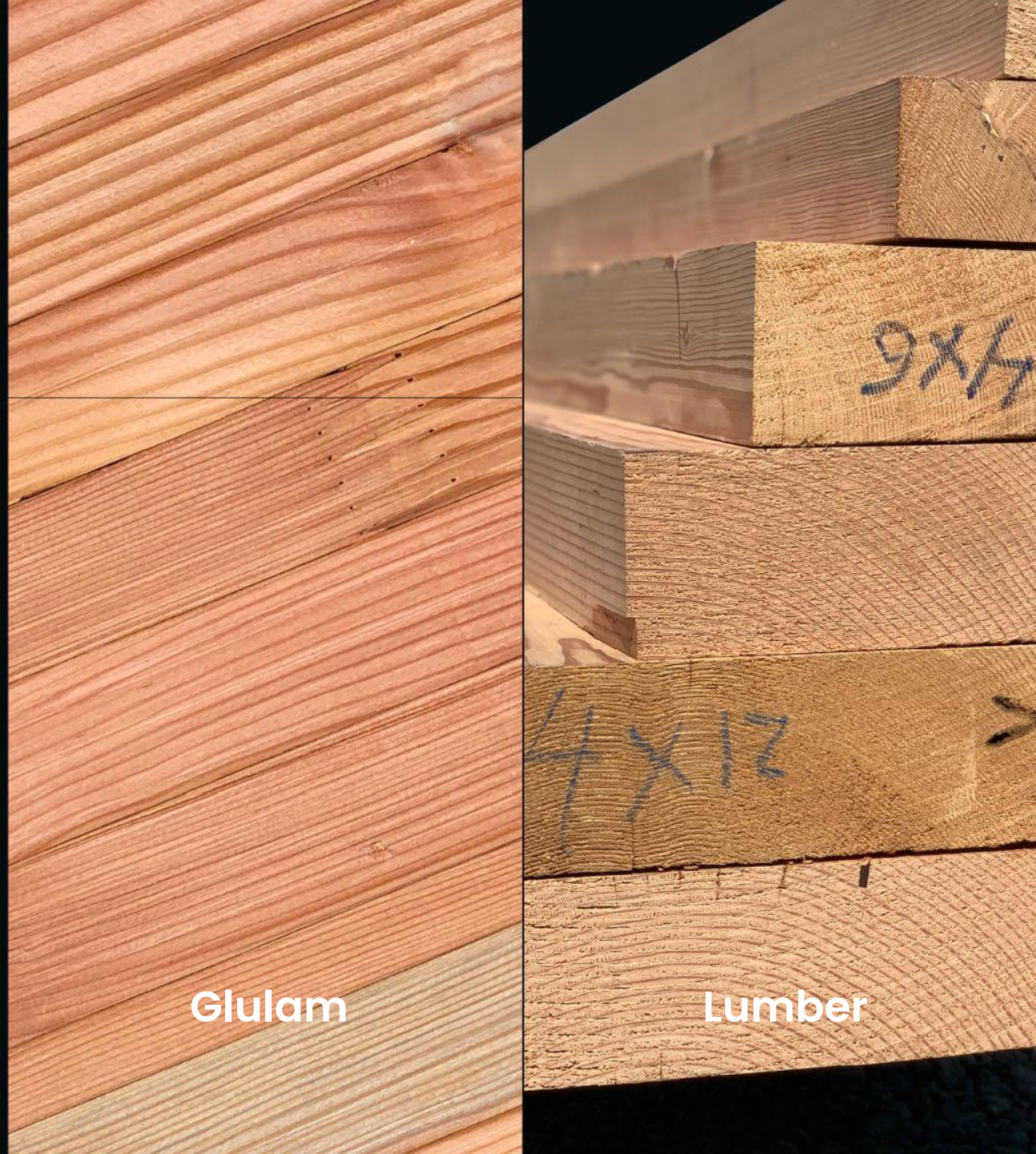
What Can Designers Do?

Specify Reclaimed

It takes 90% less energy to create reclaimed lumber than virgin.

Virgin lumber can easily be substituted for reclaimed if plans change.



The Result

Premium Lumber Products

From Landfill Bound Wood to Local Community Treasure

The Benefits of Old Growth Lumber

~~Virgin Lumber~~ ~~Old Growth~~

Durability and Strength

Unique Aesthetic Qualities

Environmental Considerations

Opportunity

Colorado Reclaimed Lumber TAM

$50M

123K

Tons of Wood

urban machine

Reclaiming the Past

To Build the Future

Our reclaimed lumber gets a new life while keeping its history.

Reclaimed from Landings Drive, Mountain View, CA

Learn how we reclaimed this wood & added to its history.

UrbanMachine.Build

FSC
www.fsc.org
FSC® C183827

Look for Urban Machine FSC® certified reclaimed lumber

Every piece of lumber tells a Story

We mark our premium lumber with a QR code, a portal to honor its history.

The Colorado Mass Timber Coalition

Will Lepry, Director

2024 Recycle Colorado Summit, Ft. Collins

4 June 2024

What is Mass Timber?

Mass timber is a category of engineered wood product that is comprised of multiple solid wood panels adhered together that can replace structural steel or concrete

- Many types of mass timber are created from dimensional lumber (e.g., 2x6s, 2x8s)
- The dimensional lumber is typically sourced from sawmills that process raw timber from the forest into useable materials

Common types of mass timber

Cross-laminated timber (CLT)	Three or more perpendicular adhesive bonded layers of lumber that can be used in all major building components	
Glue-laminated Timber (Glulam)	Parallel grain layers bonded with adhesive to create a structural element typically used in beams or columns	
Nail-laminated timber (NLT)	Large wood composite panel made from nailing face to face lumber common in horizontal applications (e.g., panels)	
Dowel-laminated timber (DLT)	Similar to NLT but constructed with friction based wooden dowels	
Laminated Veneer Lumber (LVL)	LVL is made of dried softwood veneers, glued together so that the grain of each veneer is parallel to the length	

Source: Mass Timber Building Science Primer (2021)

Building with mass timber has several benefits

Efficient Construction

Mass timber buildings are roughly 25% faster to construct than concrete buildings and require 90% less construction traffic and 75% fewer workers on site

Environmental Impact

Replacing concrete used in construction with timber such as CLT could cut CO_2 emissions from buildings by 20% as compared to concrete excluding EOL

Thermal Performance

Unlike steel and concrete, wood is a natural insulator and can have an R value 15x greater than poured concrete

Reduced Structural Weight

A CLT building weighs ~5x less than one made of concrete significantly reducing the amount of foundation needed and allowing for vertical building expansion which can conserve land and resources

Safety and Performance

Mass timber is as strong as steel and has superior seismic resiliency and fire safety

Biophilic Benefits

Seeing wood surfaces has been shown to have positive health benefits as well as increased productivity for those occupying the space

Sources: Mass Timber Building Science Primer (2021), Thinkwood.com

Inspiration: PDX new mass timber airport terminal

Source: ZGF gives Portland International Airport, America's best airport, the timber treatment, The Architect's Newspaper, 2023

The Colorado Mass Timber Coalition (CMTC)

To accelerate the adoption of mass timber products and technology in Colorado's next generation of buildings, and to create a future for locally derived forest products, including timber from efforts to improve forests and watersheds, to promote economic opportunity and affordable housing across the state.

17 Executive Committee Members

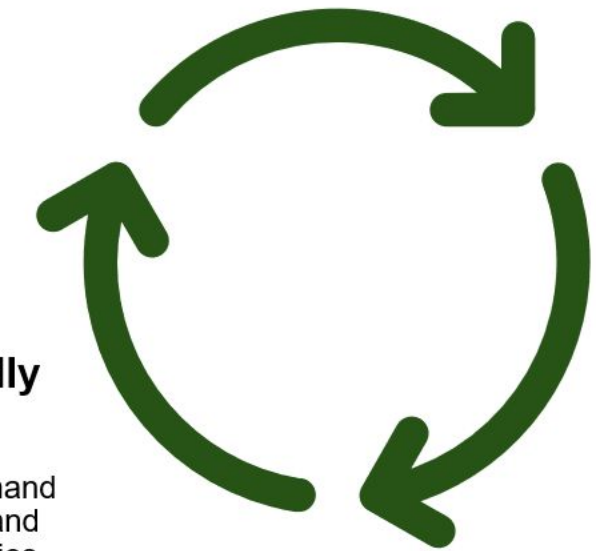
55 General Members

7 Subcommittees

What is our vision for Colorado's sustainable future?

Sustainable forest management

Reduces wildfire risk and improves watershed health



Environmentally friendly construction

Policy, incentives, and public demand drive mass timber construction and promotes sustainable communities

Growing forest product economy benefits local communities

Revitalized milling and manufacturing spurs rural economic growth and new jobs

The CMTC will work across seven subcommittees

Subcommittee	Focus Areas
1 **Forest Resources**	Resource characterization, availability, social license, research into product suitability
2 **Demand Development**	Demand activation, education and outreach, incentives, pilots and demonstration projects, potential anchor projects (large- scale, multi-building projects with motivated developers
3 **Affordable Housing**	Examining the potential relevance of mass timber in meeting affordable housing needs
4 **Manufacturing & Milling Capacity**	Building long-term mill and manufacturing capacity; transportation and logistics, location considerations, product types, capital stacks, partner identification and recruitment
5 **Workforce**	Understanding potential workforce gaps and solutions to support a larger scale of forest health interventions and the potential for growth of a sustainable forest economy, including mass timber
6 **Policy**	Investigate current policy landscape across all aspects of the supply chain (e.g., harvesting to construction) and work to create, update, and implement new policies
7 **University Working Group**	Research mass timber challenges directly related to Colorado (e.g., small diameter, native species, integrated design, real estate, etc.)

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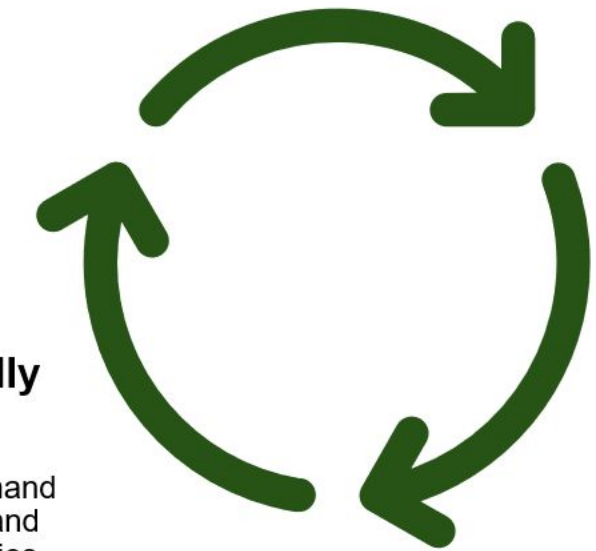


Wood from deconstruction or scrap lumber

Growing forest product economy benefits local communities

Revitalized milling and manufacturing spurs rural economic growth and new jobs

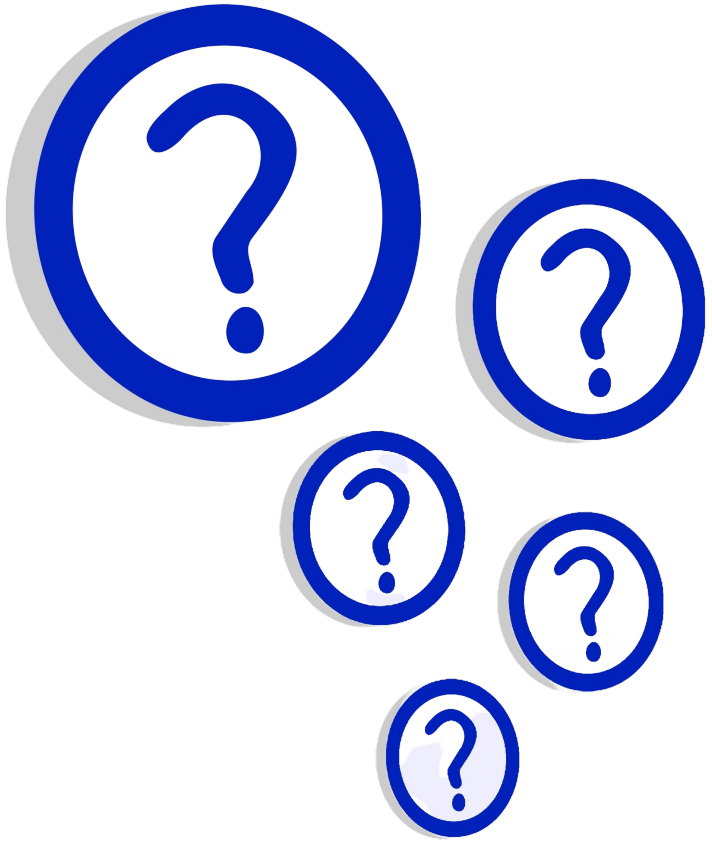
Biochar and other products

Environmentally friendly construction

Policy, incentives, and public demand drive mass timber construction and promotes sustainable communities


Want to learn more?
Please let me know!
wlepry@nationalforests.org

Questions



Thank you

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