

# Opportunities for Transparency and Carbon Calculations for the Wood Supply Chain

Jacob Dunn -ZGF Architects

WEC Carbon Friendly Forestry Conference - October 27, 2021

ZGF

Photo credit: Hannah Letinich





# **PROCUREMENT**

## **Tracking/Transparency**



# **FOREST CARBON**

## **Tied to Forest Products**



# PDX Next Terminal Core Redevelopment

THE FRONT DOOR TO THE REGION

- ~1M SF major renovation
- Western expansion and complete interior reconfiguration
- 8 titles World's Best Airport (*Travel + Leisure Magazine*)

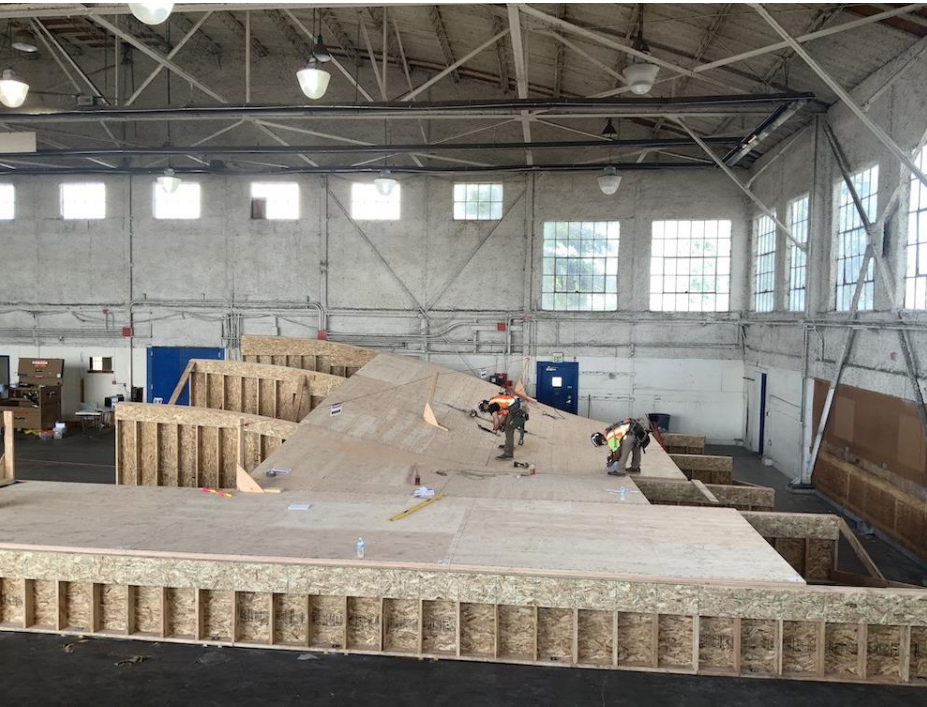
- |        |                   |
|--------|-------------------|
| • 2013 | • 2018            |
| • 2014 | • 2019            |
| • 2015 | • <del>2020</del> |
| • 2016 | • 2021            |
| • 2017 |                   |





# A Mass Timber Roof

3,000,000 BF



**Mass Plywood (2" Thick)**  
400,000 SF

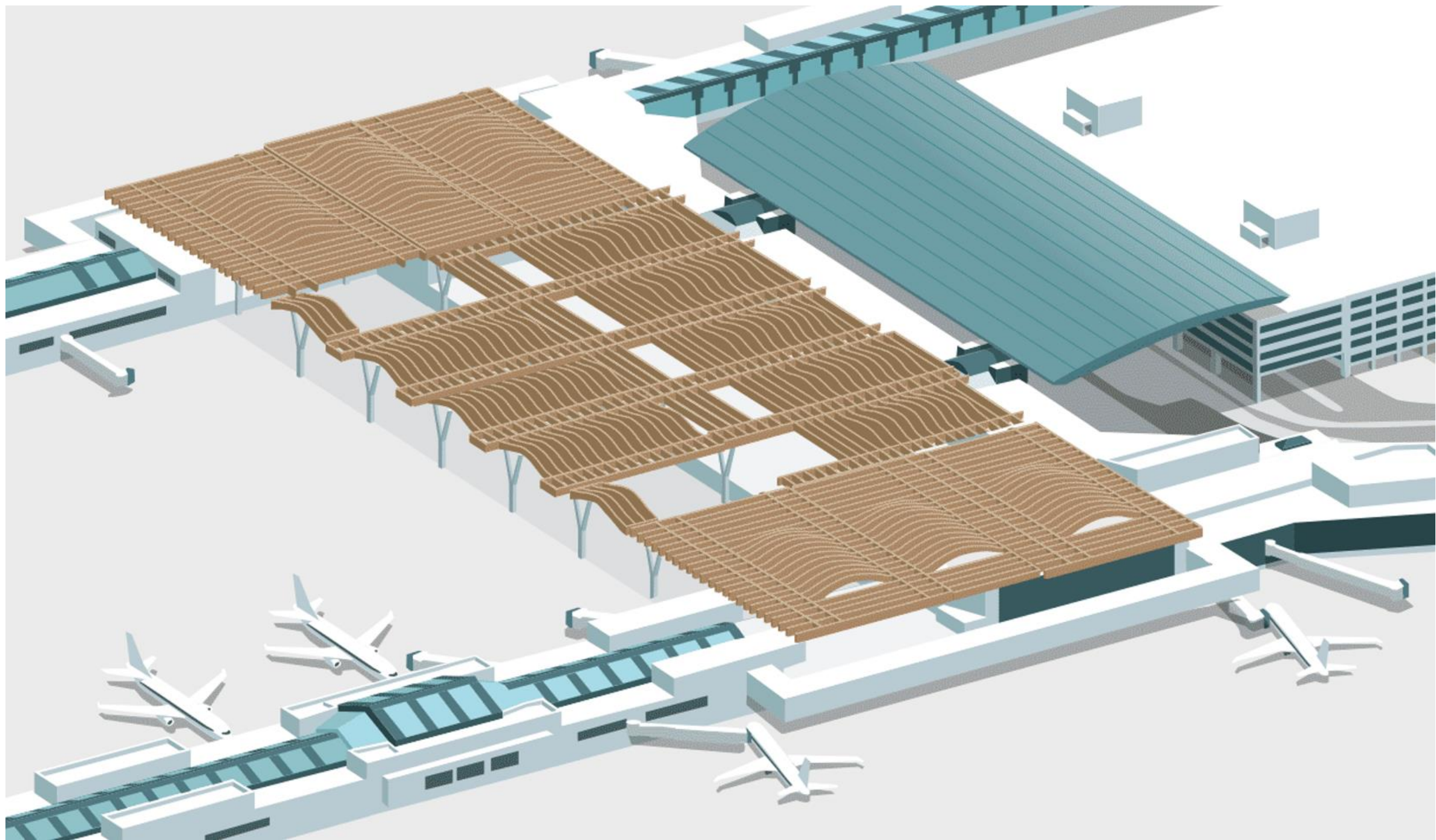


**Lattice Ceiling (3x6")**  
600,000 Board Feet



**Glulam Beams (2x8" Stock)**  
2M Board Feet, 400 80' Beams





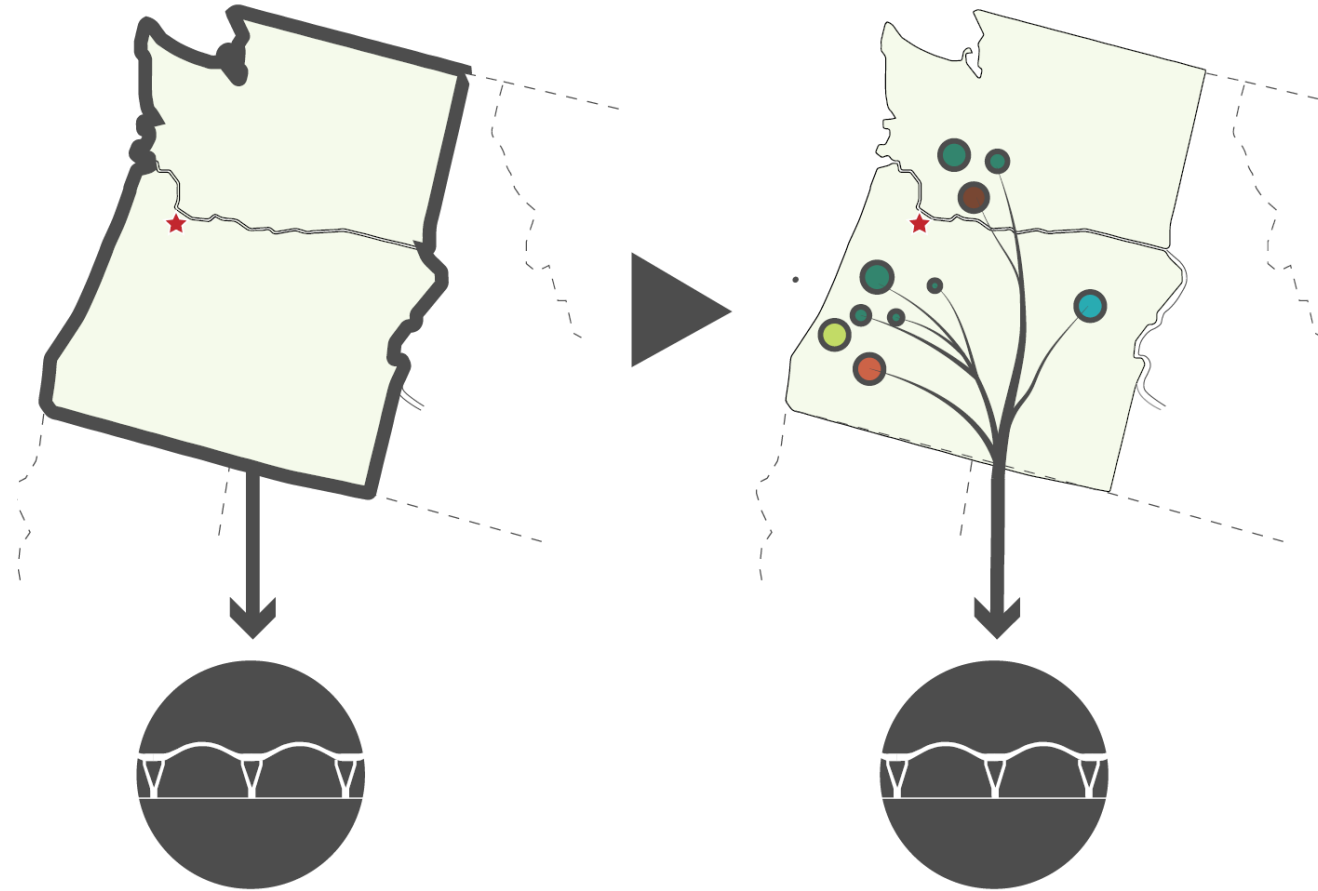






# From Forest to Frame

TELLING THE LOCAL STORY



**Business as Usual**

**Direct Sourcing**

# Transparency Procurement Pathways

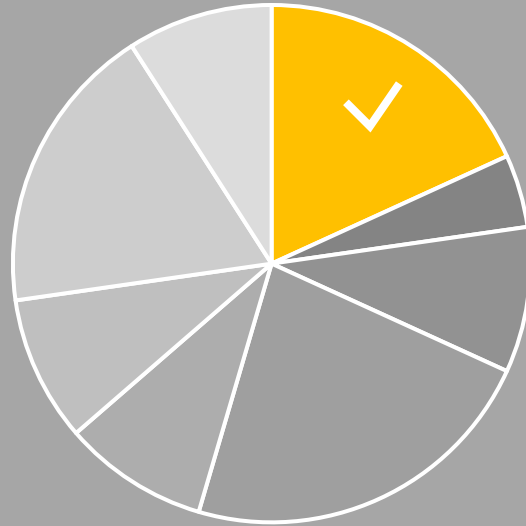
4 DIFFERENT APPROACHES

## Business as Usual



Can it come from this region?

## Disclosure + Tracking



Where did the wood come from?

## Disclosure + Optimization



Where did the wood come from? And can you buy from X types of sources?

## Segregation



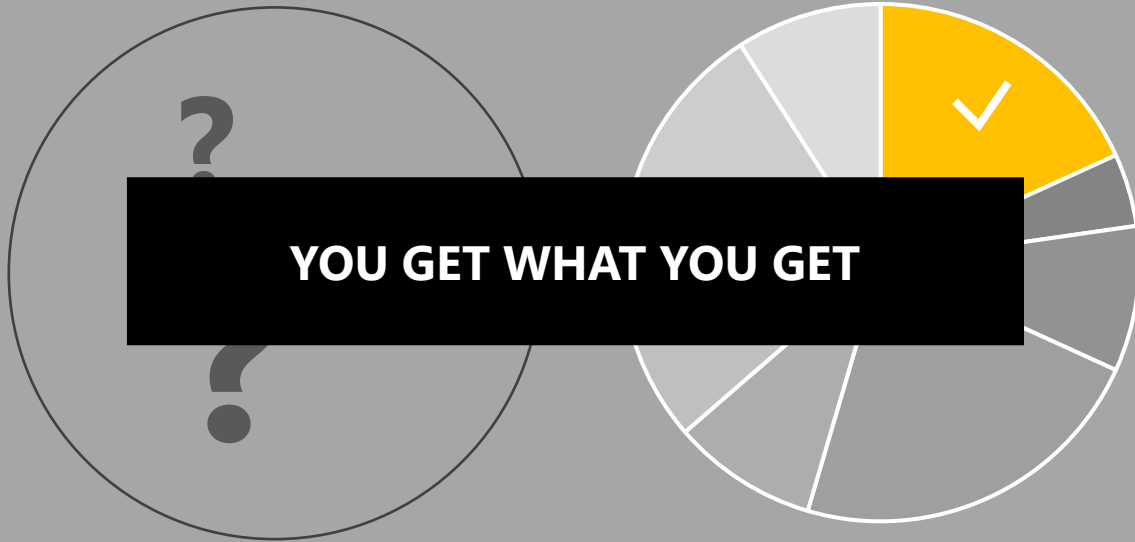
Can you segregate your log deck from X types of sources?



# Transparency Procurement Pathways

4 DIFFERENT APPROACHES

## Business as Usual



Can it come from this region?

## Disclosure + Tracking



Where did the wood come from?

## Disclosure + Optimization



Where did the wood come from? And can you buy from X types of sources?

## Segregation

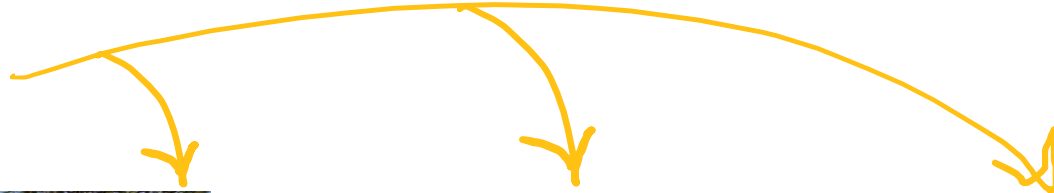
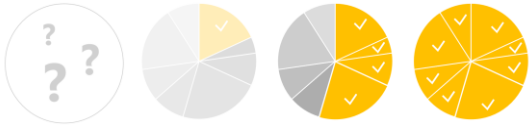


Can you segregate your log deck from X types of sources?



# Performance Goal Possibilities

LANDOWNER TYPES AND CARBON



*Photo credit: Hannah Letinich*



**XX%**

From East Side Rural Communities  
Managing for Wildfire Resilience



**XX%**

From Tribally Managed Forests



**XX%**

From Climate-Smart Forests



# PDXNext Sourcing Performance Data

TRACKING AND SUSTAINABLE HARVESTING



**2M BF**

2x8" Lamstock for Glulam Beams



**600K BF**

3x6" Lattice



# PDXNext Sourcing Performance Data

TRACKING AND SUSTAINABLE HARVESTING

← **>95% Sustainably Harvested** →



**2M BF**

2x8" Lamstock for Glulam Beams

**62%**

Unsegregated with Disclosure Tracking +  
FSC Certified

**600K BF**

3x6" Lattice

**23%**

Segregation  
+FSC Certified

**38%**

Segregation + Sustainable  
Harvesting

← **~38% Tracked to  
Forest of Origin** →



An architectural rendering of a modern airport terminal interior. The space is characterized by a high, vaulted ceiling made of a complex wooden lattice structure. Large, mature trees are integrated into the design, with some growing from circular planters in the foreground and others as part of the ceiling's structure. The floor is a light-colored, polished material. People are seen walking through the terminal, some with luggage, and others standing near a blue directional sign. The overall atmosphere is bright and airy, with natural light filtering through the lattice and trees.

# Lattice (600k bf)

100% Sustainably Harvested

100% Tracked back to Origin



**Oregon Tribe A Wood**



**Oregon East Side  
Federal Restoration  
Forest A**

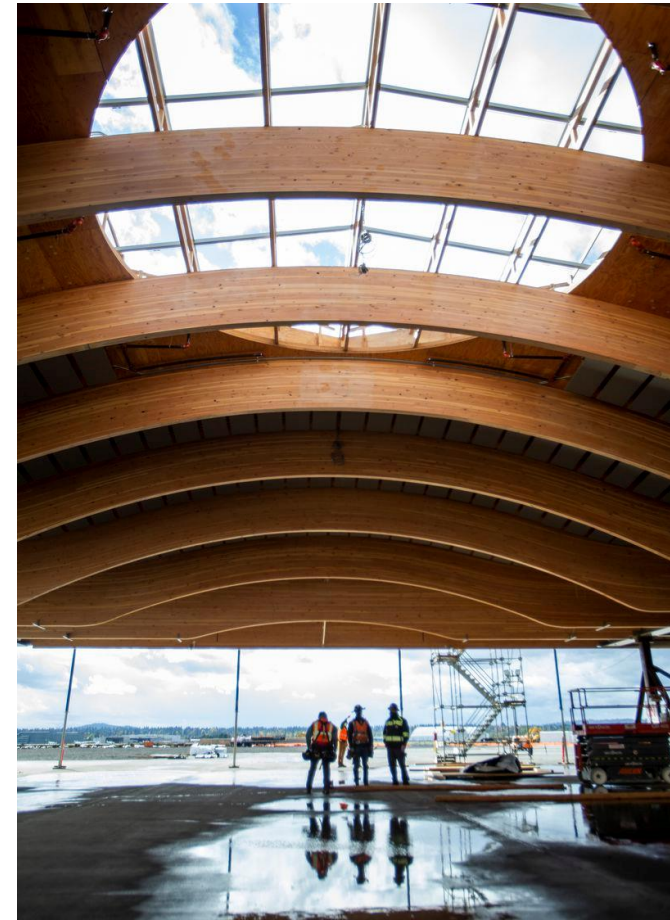
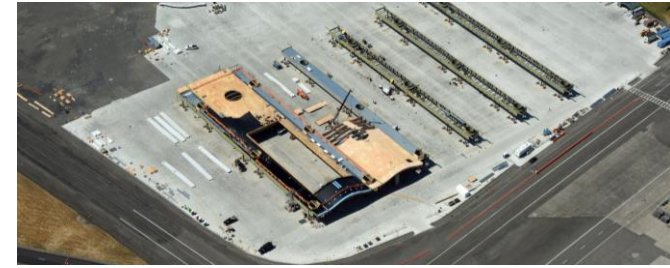
**Washington Tribe B  
Wood**

**Washington Small  
Family C**



# PDXNext Coming Soon in 2025

PREFABRICATION



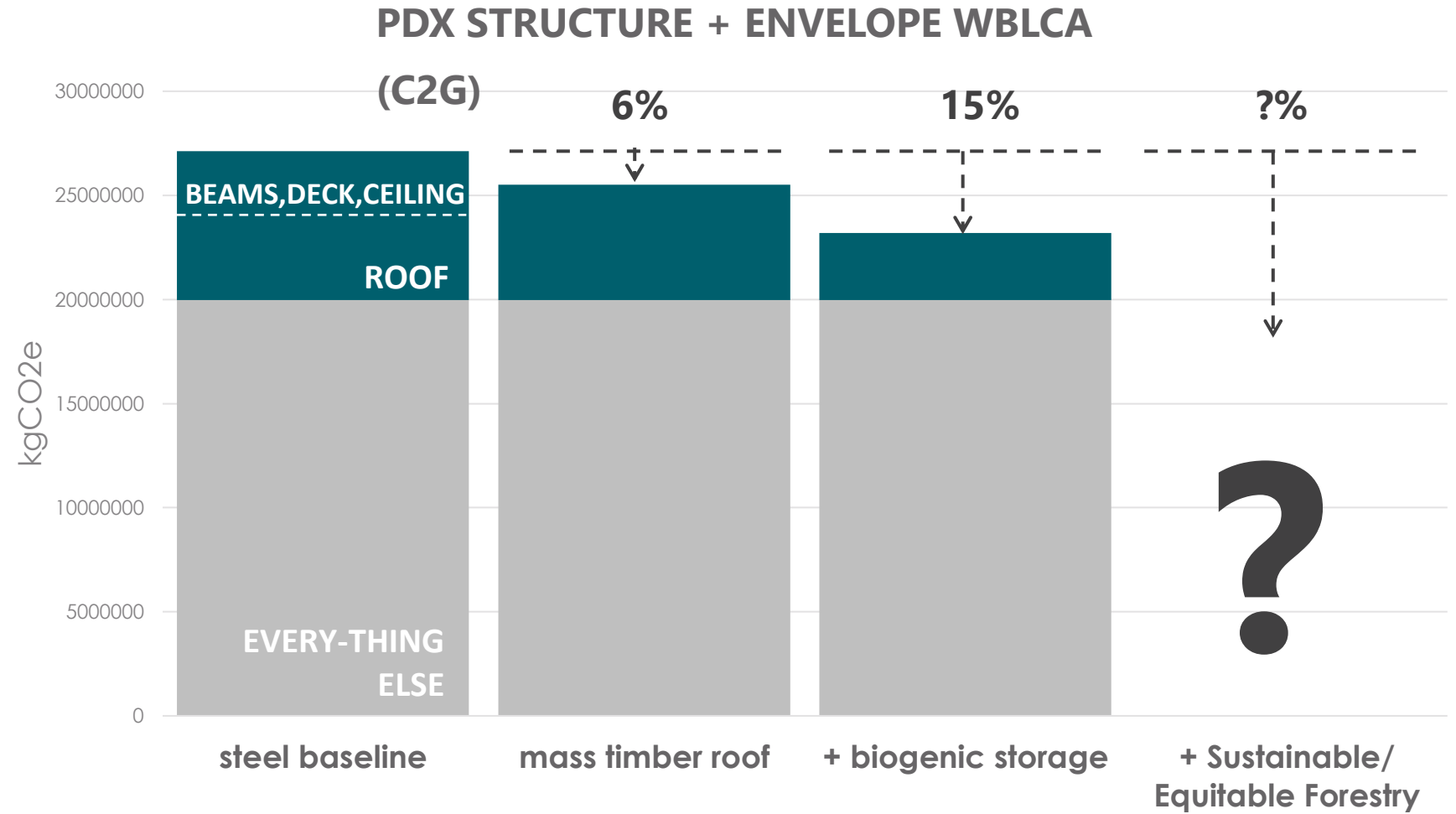


# So What's the Carbon Benefit?

WHOLE BUILDING LCA

## LCA Details:

- Cradle to grave
- Tally
- With and without biogenic carbon storage in the product



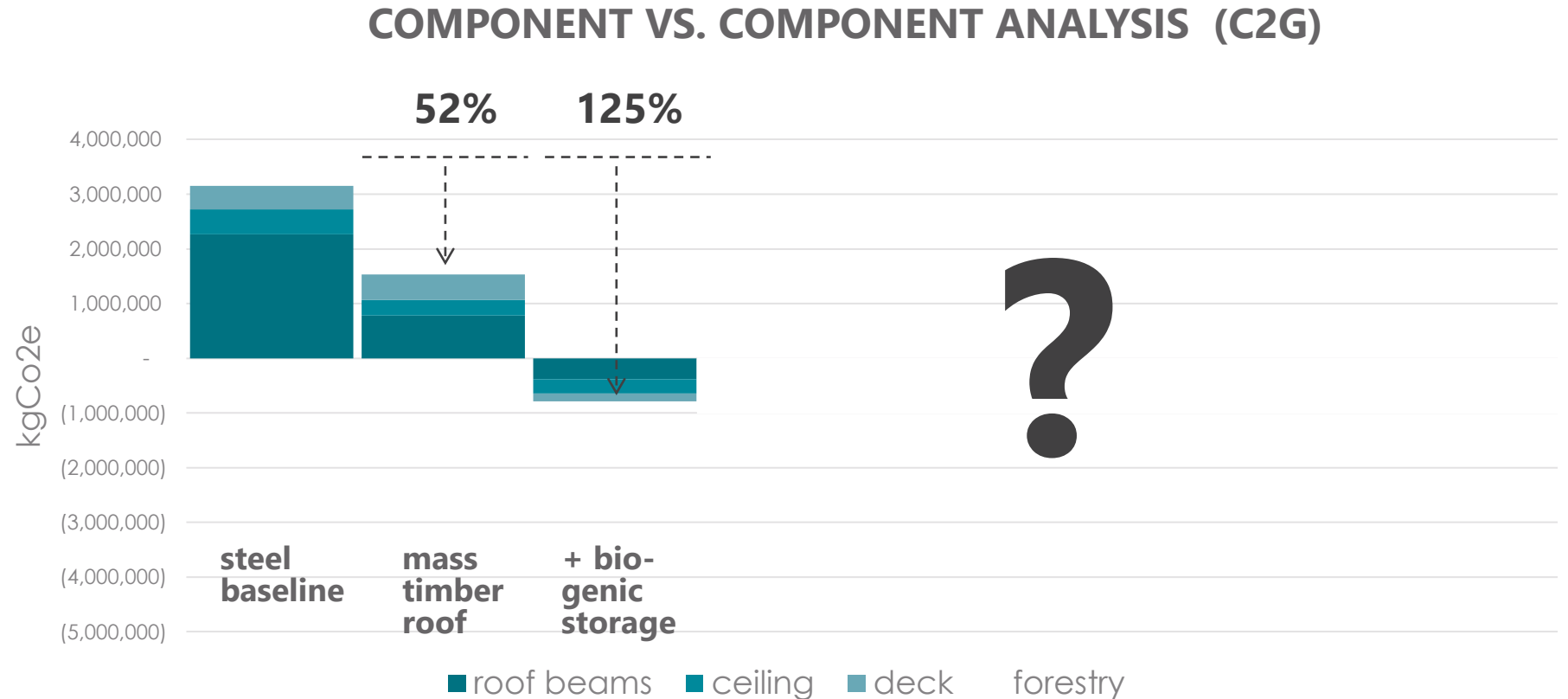


# So What's the Carbon Benefit?

ROOF REPLACEMENT SCOPE

## LCA Details:

- Cradle to grave
- Tally
- With and without biogenic carbon storage in the product





# Observational Data Factors

3 DIFFERENT DRIVERS

## Landowner Type:

Federal

Non-Industry Private

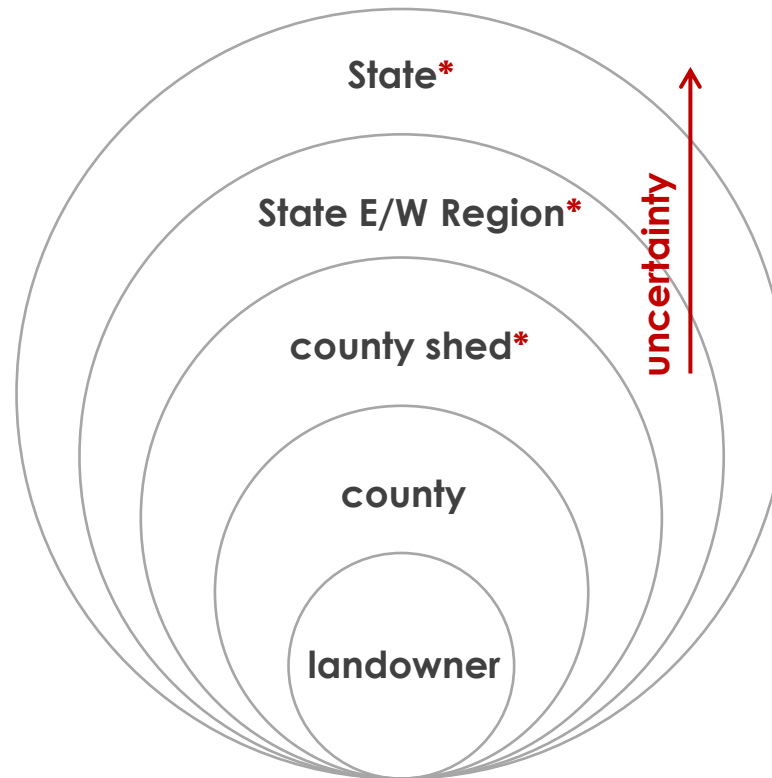
Industry Private

Tribe

State

Local

## Spatial Scale:



**\*Data Comes with distributions**

## Time Period:

**2002-2017**

2002-2007

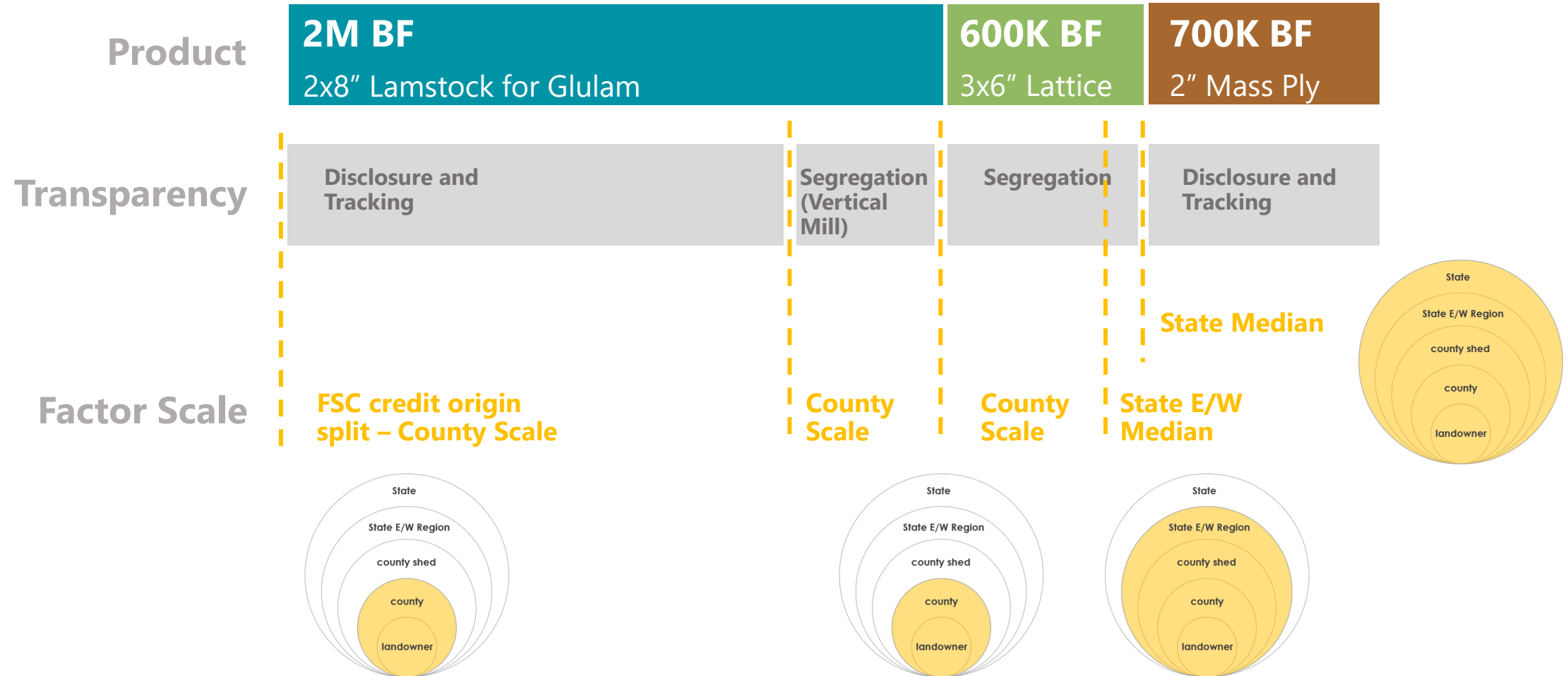
2007-2012

2021-2017



# Observational Data Factors

PDX APPLICATION

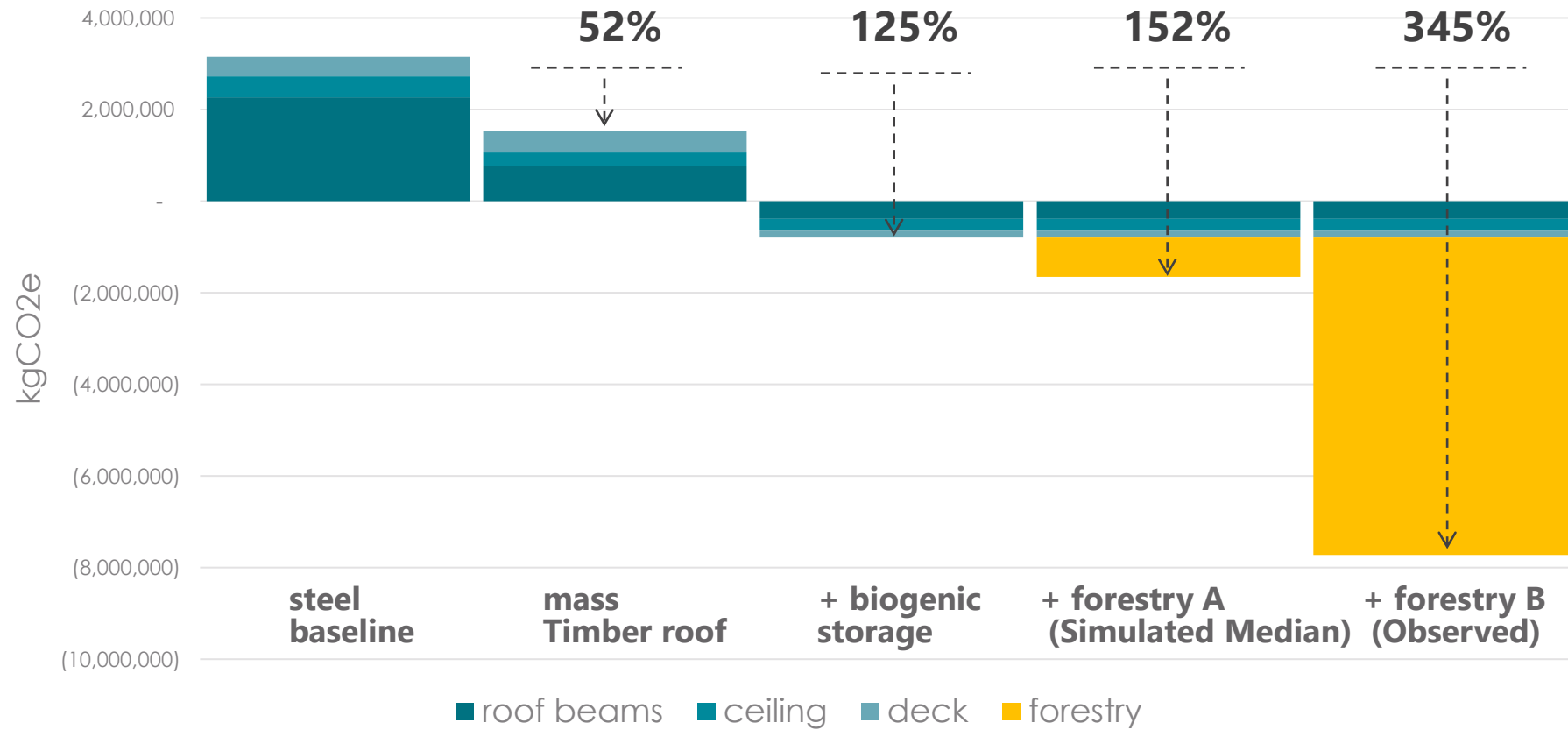




# Observational Data Factors

PDX APPLICATION WITH FOREST CARBON

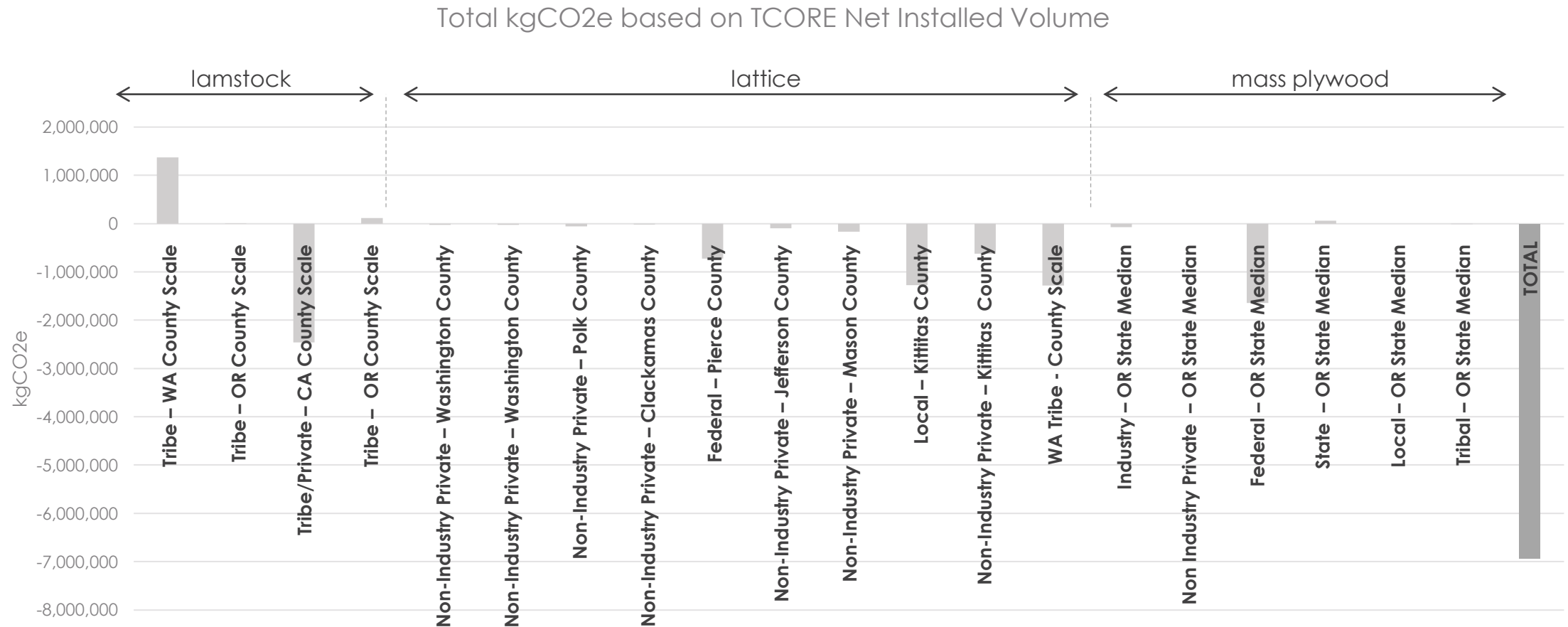
## PDX STRUCTURE + ENVELOPE WBLCA (C2G)





# Observational Data Factor Breakdown

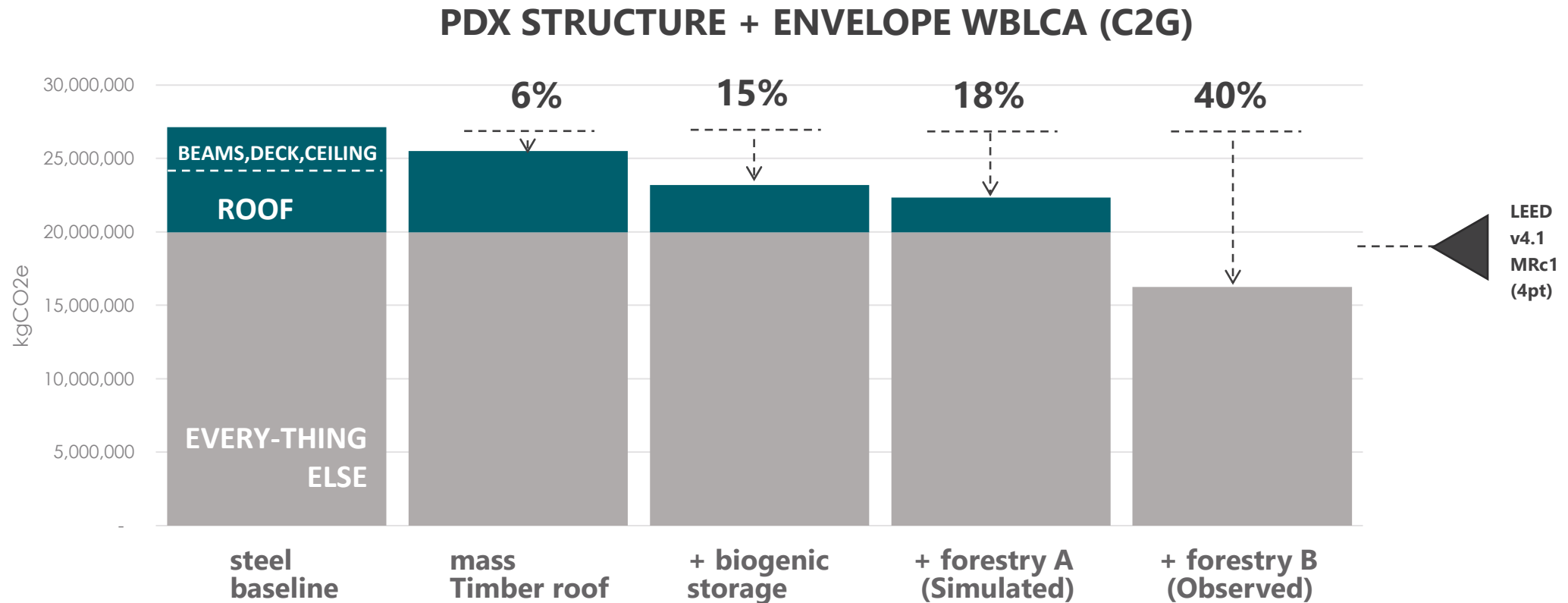
TOTAL GWP BY OVERALL VOLUME





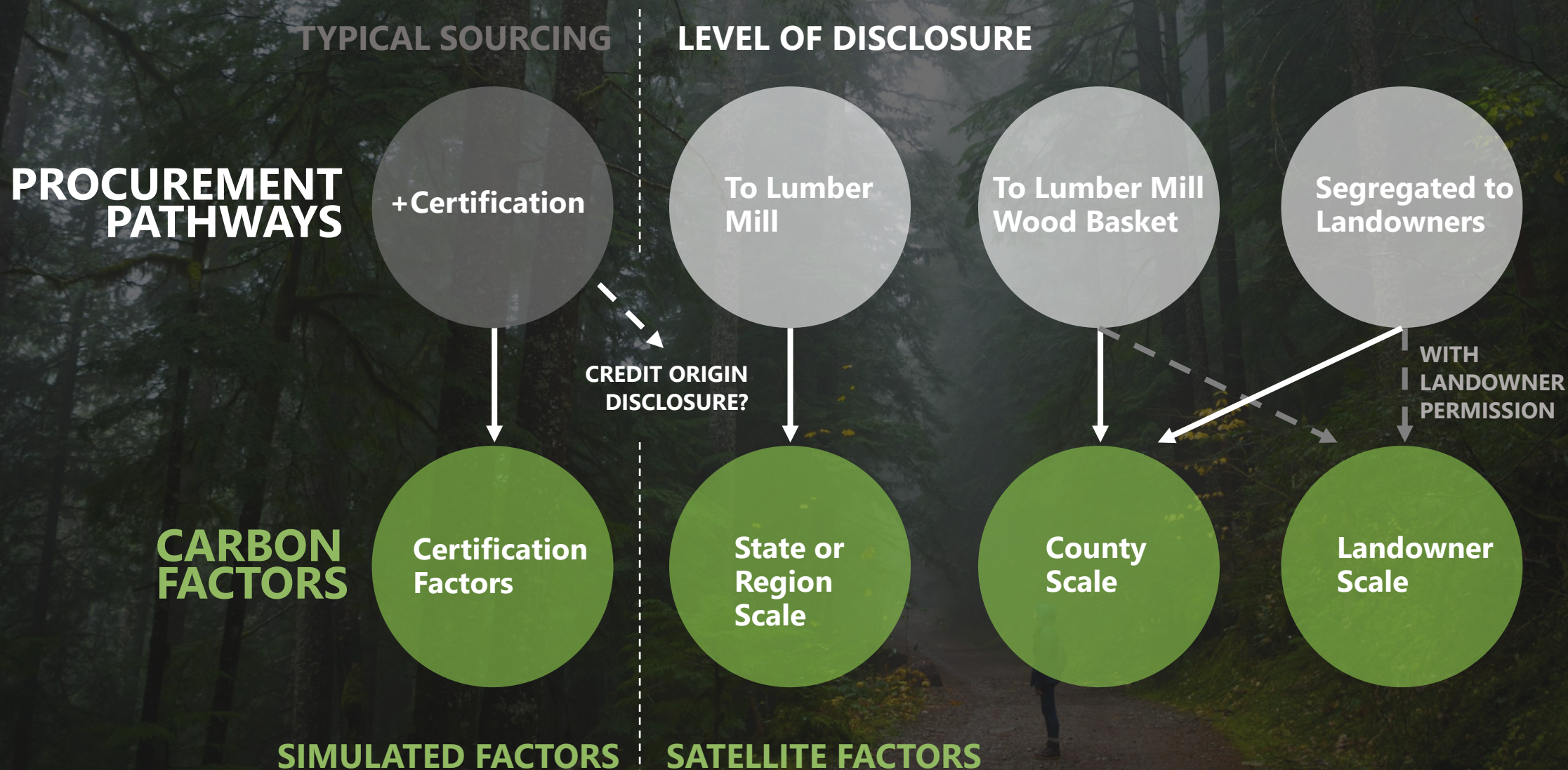
# PDX Mass Timber Impact

ZOOMED BACK OUT TO WHOLE BUILDING LCA





# Scaling this Approach





# UpStream Forestry Carbon & LCA Tool

PUBLIC PILOT AVAILABLE!



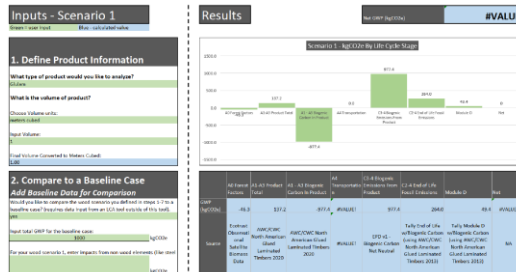
+

=



- Wood product cradle to gate/grave LCA analysis
- Custom end of life scenarios
- Forestry data (coming soon)

**Pilot available!** Download a copy at: [https://www.zgf.com/news\\_post/new-tool-helps-designers-measure-lifecycle-impacts-of-wood/](https://www.zgf.com/news_post/new-tool-helps-designers-measure-lifecycle-impacts-of-wood/)







ZGF

**Thank You!**

[jacob.dunn@zgf.com](mailto:jacob.dunn@zgf.com)

Keep updated at: [PDXNext.com](http://PDXNext.com)

WEC CFFC | 10.27.2021