A Designer’s approach to WBLCA and Mass Timber Benefits

Disclaimer: This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board
Getting Familiar
Our LCAs have been done with:
• Local Universities (UO and PSU) students through collaborations where they get credit.
• Sustainability Consultants
• We now have Tally and we will be hiring an in-house LCA specialist.
Conducted By University of Oregon Professor and grad students under a research grant from the TallWood Design Institute, funded by the USDA Agricultural Research Service.
WBLCA Case Studies

“This series offers insight into the current possibilities and limitations of WBLCA for CLT buildings”

• 5 mass timber buildings of different scales and uses.
• Athena IE and Tally
• Cradle to Grave
• Modules A+C and A+C+D
• Several Impact Categories
Really good background data especially for CLT and WBLCA
WBLCA Case Studies

Explanation of CLT end of life (EOL) assumptions between software

Note: EOL info is based on stick frame buildings, need more data on EOL for mass timber.
WBLCA Case Studies

Ultimately interesting but difficult to draw conclusions to help you make decisions about buildings.

- Global Warming Potential
- Acidification
- Eutrophication
- Photochemical Smog
- Primary Energy Demand
Applying to Projects
In a mass timber building, concrete and steel account for most of the carbon footprint. In this case 84% includes biogenic carbon.
Distance makes a difference
Distance makes a difference

16% increase

Tally Includes Biogenic Carbon

North American Mass Timber
- Steel: 3,117,824 kgCO2eq (28%)
- Concrete: 6,194,827 kgCO2eq (56%)
- Mass Timber: 1,731,652 kgCO2eq (16%)

Austrian Mass Timber
- Steel: 3,117,300 kgCO2eq (24%)
- Concrete: 6,194,827 kgCO2eq (48%)
- Mass Timber: 3,507,776 kgCO2eq (27%)

Includes Biogenic Carbon
Distance makes a difference

16% increase

8% increase

Tally

Steel uses north American profile except for distance.

WOW!
Distance makes a difference? - WBLCA

Design evolved adding significant steel and concrete for seismic

One Click
Distance makes a difference? - WBLCA

Account for transport? (Includes Biogenic Carbon)
Take-Aways

- Great comparative tool
- Every project is different, hard to generalize
- If you haven’t done a lot of this, hire an expert
- Be careful with using results from different LCA software
- Best to compare to a conventional construction baseline
- Appreciate LEED V4.1 encouragement for Baseline Building
- Make sure client knows these aren’t absolute numbers
- Know that details and assumptions will be different
- Ask software developers questions, ask for more regional information
Big Uncertainties

• End of life accuracy for mass timber
• Accounting of forest practices impact, FSC and SFI?
• Relativity of impact categories? GWP vs Eutrophication?
Thank you