Background

The following slides present an analysis of the incremental softwood lumber opportunity in the United States. The analysis looks at the current state of construction of residential and non-residential buildings then poses “what if” scenarios based on targeted market share gains for wood construction.

This analysis is an update from work completed in 2016. It reflects 2019 market shares, a revised perspective on how wood buildings will be constructed, and revised target market shares and is now time based.
Mass Timber Outlook

Levers of Control

- Historical Floor Area
- Housing Starts & Spending
- Wood Share % & Height Class %
- Building Systems (Volume / ft²)
- Wood Volume Estimate
The Impact of Different Building Systems

Base Case Assumptions

Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor.
Incremental Softwood Lumber Consumption (Board Feet)

Summary

Incremental opportunity: +4.9 BBF

Market Characteristics

65% is in non-residential construction

78% is 1-6 stories (residential + non-residential construction)

20% is wood cores (elevator shafts or structural cores)

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.
Incremental Mass Timber (Glulam & Mass Panels) Consumption

Summary

Incremental opportunity: +3.8 BBF

Market Characteristics

60% is in non-residential construction

72% is 1-6 stories (residential + non-residential construction)

Note: Hybrid construction is defined as steel construction with mass timber floor plates. Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.

<table>
<thead>
<tr>
<th>BBF per year</th>
<th>2025 Gain</th>
<th>2030 Gain</th>
<th>2035 Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Timber</td>
<td>0.7</td>
<td>1.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Hybrid</td>
<td>0.1</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>0.8</td>
<td>2.1</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Incremental Softwood Light-Frame Consumption

Summary

Incremental opportunity: +1.1 BBF

Market Characteristics

82% is in non-residential construction

100% is 1-6 stories (residential + non-residential construction)

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.
Market Shares – Non-Residential

Current Share and Target Shares in 2035

Incremental Market Share (2035-Current)

<table>
<thead>
<tr>
<th>Story Count</th>
<th>2035 Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4 Stories – Conv.</td>
<td>48%</td>
</tr>
<tr>
<td>1-4 Stories – Large</td>
<td>17%</td>
</tr>
<tr>
<td>1-4 Stories – Restricted</td>
<td>0%</td>
</tr>
<tr>
<td>5-6 Stories</td>
<td>58%</td>
</tr>
<tr>
<td>7-8 Stories</td>
<td>32%</td>
</tr>
<tr>
<td>9-12 Stories</td>
<td>10%</td>
</tr>
<tr>
<td>13-18 Stories</td>
<td>5%</td>
</tr>
</tbody>
</table>

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.
Market Shares – Residential

Current Share and Target Shares in 2035

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix. All wood use factors include core.
Opportunity accelerates after 2030 as target shares in non-residential increase.
Projection of Mass Timber Consumption by Year

Projections to 2035

**RESIDENTIAL INCREMENTAL OPPORTUNITY**

0.46 - 2.55 BBF

**NON-RESIDENTIAL INCREMENTAL OPPORTUNITY**

0.35 - 3.30 BBF

**TOTAL INCREMENTAL ↑ OF 0.81 - 5.85 BBF**

Projected Incremental Mass Timber Demand (National)

Incremental softwood demand (bfb)

- 0.50
- 1.00
- 1.50
- 2.00
- 2.50
- 3.00
- 3.50

2025 Gain 2030 Gain 2035 Gain

- Residential Base
- Non-Residential Base
- Residential High/Low
- Non-Residential High/Low
Projection of Light-Frame Consumption by Year

Projections to 2035

RESIDENTIAL INCREMENTAL OPPORTUNITY
0.00-0.86 BBF

NON-RESIDENTIAL INCREMENTAL OPPORTUNITY
0.89-2.10 BBF

TOTAL INCREMENTAL ↑
OF 0.89-2.96 BBF
Projection of Carbon Impact by Year

Projections to 2035

TOTAL INCREMENTAL ↑ OF ~8.4 MILLION TONS OF CO₂ AVOIDED

**MODELED OF BASE CASE**

Source: WoodWorks Carbon Calculator Documentation
Mass Timber Outlook

U.S. – Incremental Lumber Demand

Sources:
SLB Mass Timber Demand Outlook, 2020 FP Innovations, 10/20
Mass Timber Outlook Comparison

U.S. – Incremental Lumber Demand

Sources:
SLB Mass Timber Outlook, 2020 FP Innovations, 10/20
Europe CLT Adoption Curve

Source: FEA 2020
Impact of Wood Cores

- **Wood cores** are either elevator shafts or structural cores (stairwells, etc).
- Base case assumes cores in 1-6 story buildings, in 7-8 story buildings from 2025 onwards, and in 9-12 story buildings from 2030 onwards.
- **Opportunity = 1 BBF by 2035.**

2035 Percentage Change

- Residential: 35%
- Non-Residential: 65%
- % Volume Related to Core: 20%

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.
Incremental Softwood Lumber Demand

U.S. – Incremental Demand at Target Market Shares in 2035

**The Opportunity for growth is in the 1 to 12 story built environment.**

Source: 2020 FPInnovations

**Residential Incremental Opportunity:** 1.32 – 2.55 BBF

**Non-Residential Incremental Opportunity:** 2.45 – 4.20 BBF

**Total Incremental:** 3.77 – 6.75 BBF
Estimated Incremental Number of Buildings

U.S. – Incremental Demand at Target Market Shares in 2035

MARKET CHARACTERISTICS

- **84%** is in non-residential construction
- **95%** is 1-6 stories (residential + non-residential construction)
Incremental Softwood Lumber Consumption

U.S. – Incremental Demand at Target Market Shares in 2035

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.
Incremental Mass Timber

Region Summary – Base Case

Note: Outlook assumes 25% of buildings are built with low wood use factors, 50% with medium wood use factors, 10% with a high wood use factor, and 15% with a steel/wood wood use factor. Further descriptions of the wood use factors can be seen in the appendix.
Incremental Light-Frame

Region Summary – Base Case

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If you have any questions, please contact the Softwood Lumber Board at info@softwoodlumberboard.org.