Industry Snapshot

- Primary wood-using industry consumption
- Emerging markets in the spotlight
Wisconsin’s’s Primary Wood-Using Industries
<table>
<thead>
<tr>
<th>Primary Mill Type</th>
<th>2003</th>
<th>2008</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sawmills</td>
<td>227</td>
<td>179</td>
<td>205</td>
</tr>
<tr>
<td>Veneer mills</td>
<td>9</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Pulp mills</td>
<td>13</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Composite mills</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other mills</td>
<td>21</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td><strong>ALL MILLS</strong></td>
<td><strong>275</strong></td>
<td><strong>227</strong></td>
<td><strong>238</strong></td>
</tr>
</tbody>
</table>

*Wisconsin timber industry (2013), Resource Update FS-125*
<table>
<thead>
<tr>
<th>Mill Receipts</th>
<th>2003</th>
<th>2008</th>
<th>2013</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw logs</td>
<td>95</td>
<td>74</td>
<td>93</td>
<td>25.7</td>
</tr>
<tr>
<td>Veneer logs</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>Pulp mills</td>
<td>196</td>
<td>175</td>
<td>163</td>
<td>6.8</td>
</tr>
<tr>
<td>Composite mills</td>
<td>40</td>
<td>30</td>
<td>33</td>
<td>10.0</td>
</tr>
<tr>
<td>Other mills</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>ALL MILLS</strong></td>
<td>346</td>
<td>295</td>
<td>307</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Values in million cubic feet

Wisconsin timber industry (2013), Resource Update FS-125
What products are harvested?

Roundwood Harvested in Wisconsin, 2013

- 53% Pulpwood-Pulp
- 29% Saw logs
- 12% Pulpwood-Panel
- 4% Veneer logs
- 2% Other
Roundwood receipts, Wisconsin

Wisconsin timber industry (2013), Resource Update FS-125
Where does wood come from?

The Great Lakes Forests Region

Railroad Operators
- BNSF
- CN
- HCRR
- CPRS
- LSI
- NMCZ
- WGN
- PGR
- UP
- TR
- All Other Railroads

Economic Features
- Pulp Mills
- Public Log Landings

Source: Wisconsin Department of Transportation

March 2010
Where does wood come from?

Origin of Roundwood, Wisconsin Mills

- Wisconsin: 85%
- Minnesota: 7%
- Michigan: 7%
- Other: 1%
- Canada: 0%

Wisconsin timber industry (2013), Resource Update FS-125
Where does our wood go?

Wisconsin Roundwood Production by Destination, 2013

- Wisconsin: 84%
- Minnesota: 7%
- Michigan: 8%
- Other: 1%
Wisconsin sawmill trends

Wisconsin timber industry (2013), Resource Update FS-125
Sawmills

- Value-added investments/vertical integration
- Growing importance of exports
  - 1 in 4 U.S. hardwood grade boards goes to China
- Industrial product markets
  - *Pallets and railroads move the world*
- Residue markets a concern
Sawmills (con’t)

Where the hardwood lumber volume went, 1999

- Exports: 10.6%
- Cabinets: 11.5%
- Millwork: 17.7%
- Railway ties: 5.3%
- Pallets: 35.4%
- Furniture: 19.5%

Where the hardwood lumber volume went, 2015

- Exports: 17.4%
- Cabinets: 9.3%
- Millwork: 18.6%
- Railway ties: 12.8%
- Pallets: 34.9%
- Furniture: 7.0%

Source: Luppold and Bumgardner
Market share estimates of imports in the U.S.

Consumption = value of shipments + imports − exports
Import share = imports/consumption

Data sources: U.S. Census Bureau; International Trade Admin
Sawmills (con’t)

- Across the wood industry, labor recruitment an ongoing challenge
- Images of the past still linger....
Positive stories in Wisconsin…

Careers in the Wood Industry

Come make a career with us! The wood industry is looking for the next generation of skilled workers. See the following information to learn more about these rewarding opportunities in your community.

Lumber Inspector
Log Scaler

Career Exploration Video
Lumber Inspector Profile
Career Exploration Video
Log Scaler Profile
Wisconsin Pulp Industry
Pulp mill trends

Pulp Mill Roundwood Receipts (Wisconsin)

Million cubic feet


~2 million cords

Softwood  Hardwood
Wisconsin pulp/paper industry

- Wisconsin has been the number one papermaking state in the US for over 60 years

- The pulp and paper industry serves diverse markets/uses, majority of the industry is stable
  - Printing & Writing
  - Packaging
  - Hygienic papers
  - Specialty
Global paper and paperboard market,
million metric tons\(^1\)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Tissue</td>
<td>3.9</td>
<td>3.5</td>
</tr>
<tr>
<td>Newsprint</td>
<td>1.1</td>
<td>−5.6</td>
</tr>
<tr>
<td>Printing &amp; writing</td>
<td>3.2</td>
<td>−1.5</td>
</tr>
<tr>
<td>Cartonboard</td>
<td>3.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Containerboard</td>
<td>4.3</td>
<td>2.5</td>
</tr>
</tbody>
</table>

\(^1\)Metric tons: 1 metric ton = 2,205 pounds.
\(^2\)Compound annual growth rate.
\(^3\)Per annum.

McKinsey & Company | Source: RISI
Fig. 1 – Observed newsprint consumption, printing and writing paper consumption, and Internet adoption for OECD and non-OECD regions, 1980-2013.
In general, pulpwood markets are tight.
Changes in species needs and demand
- Softwood example

Reductions in capacity impact entire supply chain.
Companies positioning into stable grades (Maine example)
Wisconsin is faring better than other states.
Some other positives going forward....
Mass Timber

Photo: USDA Forest Service Forest Products Lab
Mass timber

Mass timber is a building system that uses panelized solid wood construction.

Examples

- Glued-Laminated Timber (Glulam)
- Nail-Laminated Timber (NLT)
- Cross-Laminated Timber (CLT)
LIGHT WOOD-FRAME   POST + BEAM   MASS TIMBER

Photo: ReThink Wood
Glue-Laminated Timber (Glulam)

Photo: John Stamets

Photo: CLT Handbook
Nail-Laminated Timber (NLT)
Cross-Laminated Timber (CLT)
First CLT Structure in US

Franklin, West Virginia
Promega Corporation—Madison, WI
Why the push for mass timber?

- Wood is strong and durable
Why the push for mass timber?

- Efficiency in construction
- Cost-competitive
- Less energy/resource intensive to manufacture
- Fire/seismic tolerance
- Energy efficiency
- Aesthetics and health benefits
- Renewable!
North American Manufacturers:
- Nordic Structures—Quebec
- Structurelam—British Columbia
- SmartLam—Whitefish, MT
- SmartLam—Columbia Falls, MT
- D.R. Johnson—Riddle, OR
- Sterling Lumber—Phoenix, IL
- *International Beams*—Alabama
- *SmartLam*—Maine
- *LignaTerra*—Maine
A local project…“DLT”
Products Resembling Mass Timber

Photo: Sentinel Structures, River Road Bridge, Lake Tomahawk

Photo: Smart Lam

Photo: Bell Lumber & Pole
Timber bridges

Photo: James Wacker, USDA FPL.

Photo: AASHTOTransportation.org
And a few others… a little farther out
Super Wood

“UMD Researchers Create Super Wood Stronger Than Most Metals”
Energy-Harvesting Wood Floor

Move over, solar: The next big renewable energy source could be at our feet

Revolutionary floors made from waste wood pulp generate clean energy
Biodegradable computer chips made almost entirely from wood
Look out, glass – Scientists develop "transparent wood"

Ben Coxworth | March 30th, 2016
Questions?
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