Manufacturing and the Forest Products Industry
Speaker Background

Kent Wheiler

- Associate Professor, University of Washington, School of Environmental and Forest Sciences
- Director, Center for International Trade in Forest Products
  - Ph.D. in Marketing, University of Texas at Austin
  - 33 years forestry industry experience, including 26 years with Weyerhaeuser Company
  - Career focus has been predominantly market development and plantation operations
  - Lived and worked in Tokyo for six years, Shanghai four years, and Dubai one year
  - Managed timber and bamboo plantations in China, Indonesia, Ghana, South Africa and Nicaragua
“Peace is a natural effect of trade.”
—Charles de Montesquieu
We believe that using sustainably sourced wood is good for the environment and for humanity.

The Center for International Trade in Forest Products.
Forest Certification

- Programme for the Endorsement of Forest Certification (PEFC)
  - Umbrella organization that endorses ~50 national forest certification systems developed through multi-stakeholder processes and tailored to local priorities and conditions.
  - For example, in the U.S. – The Sustainable Forestry Initiative (SFI)

- Forest Stewardship Council (FSC)
  - In the U.S., many small private forestland owners manage sustainably and are also strictly regulated, but do not certify their forests simply due to economic considerations.
PEFC CHAIN OF CUSTODY CERTIFICATION
Here’s How American Uses Its Land (Merrill and Leatherby 2018)

Who owns America's forests?

Volume of roundwood harvested, by region, 2016

Industry is Located Where the Trees Are

- Most wood products produced in the U.S. depend on private timber
- Private timber owners manage their land on a variety of objectives, but those prioritizing industrial production prefer:
  - Climate conditions conducive to growth
  - Geography conducive to low cost harvesting
  - A variety of potential buyers within an economic haul distance

Source: U.S. Environmental Protection Agency (2011)
(http://www.epa.gov/sectors/sectorinfo/sectorprofiles/forest/map.html)
Wood Products Taxonomy

Logs

Saw

Lumber
- Softwood, Hardwood
- Green, Dry
- Rough, Surfaced
- Machine Stress Rated (MSR)

Peel/Slice

Glulam
- Cross Laminated Timber
- Finger Jointed
- Edge Glued
- Pressure Treated
- Heat Treated

Veneer

Plywood

Laminated Veneer Lumber

Chip Flake/Grind

Pulp -- Paper, Packaging, Sanitary Products
- Oriented Strand Board
- Particleboard
- Medium Density Fiberboard (MDF)
- Hardboard
- Pellets
- Energy
- Etc.

For example:
I-Beams
Combination of a lumber or LVL flange with plywood or OSB web.

Etc.
Wood Products Taxonomy

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- Saw
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  - Veneer
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Production Waste

Slicing

Peeling

Sawing

http://www.metz-furniere.de/uberfurng.htm

https://cdn.newsapi.com.au
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Wood Carbon Seminars, Kent Wheiler
Wood Products Taxonomy

- Logs
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Production Waste
Wood Products Taxonomy

- Logs
- Chip/Flake/Grind
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Wood Pellets

Oriented Strand Board (OSB)

Particleboard (low density fiberboard)
Wood Products Taxonomy

- **Logs**
  - Saw
  - Lumber
    - Softwood
    - Dry
    - Surfaced
  - Peel/Slice
  - Veneer
  - Production Waste
  - Chip Flake Grind
  - Production Waste
- **Plywood**
  - Laminated Veneer Lumber
  - Finger Jointed
- **Composites**
  - For example:
    - I-Beams
    - Combination of a lumber or LVL flange with plywood or OSB web

**Production Waste**

**For example:**
- Plywood
- Composites
- I-Beams
The forest products industry is the largest producer and user of energy from biomass of any industrial sector.

The creation and use of biomass energy in wood products mills is integral to the manufacture of lumber, wood panels and engineered wood products.

Using forest and mill residuals for power reduces reliance on fossil fuels and the accompanying greenhouse gas emissions.

Wood Utilization

- Lumber processing yields have improved tremendously, from 35-39% in the 1940s to more than 52% today.

- Wood science technology has developed many innovative products to use sawmill and veneer mill waste; now accounting for 36% of the log.

- Waste that cannot be used as a raw material for other products is burned to provide heat for kilns and boilers, and electricity for operations.

- The entire log is utilized.

90.0% of U.S. softwood lumber imports are from Canada; amounting to 49.7% of Canada’s total production.

Another 7.4% of imports are from Europe, Chile, and New Zealand... countries with good forestry practices and a high proportion of certified, sustainable suppliers.

54% of U.S. softwood lumber production is in the South; 41% in the West.
U.S. Oriented Strand Board (OSB) and Softwood Plywood in 2018

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>OSB Production</td>
<td>15,129</td>
</tr>
<tr>
<td>Plywood Production</td>
<td>8,869</td>
</tr>
<tr>
<td>OSB Imports</td>
<td>6,234</td>
</tr>
<tr>
<td>Plywood Imports</td>
<td>2,600</td>
</tr>
<tr>
<td>OSB Exports</td>
<td>202</td>
</tr>
</tbody>
</table>

Source: APA, The Engineered Wood Association

- 82% of U.S. OSB and 62% of U.S. plywood production is in the South
- 99.2% of U.S. OSB imports are from Canada; amounting to 73.7% of Canada’s total production.

U.S. softwood plywood imports:
- Brazil: 34%
- China: 30%
- Chile: 20%
- Canada: 14%
- Other: 2%
U.S. Softwood Lumber Consumption by End Use in 2018
Source: Western Wood Products Association

<table>
<thead>
<tr>
<th>End Use or Product</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Single-Family Home</td>
<td>100</td>
</tr>
<tr>
<td>New Multi-Family Apartment Building</td>
<td>70</td>
</tr>
<tr>
<td>Residential Repair &amp; Remodel</td>
<td>30</td>
</tr>
<tr>
<td>Furniture</td>
<td>30</td>
</tr>
<tr>
<td>Paper</td>
<td>3</td>
</tr>
</tbody>
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The Southern Region accounts for half of U.S. housing starts.

Ten years after the housing crash of 2007-2009, we are not yet back to the same level of construction.

Canadian owned-capacity has recently migrated to the U.S. South.

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**New Housing Starts by Region**

<table>
<thead>
<tr>
<th>Total Regional Starts*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total NE</td>
<td>133,000</td>
</tr>
<tr>
<td>Total MW</td>
<td>254,000</td>
</tr>
<tr>
<td>Total S</td>
<td>810,000</td>
</tr>
<tr>
<td>Total W</td>
<td>411,000</td>
</tr>
</tbody>
</table>

*Source: [Virginia Tech & USFS Housing Commentary](https://www.woodproducts.sbio.vt.edu/housing-report/casa-2019-12a-december-main.pdf)*

- SAAR: in thousands
- NE = Northeast, MW = Midwest, S = South, W = West
- US DOC does not report 2 to 4 multi-family starts directly, this is an estimation (Total starts – (SF + ≥ 5 MF starts)).
- Percentage of total starts.