

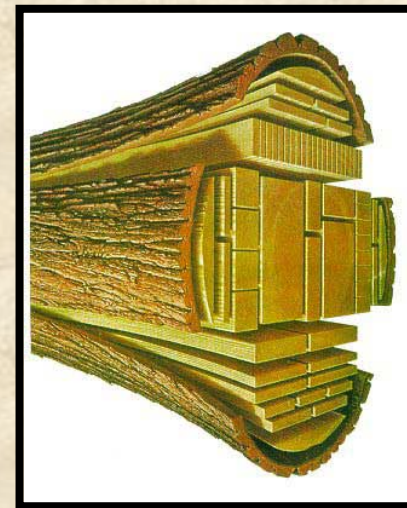
The Rest of the Story: When timber becomes wood products



Brian Bond

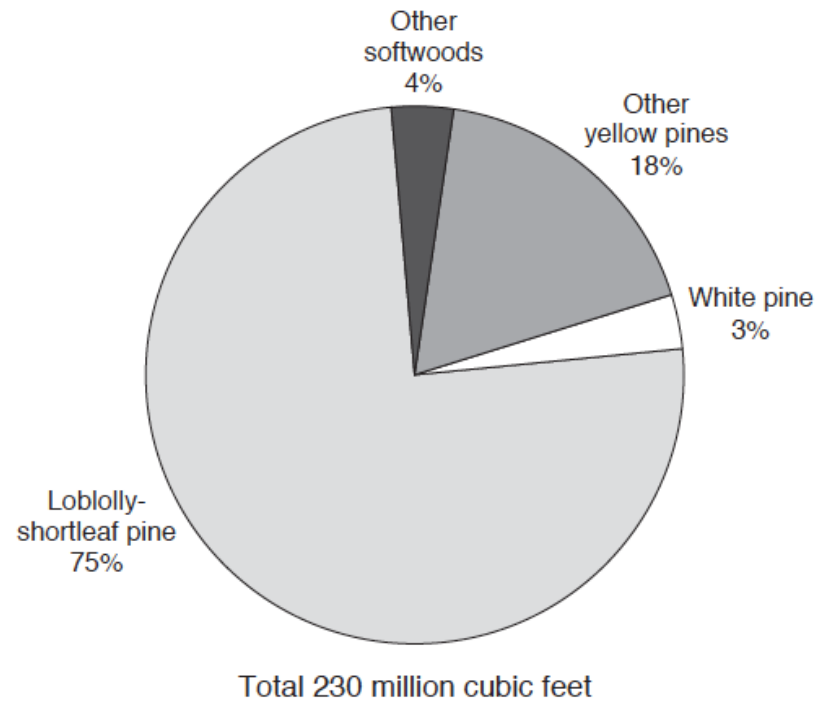
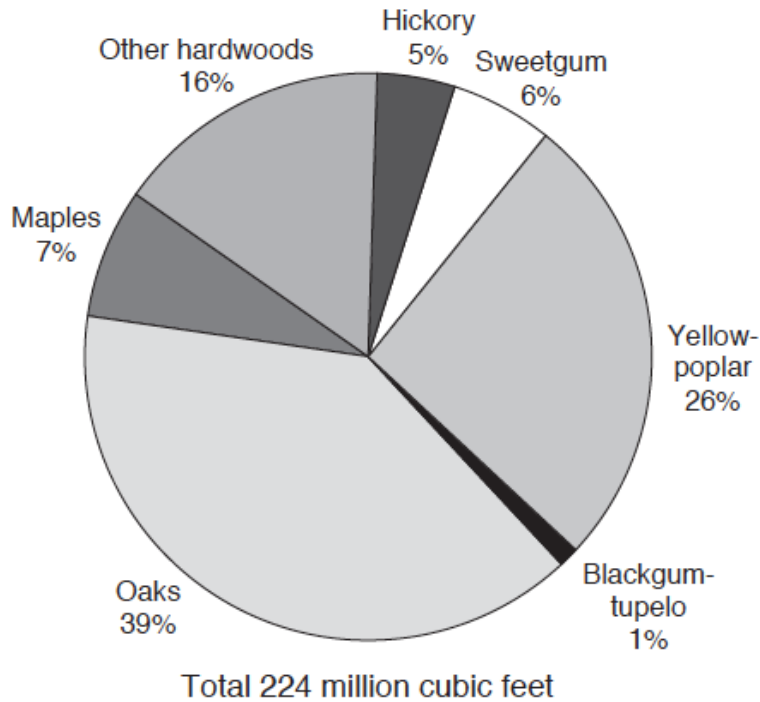
Outline

- What comes off the property
- What they do with it
 - What does Virginia's industry look like
- Changes and the future



What Comes Off the Land?

Approximately 66% hardwoods, 22% of pine, and 12% of the oak-pine type



What Comes Off the Land?

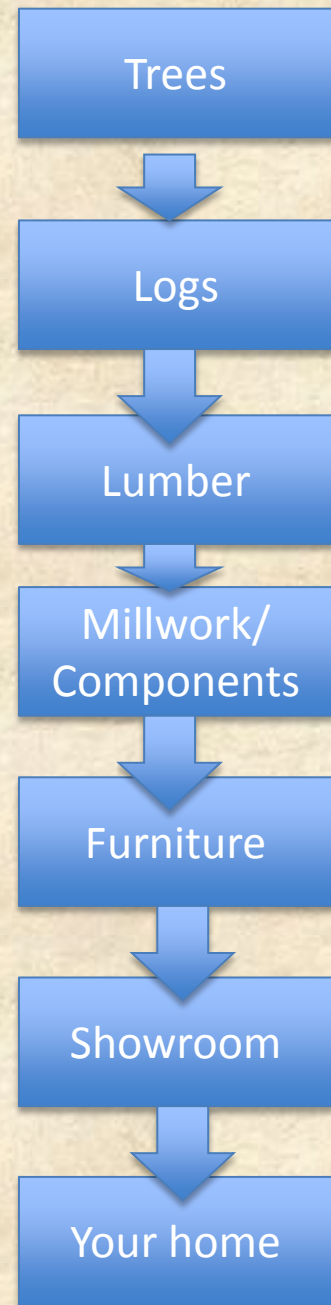
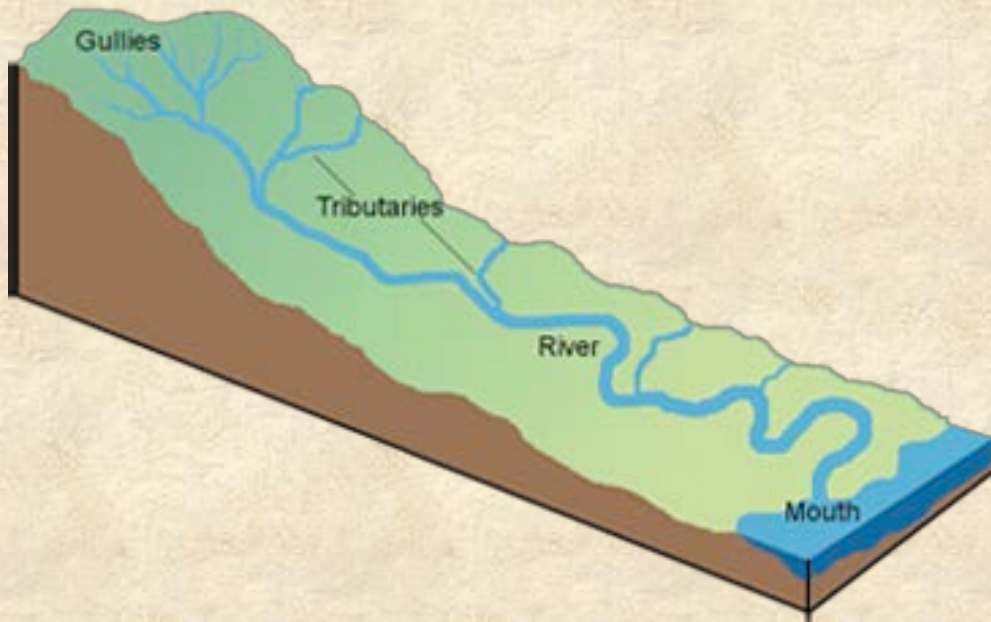
- Products point of view
 - Species?
 - Quality?
 - Volume?



Variation



Value Stream



What Comes Out of the Woods

- Merchandising - separating logs according to the products to be derived from the log.

1. Pulpwood - small, low-quality logs
2. Sawlogs - intermediate size, medium-quality logs
3. Ply bolts or veneer logs - large, high quality logs

Value

Low



High



What Can Be Merchandised?

- Pulpwood
- OSB logs
- Pallet logs
- Poles
- Tie Logs
- Chip-n-saw
- Sawlogs
 - Export
 - Stud
 - Shop
 - Grade
 - Ties
- Plywood
- Veneer
 - High quality sliced
 - Rotary peeled
 - Engineered peeled



Average Delivered Prices FOB Mill for Virginia

Product	\$/ Ton	\$/per MBF (Doyle Scale)
Pine Sawtimber	48.48	484
Oak Sawtimber	52.56	460
Mixed Hardwood Sawtimber	38.17	334
Pine Chip-n-saw	40.10	400
Pine Ply logs	61.00	608
Pine Power Poles	78.00	778
Pine Pulpwood	25.98	--
Hardwood Pulpwood	21.16	--

Hardwood Veneer

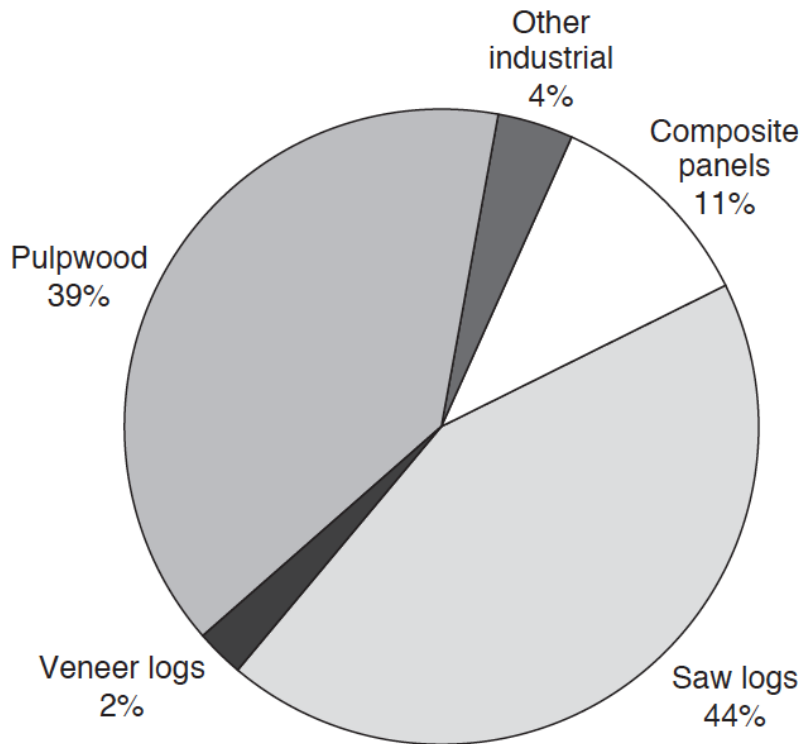
Specie	Common Value \$/MBF
Cherry	1,000-6,000
Hard maple	1,000-3,000
White Oak	600-1,800
Red Oak	700-2,000
Walnut	1,000-6,000
Yellow-poplar	400-1,500



Value of raw material

- The value of the raw material (logs) is dependent on the:
 - Quality
 - Volume
 - Cost of conversion
 - The cost of conversion is often dependant on log volume and grade
- Potential Use/Market

Roundwood Production by Product



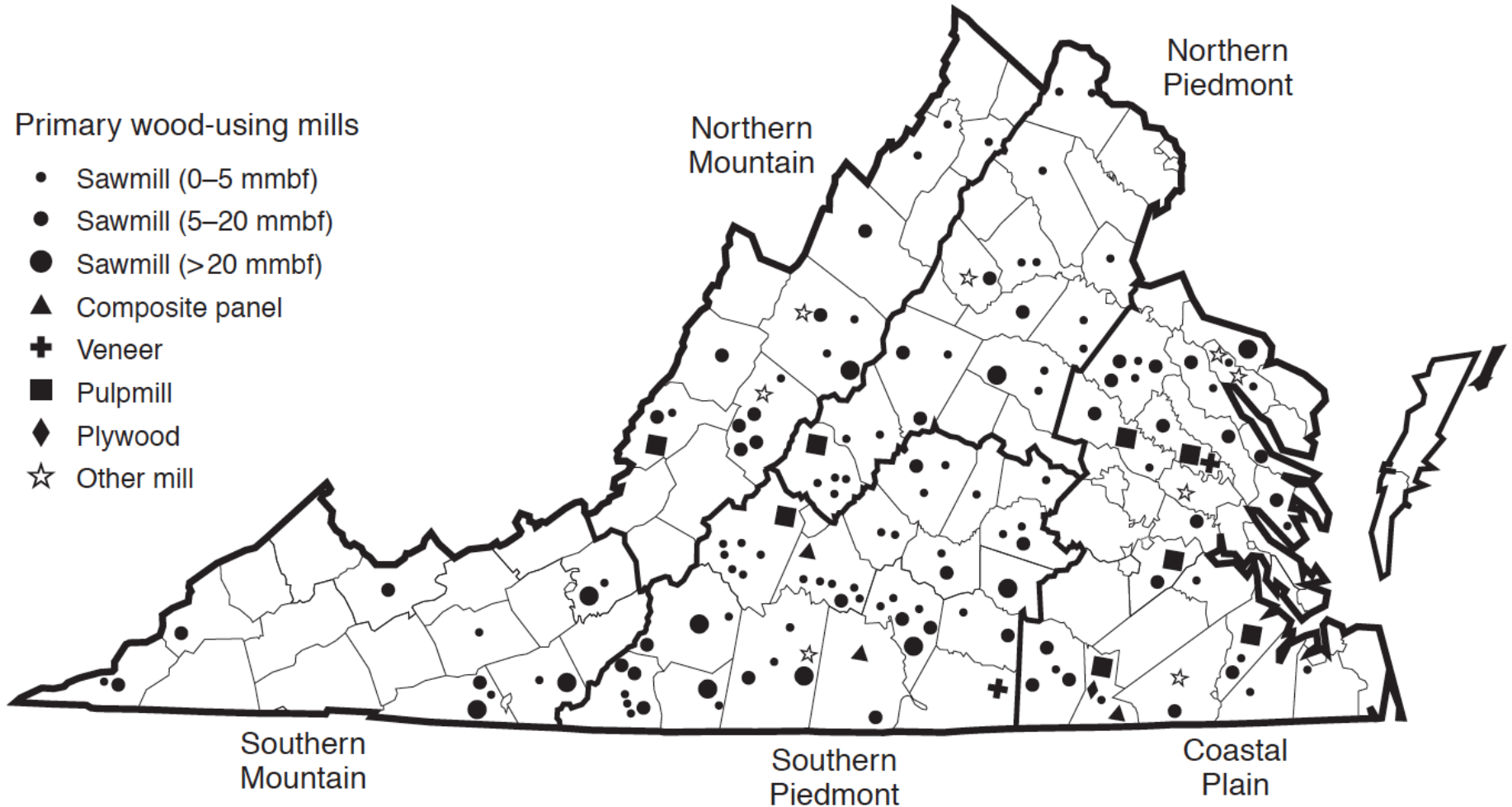
Total 402 million cubic feet

- Softwood
 - 454.4 million board feet, International 1/4-inch rule
 - 20% reduction from 2007
- Hardwood
 - 559.6 million board feet, International 1/4-inch rule
 - 35% reduction from 2007

Forest Products Industry

Primary wood-using mills

- Sawmill (0–5 mmbf)
- Sawmill (5–20 mmbf)
- Sawmill (>20 mmbf)
- ▲ Composite panel
- + Veneer
- Pulpmill
- ◆ Plywood
- ☆ Other mill



Virginia Forest Products Industry

- The forest products industry is a significant part of the economy of the Commonwealth.
 - The harvesting, processing and marketing of forest products generates over \$23.4 billion annually to the Virginia economy.
- Landowners receive \$350 million annually from the sale of their timber

Forest Products Industry

- **Employment**

- An estimated 144,000 people are employed in the primary and secondary manufacturing, harvesting, transportation and marketing of forest products.
- 4.1% of the state's workforce.

Virginia Forest Products Industry

- Pulp & paper Mills - **6**
- Paper Products - **100**
- Particleboard, etc. - **10**
- Veneer & Plywood - **4**
- Sawmills -**140**
- Treating Plants - **27**
- Pallet Plants - **55**
- Furniture Plants - **65**
- Millwork Plants - **55**
- Pellet Mills-**8**



Pulp and Paper

- Six Mills in VA
 - Largest wood users in the state
 - Largest wood industry employers in VA
 - Use lowest quality of wood



OSB

- Raw Material
 - Logs – low quality
 - Specific species mix
 - Flakes, glue, wax



Veneer and Plywood

- Hardwood and Softwood

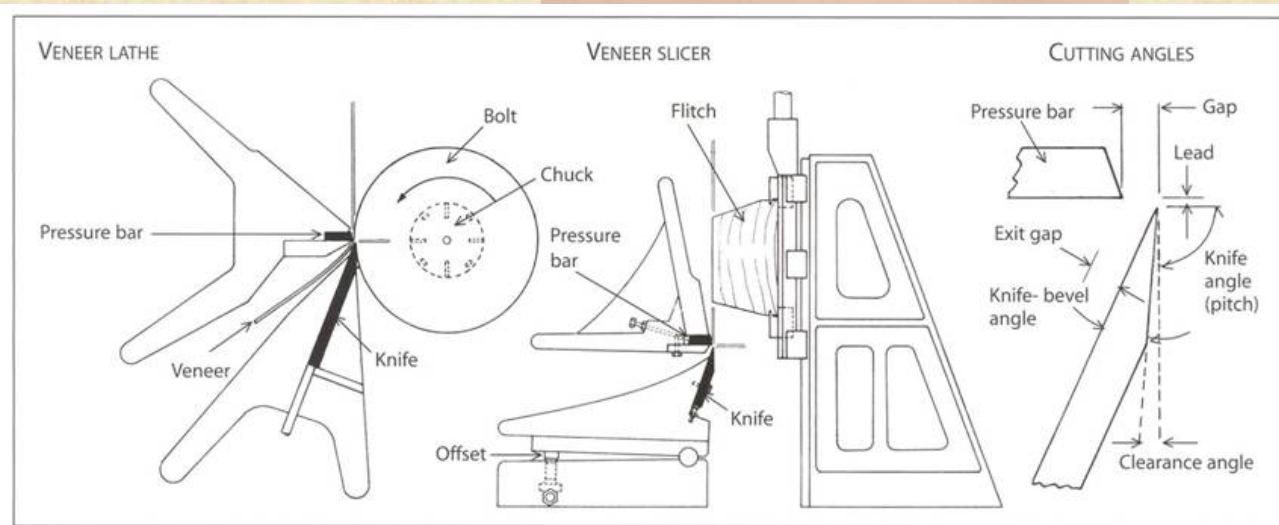
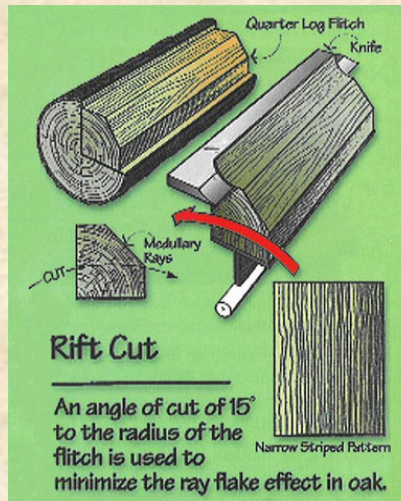
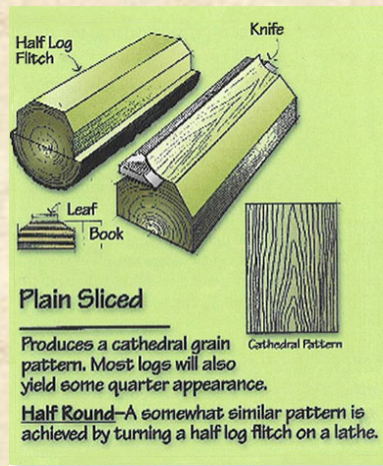
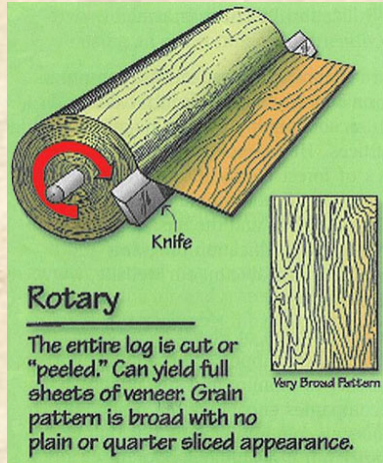


Figure 14.2 • Cutting plywood veneers. Softwoods for plywood are rotary-cut with a veneer lathe, while hardwood veneers are typically sliced, either vertically (center) or horizontally. The illustration at right shows the relationships between nosebar and knife, which determine the quality of the veneer.

Veneer cutting to produce specific “grain patterns”



Lumber!

Annual Production

16 million acres of forestland

Hardwood Lumber	740 million board feet
Softwood Lumber	488 million board feet

Hardwoods

White Oak	
Red Oak	
Tulipwood	54%
Hickory	
Maple	9%
Other Hardwoods	12%
<hr/>	
TOTAL	75%

Softwoods

Yellow Pines	
Eastern White Pine	
Eastern Hemlock	
Spruce, Fir, Cypress, Cedar	
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TOTAL	25%

Hardwoods 75%



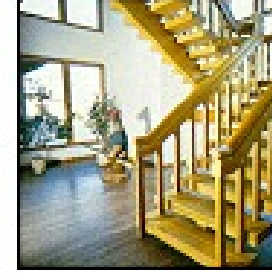
Softwoods 25%

Sawmill Industry Changes



- Loss of 26 mills
- 56 mills account for 83% of production
- 82 % retained in VA

Lumber Consumption- U.S.



Who uses all that lumber?

60 % new housing

7% non-residential construction

12 % manufacturing

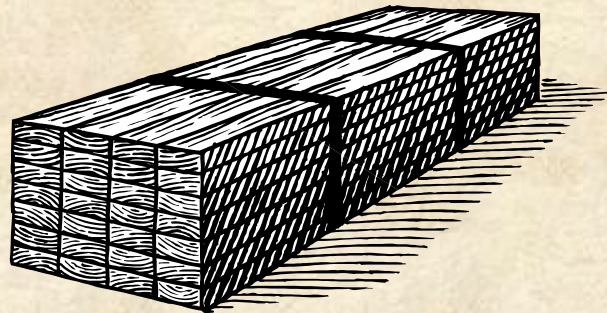
10 % pallets, containers, dunnage

11% other

Importance of Construction Ind.

– Construction

- Average single-family home uses 14,400 board feet of lumber
- 12,800 square feet of structural panels
- 2,300 square feet of non-structural panels



Softwood Lumber

- Classified as:
 - Boards
 - Less than 2 inches nominal thickness
 - Dimension
 - 2 to 5 inches in nominal thickness
 - Timbers
 - 5 inches or thicker



Pine Lumber

- Southern Yellow Pine
 - Trusses
 - Treated wood
- White Pine
 - Log homes



Hardwood Lumber

- Principle Uses:

- High grades

- Furniture, flooring, millwork, cabinets, case goods.

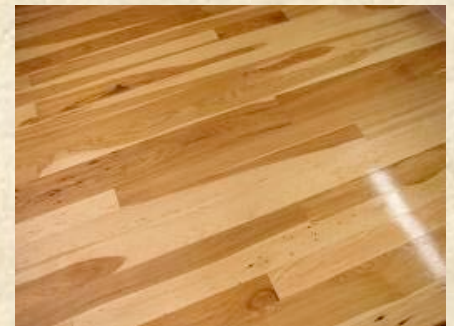
- Lower grades

- Pallets

- 30% of total hardwood lumber production!

- Ties

- 25 Million annually



The Output Problem

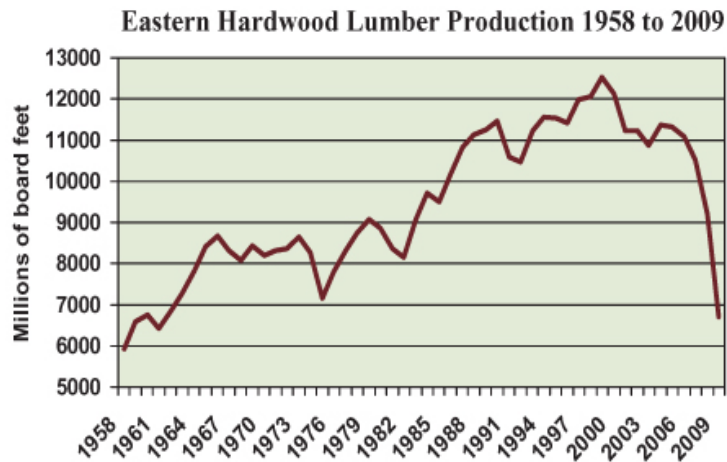
Red oak log, 14 inch diameter, 10 foot log.

80 bf International 1/4 inch rule

Lumber Volume by Grade

Log Grade	FAS	1C	2C	3C	Total
1	33.35	17.61	7.19	3.96	62.10
2	14.78	19.08	11.51	6.98	52.37
3	2.18	12.89	15.15	12.80	43.02

Hardwood Trends



Graph 1.

The Percent of Hardwood Lumber Consumed for Industrial and Appearance Applications

User group	1972	1982	1992	2002	Today
Industrial	32	40	34	37	60
Appearance	68	60	66	63	40

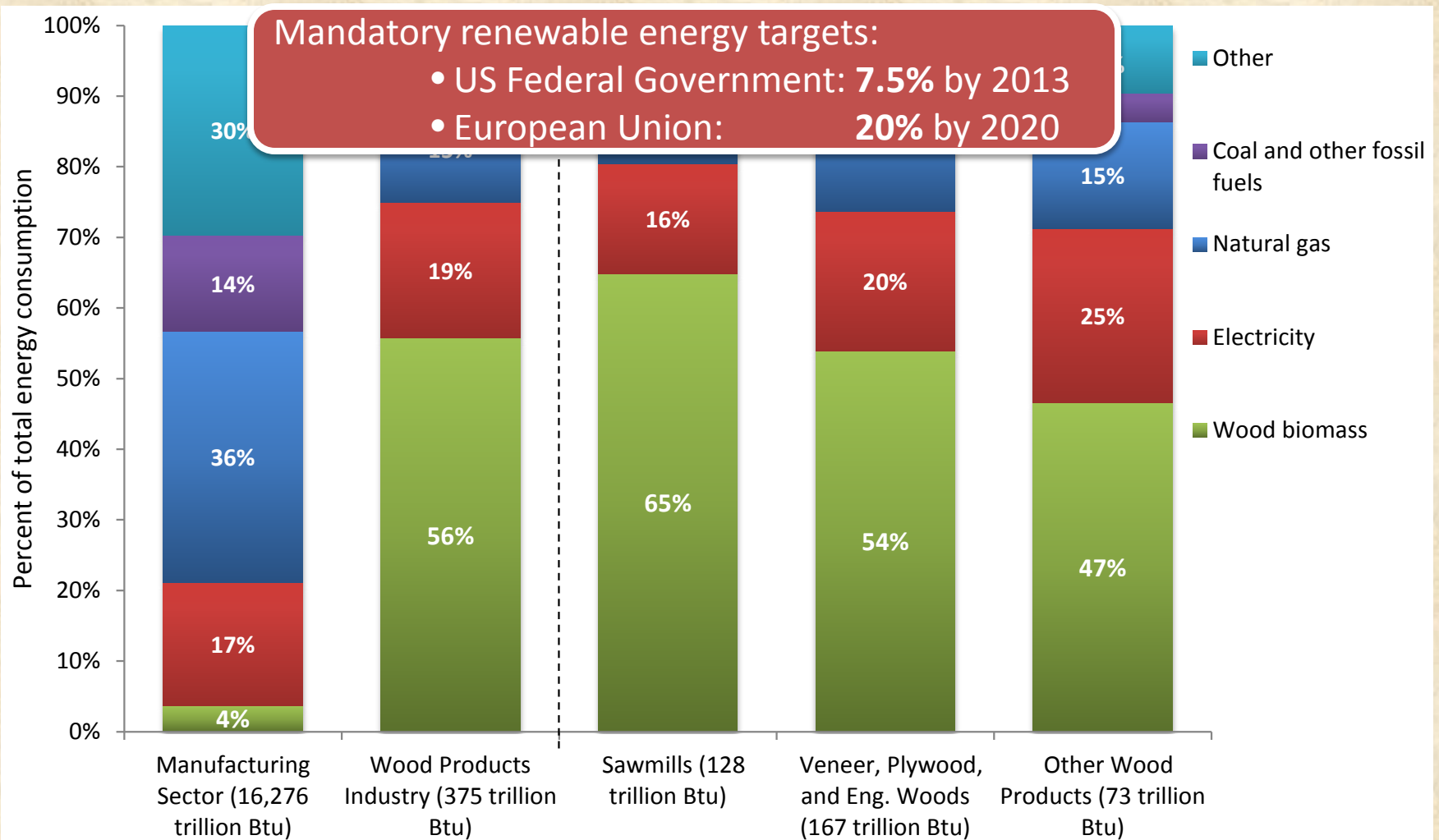
Table 2.

Residue/Byproducts

- Forest products industry utilizes its own manufacturing "by-products"
- When a log is converted to lumber, sawdust, bark, chips and slabs are produced
 - nearly 100% utilized



Leader in Biomass Utilization



Source: 2002 Manufacturing Energy Consumption Survey, Energy Information Administration

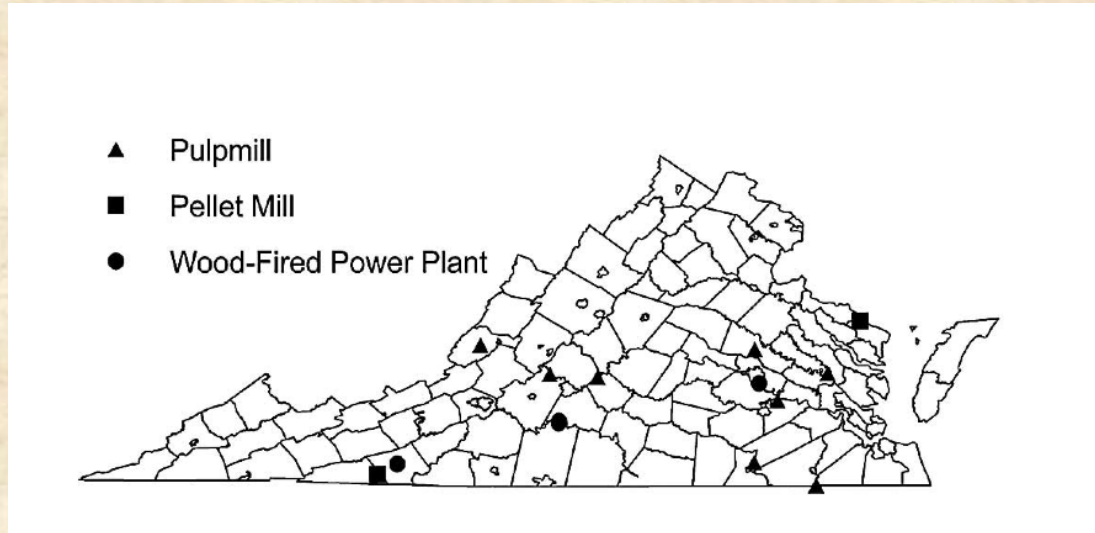
* Other includes net steam (sum of purchases, generation from renewables, and transfers), and others used to produce heat and power

Products from Residue

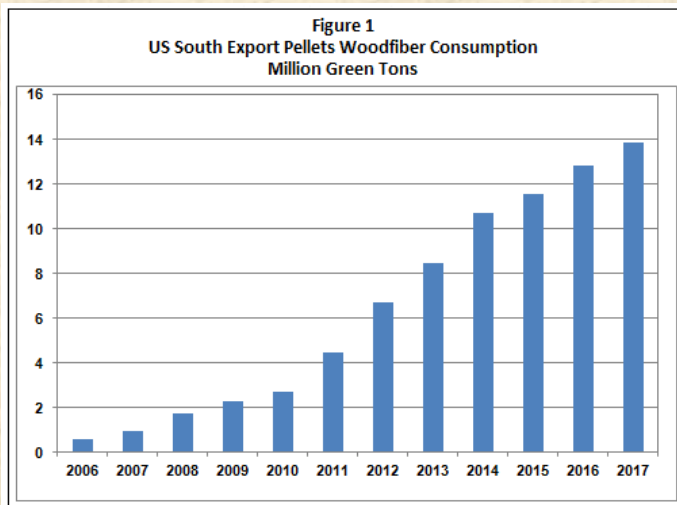
Particle Board



Wood Energy



Four wood pellet mills, and four wood-burning power plants



Exports

- Virginia has been exporting forest products since the early 1600s
 - Jamestown



Exports

- Saw logs
- Veneer logs
- Softwood lumber
- Hardwood lumber and veneers
- Hardwood flooring
- Hardwood furniture dimension
- Molding and other millwork
- Laminated lumber
- Preservative-treated lumber
- Plywood
- Furniture
- Pulp
- Specialty papers
- Newsprint and paperboard
- Wood chips
- Pellets



VA Exports

Description	U.S. Dollar			% Change
	2010	2011	2012	2012/2011
Wood	251,063,838	247,619,967	289,238,483	16.81
Lumber	110,548,892	121,213,619	145,693,899	20.2
Fuel In Log; Chips/Etc	873,707	3,819,813	34,691,069	808.19
Veneer Sheet	34,030,848	29,011,185	25,545,606	-11.95
Fibrbrd Of Wd/Ot Lign	5,554,210	8,465,089	9,682,136	14.38
Pack/Etc;Pallet/Collr	4,905,344	3,539,226	5,862,766	65.65
Particle+Simlr Board	1,030,818	775,448	3,224,478	315.82
Densfd Blk/Plt/Str/Pr	226,783	175,974	389,945	121.59

Future?

- Low quality small diameter
 - Pulp and paper
 - Energy
- Industrial wood
 - Pallets and Ties
- Lumber
 - Furniture, flooring, treated wood, etc.

