"Current Wood Supply & Consumption"
Forest Resource Development Conference
October 28, 2009, Harbison Forest, Columbia, SC

The Supply Chain Primary Components Have Made the $17.3 Billion a Reality
Development Initiatives Must Have Buy-in From All of These Key Players
Let’s Start With the FOREST!

The $17.3 Billion is because SC has an Available, Usable Wood Supply

Trees Dictate the Type & Location of Our Primary Wood-Using Industry

Where are the GAP OPPORTUNITIES?
US Forest Timberlands, 513 million Acres, 69% Private, 57% Softwoods

SC, 12.9 Million Acres Timberland, 2.5% of US
86% Private, 4.2% Roundwood Harvest in US

30% SYP ships North, no treatable species

Southeast US: Largest Single Timber Growing Area, Processing Center & End User in World

Maryland to Texas; same type land, same tree species, same mills and processes, same consumer products

US Softwood Growing Stock, Private Timberlands

Current Rotation Age Thinking in the South 25-30 Years

Availability? Sustainability?

West Coast 29%

Lake States 4%

Rocky Mtns 8%

South 45% US
73% Softwood Growing Stock Less Than 40 Yrs Located in Southeast
Southern Pine Timber Types (Acres), Private, Planted 61%

“The Wall of Wood”
15-25 yr old peak

Natural Stands, 23.1 Million Ac
Planted Stands, 35.5 Million Ac

Million Acres Private Timberlands

Tree Planting Today
1978-97 avg @ 66%

40 Yrs Balanced Natural Forest
15 to 55 years old
Great News for Plywood & LVL

Southern Pine Growing Stock, Private, Planted 43%

Natural Stands, 49.7 Billion CF
Planted Stands, 37.9 Billion CF, 43.3% Pine Vol
Natural 5 East Coast States, 46.5% Vol
Planted 5 East Coast States, 51.3% Vol
Million Tons Excess Annual Growth

-3.2MM Tons 7/06, 21.03MM Tons 3/08, 28.5MM Tons 3/09

Avg State GRM Date:

Why smallest state in South, SC, has more excess annual sawtimber growth on FIA Web past 2 years?

Southeast - Texas to Virginia

FIA Web Date 7/06 3/08 3/09
Avg GRM Date 1998 1999/0/2001

Lupold Consulting Inc.
Million Tons Excess Annual Growth

Southeast - Texas to Virginia

FIA Web Date 7/06 3/08 3/09
Avg GRM Date 1998 1999/0 2001

Lupold Consulting Inc.
Million Tons Excess Annual Growth

Southeast - Texas to Virginia

Excess Annual Growth Softwood Pulpwood, FIA Web
.57MM Tons 7/06, 10.6MM tons 3/08, 9.3MM Tons 3/09

FIA Web Date 7/06 3/08 3/09
Avg GRM Date 1998 1999/0 2001

Thousand Tons Green, 68#/cf

Excess Annual Hardwood Sawtimber, All Ownerships
43.2MM Tons 7/06, 54.4 MM Tons 3/08, 54.2MM Tons 3/09

FIA Web Date 7/06 3/08 3/09
Avg GRM Date 1998 1999/0 2001
Eastern US Acres in Hardwoods, Private

- Impact Hardwood Clearcut
- Regeneration, Shovel Logging & Paper Mill Volume
- Past 20 Years

63% Oak-Hickory, 6 million acres, 0-5 years in South

Excess Annual Hardwood Pulpwood, All Owners, 8-10" dbh
-2.5MM Tons 7/06, -3.73MM tons 3/08, -3.76MM Tons 3/09

Southeast - West to East

Lupold Consulting Inc. USFS FIA Web 1/08
New Plant Announcements, 2005-2009, To Use Pine Pulpwood
10.5MM Tons OSB, Paper, Small Logs  14.5MM Tons Energy

Pulpwood Allocation:
100% OSB, Paper, Small Logs
50% Pellets
33% Cogen

At an Avg GRM date of 2001 across the South, none of these announced volume uses are included in current state FIA growth/removal data

Excess Annual Growth Softwood Pulpwood, ~15.7MM Tons
With New OSB, Energy, Paper, Small-log Users at 25MM Tons
Initial inventory & inventory change from 2005 to 2030 from recession/recession scenario, in terms of percentage change in pine inventory from 2005 to 2030. Forest Products Journal 7-8/2009, By Abt, Cubbage & Abt
Hardwood Products: 181 Million Green Tons; 36% US Timber Harvest; MS-AL-GA 17%, MN-WI-MI 15%, ME 4.4%; Sawtimber 40%, Pulpwood 44%, Fuel 16%
Primary Forest Products Shipments From SC
Year 2002, $4.26 Billion

- Sawmills 13%
- Composite panels 3%
- Softwood plywood, veneers 4%
- Hardwood plywood, veneers 3%
- Pulp & paper 75%

Over 42% Southern Pine treated

26% SYP used in trusses & EWP Systems

1” boards (4%)
industrial (18%)
framing (10%)

85-90% LUMBER & PANELS
SHIP TO SECONDARY USERS
- 70-75% SHIPS OUT-OF-STATE

SFPA
Wood Product Secondary Value Shipments in SC, 2002, $1.4 billion
23rd plants located in Columbia, Augusta, Savannah, Charleston metro
1/4th in Orangeburg, Summerville, Statesboro, Swainsboro

- Architectural millwork: 3%
- Mattress: 2%
- Other furniture: 1%
- Treated lumber, poles, post: 19%
- Pallets, containers: 4%
- Upholstered furniture: 11%
- Mobile homes, prefab buildings: 4%
- Other wood products: 39%
- Trusses: 5%
- Fixtures: 9%
- Windows, doors: 9%
- Other millwork, moldings: 4%
- Office institutional furniture: 5%
- Cabinets: 7%
- Household furniture: 8%
- Reman, cutup: 9%

Secondary Wood Products
217 plants
$1.4 billion shipments
Black Liquor Fuel Credits?

Pulpwood Use in SC

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
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<tbody>
<tr>
<td>1980’s</td>
<td>13.5 million tons annually</td>
</tr>
<tr>
<td>1990’s</td>
<td>14.95</td>
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<tr>
<td>2000-5</td>
<td>15.1</td>
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Secondary Paper Products
76 plants
$1.7 billion shipments

Lupold Consulting Inc.
Forest
Wood Buyers
Loggers
Solid Wood
- Softwoods
- Hardwood

Pulp & Paper
- Raw Materials
- Primary $3.2 Billion
- Paper, Paperboard, Tissue, Linerboard, Pulp, Power to Grid
- Secondary $1.4 Billion
- Treating, Trusses, Containers, Pallets, Millwork, Mobile Homes, Utility Buildings, Engineered Systems, Furniture, Cabinets, Windows, Doors, Reman, Flooring, Mattress

Forestry/Forest Products Cluster
Stumpage: Saw 75%, Pulp 25%
Sales: Wood 34%, Paper 66%
Value SC Economy: $17.4 Billion
57% To SC Communities
9-12 month old tops bundled in Sweden, 80-yr Rotation

Multiple Operations:
- Fall & bunch
- Forward logs, truck
- Bundle tops
- Forward bundles, truck
- Pull stumps
- 1-2 yrs forward stumps
- Chip stumps, truck
- Hardwood brush cut & forward
- Chip hardwood yr later, truck

Swedish home electricity: $.21 US/kw
Wood fuel $50 to 100 US/ton (Kr/kw)
Same 3 Times Ratio as US
Summary Recent USFS/SCFC Study To Determine SC Biomass Fuel Available

**Types and volumes currently being utilized:**

- Mill Residues: 6,000,000 green tons
- Paper & Wood Recycled: 1,000,000
- Logging Residues: 600,000

**Volume not being utilized:**

- Standing residuals after harvest, 9 tons/acre: 412,500 acres annually (3.2% SC forest) = 3,740,000 green tons

- Recoverable logging residues at 60%, 11 tons/acre: 35% >5” dbh, 65% <5” dbh = 4,532,000 green tons

**Total not utilized:** 8.3 million tons annually
Fabricated into modular components at Ridgeland, South Carolina by Haven Custom Homes

New Orleans Home

Tools are available to measure CO₂ impacts

- Sawn timber
- Softwood plywood
- Birch plywood
- LVL
- Particleboard
- Headboard
- Softboard
- Gypsum board
- Limestone bricks
- Red bricks
- Standard concrete
- Special concrete
- Hollow-core elements
- Steel plates and rolls
- Steel I-beams
- Steel pipe-beams
- Aluminium façade elements

Lupold Consulting Inc.
How wood products help slow Global Warming

Wood buildings use less CO₂

The timber content of wood vs masonry houses

Wood and wood products save CO₂

CO₂ emissions for different wall constructions

Governments are using legislation to curb CO₂

Environmental impacts of wood house vs concrete house

Wood is going to become more important
**Wood Fiber Used Annually in SC, million tons:**

- Pine Saw
- Pine Pulp
- Hdwd Saw
- Hdwd Pulp
- Rdwd Fuel
- Chips
- Bark
- Sawdust
- Shavings
- Excess Pine Saw

- Log Res $22
- Stand Res $22
- Log Res $30

**Currently Used By Industry**

- 62% Rdwd Used Today

**Percent Tons Distributed**

**Wood Fiber Delivered Annual Value By Product, million dollars:**

- Pine Saw
- Pine Pulp
- Hdwd Saw
- Hdwd Pulp
- Rdwd Fuel
- Chips
- Bark
- Sawdust
- Shavings
- Excess Pine Saw

- Log Res $30
- Stand Res $30
- Stand Res $22
- Log Res $22

**Currently Used By Industry**

- 62% Rdwd Used Today

**Sustainable Potential**

- 45.72 Currently Used
- 8.85 Excess Sawtimber
- 2.34 Residue at $22/ton
- 5.46 Residue at $30/ton

**Unit Value Delivered Green From Woods**

**Does not include urban wood waste**

**68% Used Today - $500 Million GAP OPPORTUNITY!**

**$17.3 + 8.2 = $25.5 Billion**

**Does not include urban wood waste**
Isn’t it mostly about telling our fantastic “supply chain” sustainability story to SC citizens who can enjoy the forest in so many different ways and at the same time use wood derived products that are greener than any other products ever developed over a long period of time.