

Logging Capacity Survey Summary Report 2008 Update

*Wood Supply Research Institute
May 2009*

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Report Overview

The report contains three parts that provide a comprehensive picture of the U.S. Wood Supply Chain Capacity and Structure. Those parts are:

1. Wood Supply Chain Structure
2. Wood Supply Chain Total Primary Roundwood Production Estimates
3. Wood Supply Chain Capacity related to Wood Products Manufacturing Capacity

Additionally, a tabulation of factors that contributed to lost production and logging business ownership succession was conducted and is contained in the full report.

Wood Supply Chain Structure

Data was collected related to manufacturing capacity from 158 facilities and data related to logging capacity from 7,792 wood supplier organizations. This report contains a regional and state summary of the wood supply chain delivery systems based on survey results. The year 2007 was used to illustrate the profile of the supply chain delivery system nation-wide.

Clearly the primary wood supply production force is diverse in terms of size-class and business structure. It ranges from one or two person organization with a power saw and skidding tractor to large organizations with multiple operations with sophisticated management systems and huge capital investments. Most supplier organizations, however, procure either all or a large portions of their own stumpage from both privately owned and publicly owned timberlands.

The following tables illustrate the regional diversity of the supply chain delivery system from both within and across the regions. Please note the highlighted areas within the tables and the bulleted points that provide significant observations. The same tables are found in the individual state tables in the appendix of the full report.

Mid-Atlantic Region

(N. Carolina, Virginia, W. Virginia, Ohio) Supply Chain:

Note the highlighted areas in the tables below with the following implications:

- 71% of suppliers are single operation owners and produce 43% of the total wood production.
- Dealership – Brokers include an undetermined number of landowners both private and industrial.
- 82% of suppliers purchase at least 75% of their own stumpage.

- 90% of suppliers are classified as under 100,000 tons annually and provide 52% of the total production. However less than 10% of large (100,000+ tons) suppliers provide 49% of total production.

**Mid Atlantic Region 2007 – Sample = 9.5 million tons
Supply Chain Delivery System**

| Supplier Business Type | No. of Suppliers | % of Total Green Tons |
|-------------------------------------|-------------------------|------------------------------|
| Dealership - Broker | 176 | 31.17% |
| Dealership - Subcontractor(s) | 49 | 10.21% |
| Own Multiple Operations | 44 | 15.15% |
| Own Single Operation | 661 | 43.06% |
| Trucking Contractor Only | 2 | 0.41% |
| Stumpage Participation | No. of Suppliers | % of Total Green Tons |
| Purchase 100% | 713 | 47.51% |
| Purchase 75% | 50 | 11.46% |
| Purchase 50% | 2 | 0.82% |
| Purchase 25% | 101 | 17.21% |
| Purchase 0 | 66 | 23.00% |
| Supplier Size Classification | No. of Suppliers | % of Total Green Tons |
| 0 to 35,000 tons | 672 | 27% |
| >35,000 to 65,000 tons | 109 | 15% |
| >65,000 to 100,000 tons | 63 | 9% |
| >100,000 to 300,000 tons | 77 | 35% |
| >300,000 tons | 11 | 14% |
| Total Suppliers Classified | 932 | |

**Northeastern Region
(Maine, New Hampshire, and Pennsylvania) Supply Chain**

Note the highlighted areas for implications:

- All data were collected in Maine – no data were available from other NE states
- Multiple Operation Owners suppliers produce nearly 50% of total volume.
- 57% of suppliers are Own Single Operations with only 23% of total volume.
- Likewise, 76% of the suppliers produce 35,000 tons or under and 37% of the volume.
- Conversely, 6% of suppliers produce 300,000+ tons and 35% of total production.
- 91% of suppliers produce less than 100,000 tons annually.

**Northeastern Region 2007 – Sample = 2.2 million tons
Supply Chain Delivery System**

| Supplier Business Type | No. of Suppliers | % of Total Green Tons |
|-------------------------------|------------------|-----------------------|
| Dealership - Broker | 63 | 22.64% |
| Dealership - Subcontractor(s) | 5 | 0.17% |
| Own Multiple Operations | 92 | 49.60% |
| Own Single Operation | 234 | 23.12% |
| Trucking Contractor Only | 15 | 4.47% |
| Stumpage Participation | No. of Suppliers | % of Total Green Tons |
| Purchase 100% | | |
| Purchase 75% | 409 | 100.00% |
| Purchase 50% | | |
| Purchase 25% | | |
| Purchase 0 | | |
| Supplier Size Classification | No. of Suppliers | % of Total Green Tons |
| 0 to 35,000 tons | 310 | 37% |
| >35,000 to 65,000 tons | 27 | 7% |
| >65,000 to 100,000 tons | 36 | 15% |
| >100,000 to 300,000 tons | 13 | 7% |
| >300,000 tons | 23 | 35% |
| Total Suppliers Classified | 409 | |

Lake States Region

2007 – Sample = 7.8 million tons Supply Chain Delivery System

Note the highlighted areas and implications:

- 85% of suppliers are Single and Multiple Operation Owners who produce > 60% of production tonnage.
- Almost 80% of suppliers purchase at least 75% of their stumpage.
- 83% of suppliers produce less than 35,000 tons and 43% of total tonnage.
- 97% of suppliers produce 100,000 tons or less and 77% of total volume.

| Supplier Business Type | #Suppliers | % of Total Green Tons |
|-------------------------------|--------------|-----------------------|
| Dealership - Broker | 99 | 17.50% |
| Dealership - Subcontractor(s) | 150 | 19.62% |
| Own Multiple Operations | 314 | 31.83% |
| Own Single Operation | 1,444 | 29.65% |
| Trucking Contractor Only | 88 | 1.40% |
| | 2,095 | |
| Stumpage Participation | # Suppliers | % of Total Green Tons |
| Purchase 100% | 930 | 51.53% |
| Purchase 75% | 734 | 28.72% |
| Purchase 50% | 11 | 0.29% |
| Purchase 25% | 311 | 11.53% |
| Purchase 0 | 109 | 7.93% |
| | 2,095 | |
| Supplier Size Classification | # Suppliers | % of Total Green Tons |
| 0 to 35,000 tons | 1729 | 43% |
| >35,000 to 65,000 tons | 226 | 18% |
| >65,000 to 100,000 tons | 83 | 16% |
| >100,000 to 300,000 tons | 33 | 13% |
| >300,000 tons | 24 | 11% |
| | 2,095 | |

Southeast Region (Georgia, S. Carolina, Florida, Alabama) Supply Chain

Note the highlighted areas for implications:

- Suppliers classified as Dealers provide almost 80% of total tonnage.
- An undetermined number of timber investment suppliers are not separated under Dealership-Broker category.
- Over 80% of suppliers purchase at least 75% of their own stumpage.
- Almost 50% of suppliers produce less than 35,000 tons and more are included under the dealership-subcontractor category
- 17% of suppliers produce at least 100,000 tons or more and 61% of tonnage.

Southeast Region 2007 – Sample = 33 million tons Supply Chain Delivery System

| Supplier Business Type | No. of Suppliers | % of Total Green Tons |
|--------------------------------------|-------------------------|------------------------------|
| Dealership - Broker | 525 | 42.67% |
| Dealership - Subcontractor(s) | 317 | 37.01% |
| Own Multiple Operations | 123 | 10.10% |
| Own Single Operation | 329 | 8.59% |
| Trucking Contractor Only | 10 | 1.64% |
| Stumpage Participation | No. of Suppliers | % of Total Green Tons |
| Purchase 100% | 615 | 32.67% |
| Purchase 75% | 437 | 49.09% |
| Purchase 50% | 0 | 7.34% |
| Purchase 25% | 158 | 10.90% |
| Purchase 0 | 94 | 32.67% |
| Supplier Size Classification | No. of Suppliers | % of Total Green Tons |
| 0 to 35,000 tons | 633 | 11% |
| >35,000 to 65,000 tons | 242 | 11% |
| >65,000 to 100,000 tons | 201 | 16% |
| >100,000 to 300,000 tons | 145 | 31% |
| >300,000 tons | 83 | 30% |
| Total Suppliers Classified | 1,304 | |

**South-Central Region
(Mississippi, Arkansas, Texas, and Louisiana)**

Note the highlighted areas for implications:

- 54% of suppliers are Single Operation Owners and produce 38% of total tonnage.
- Dealerships produce 43% of total tonnage and are not as dominant as in Southeast.
- Over 60% of suppliers purchase at least 75% of their own stumpage, but 27% purchases none.
- 22% of suppliers produce 100,000+ tons and provide 48% of total tonnage.
- 78% of suppliers produce less than 100,000 tons and provide 52% of total volume.

**South-Central – Sample = 26 million tons
Supply Chain Delivery System**

| Supplier Business Type | No. of Suppliers | % of Total Green Tons |
|------------------------------------|------------------|-----------------------|
| Dealership - Broker | 271 | 17.71% |
| Dealership - Subcontractor(s) | 347 | 25.29% |
| Own Multiple Operations | 227 | 19.17% |
| Own Single Operation | 992 | 37.58% |
| Trucking Contractor Only | 9 | 0.26% |
| Stumpage Participation | No. of Suppliers | % of Total Green Tons |
| Purchase 100% | 823 | 34.68% |
| Purchase 75% | 339 | 14.48% |
| Purchase 50% | 8 | 0.88% |
| Purchase 25% | 186 | 15.44% |
| Purchase 0 | 490 | 34.51% |
| Supplier Size Classification | No. of Suppliers | % of Total Green Tons |
| 0 to 35,000 tons | 870 | 17% |
| >35,000 to 65,000 tons | 234 | 16% |
| >65,000 to 100,000 tons | 331 | 19% |
| >100,000 to 300,000 tons | 315 | 28% |
| >300,000 tons | 96 | 20% |
| Total Suppliers Classified | 1,846 | |

**Western Region
(Oregon, Washington, Montana, Idaho, and California) Supply**

Note the highlighted areas for implications:

- 81% of suppliers are Single or Multiple Operation Owners and produce 70% of total tonnage.
- 62% of suppliers purchase less than 25% of their stumpage.
- 96% of suppliers produce less than 100,000 tons annually and provide 76% of total tonnage.

**Western Region – Sample = 33 million tons
Supply Chain Delivery System**

| Supplier Business Type | No. of Suppliers | % of Total Green Tons |
|-------------------------------------|-------------------------|------------------------------|
| Dealership - Broker | 161 | 16.97% |
| Dealership - Subcontractor(s) | 60 | 12.66% |
| Own Multiple Operations | 185 | 32.75% |
| Own Single Operation | 795 | 37.58% |
| Trucking Contractor Only | 5 | 0.04% |
| Stumpage Participation | No. of Suppliers | % of Total Green Tons |
| Purchase 100% | 422 | 31.83% |
| Purchase 75% | 40 | 1.88% |
| Purchase 50% | 0 | 0 |
| Purchase 25% | 289 | 25.77% |
| Purchase 0 | 455 | 40.51% |
| Supplier Size Classification | No. of Suppliers | % of Total Green Tons |
| 0 to 35,000 tons | 879 | 28% |
| >35,000 to 65,000 tons | 223 | 27% |
| >65,000 to 100,000 tons | 58 | 21% |
| >100,000 to 300,000 tons | 31 | 21% |
| >300,000 tons | 15 | 3% |
| Total Suppliers Classified | 1,206 | |

Total Primary Wood Production

For the 24 states surveyed, estimated logging production/manufacturing consumption was 433 million tons in 2006 versus 414 million tons in 2007. The peak of primary forest industry production for these states occurred between 1994 and 1998 of approximately 458 million tons. The subsequent years, 1999 through 2003, saw a prolonged trend of decline in industrial wood consumption. The long decline in consumption has resulted in a significant decline in logging capacity, and the decline appears to be ongoing, with minor exceptions in a few states. The Lake states and Western states have experienced a much more dramatic decline in logging capacity compared to other regions while the Southeast and Northeast regions have held their own over the last four years. The reasons for this are outlined in Mac Lupold's comprehensive report in Appendix B of the full report.

| Roundwood Output By Region, Million Green Tons Logged | | | | | |
|--------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------------------|
| <u>Region</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>% 2004 - 2007</u> |
| Mid-Atlantic | 51.8 | 51.1 | 49.3 | 47.4 | -8.5% |
| Northeast | 26.8 | 25.7 | 27.3 | 26.1 | -2.6% |
| Lake States | 33.5 | 33.7 | 32.1 | 29.4 | -12.2% |
| Southeast | 122.0 | 121.6 | 121.5 | 123.1 | 0.9% |
| South Central | 123.1 | 124.4 | 121.5 | 112.0 | -9.0% |
| West | 90.2 | 89.9 | 81.5 | 76.0 | -15.7% |
| Totals: | 447.4 | 446.4 | 433.2 | 414.4 | -7.4% |

Lupold Consulting Inc. 2009

Logging Capacity Utilization Rates

Logging capacity utilization was 70% in 2004 and 84% in 2007. Therefore we conclude that for 2006 and 2007, suppliers were running at peak capacity. Interestingly, overall demand for primary wood consumption has been steadily falling in most regions except the Southeast which was steady during 2004-2007. Logging capacity appears to be falling at a faster rate than consumption. The recent recession and drastic reduction in wood product manufacturing that began during the last quarter of 2008 have dramatically altered trends for 2007-2008 and beyond. We estimate that current manufacturing capacity utilization is between 60 to 70% and is higher in paper and lower in solid wood and composite wood products.

| Logging Capacity Utilization Rates By Region – Percent | | | | | |
|---------------------------------------------------------------|--------------|--------------|--------------|--------------|---------------------------------|
| Region | 2004 | 2005 | 2006 | 2007 | % Change 2004 - 2007 |
| Mid-Atlantic | 74.3% | 80.4% | 88.7% | 89.4% | +15.1% |
| Northeast | 73.2% | 67.8% | 82.4% | 81.6% | +8.4% |
| Lake States | 75.6% | 73.9% | 91.1% | 86.5% | +11.1% |
| Southeast | 73.7% | 79.0% | 85.4% | 85.3% | +11.6% |
| South Central | 69.3% | 77.1% | 83.9% | 82.4% | +13.1% |
| West | 63.9% | 68.9% | 83.0% | 80.5% | +16.6% |
| Totals: | 69.7% | 74.0% | 85.2% | 84.1% | +14.4% |

A rise in logging capacity utilization has mixed implications. It is positive in that the loggers tend to run their equipment and manpower with more efficiency and thus experience higher returns. It is negative from the manufacturing perspective because it may experience raw material supply shortages due to the lack of “surge capacity”. Perhaps the most problematic aspect is the continued disinvestment in logging capacity by the logging contractors that seems to be occurring faster than the trend toward lower consumption. According to some anecdotal data collected during the survey, logging operations have been going out of business at an accelerating rate over the last few months. Had the recession not occurred, it is our opinion that the strain on the logging capacity would have led to some significant supply disruptions. When the economy recovers, it may be challenging to recover the logging capacity necessary to maintain a viable supply chain.

Manufacturing Capacity Utilization Operating Rates

Average manufacturing capacity operating rates for 2007 provided by Mac Lupold’s research are in the table below.

| Forest Industry Operating Rates 2007 | |
|---------------------------------------------|------------------------------------------|
| Region | Manufacturing Operating Rates |
| Mid Atlantic | 87.9% |
| Northeast | 88.8% |
| Lake States | 90.2% |
| Southeast | 90.3% |
| South Central | 87.7% |
| West | 79.7% |

Logging Capacity Compared to Manufacturing Capacity

A core objective of this study was to determine if logging-trucking capacity was sufficient in 2006-2007 to meet manufacturing demand. Thus, we applied our estimated level of capacity utilization (Phase 2) based on the total wood production as determined in Mac Lupold's study. The Lupold study calculated average manufacturing capacity operating rates for solid wood products and pulp-paper operations on a regional basis. We used the year 2007 and conducted a logging capacity "stress test" using the following methodology:

- Given the 2007 manufacturing capacity operating rates, we calculated primary wood demand if they operated at 100% capacity.
- Given the 2007 logging capacity utilization rates – we calculated the ability of the supply chain to provide primary wood if they operated at 85% which was determined to be the theoretical maximum capacity utilization that would be sustainable.
- We then compared the 100% manufacturing capacity demand with logging maximum capacity and calculated deficits or surpluses on a state by state basis to use as a metric that would estimate relative adequacy of logging capacity.

A summary of the test results follows:

| Region | 2007 Actual Production - Consumption (Million Green Tons) | 2007 Estimated Demand @100% Manufacturing Capacity (Million Green Tons) |
|---------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Mid Atlantic | 50.3 | 57.2 |
| Northeast | 26.1 | 29.2 |
| Lake States | 26.6 | 29.5 |
| Southeast | 123.1 | 136.3 |
| S. Central | 112.0 | 127.7 |
| West | 76.0 | 95.4 |
| Totals | 414.1 | 475.3 |

| Region | 2007 Estimated Maximum Logging @85% | 2007 Surplus Or (Deficit) (Million Green Tons) |
|---------------------|--------------------------------------------|----------------------------------------------------------|
| Mid Atlantic | 50.3 | (6.9) |
| Northeast | 27.2 | (2.0) |
| Lake States | 26.6 | (2.9) |
| Southeast | 123.1 | (13.2) |
| S. Central | 115.5 | (12.2) |
| West | 80.2 | (15.2) |
| Totals | 422.9 | (52.4) |

The "stress test" indicated a logging capacity deficit of 52 million green tons if the forest industry operated at 100% of capacity. Logging capacity was at 84% to 85% in 2007 and 2008. So, logging-trucking capacity was either at or close to theoretical maximum.

Observations and Recommendations

Below are several observations about the issues identified above and potential solutions. All the factors are strongly intertwined. Thus, it may be appropriate to address them in a comprehensive manner.

- **Recession Recovery Plan** – Each individual procurement organization and each individual supplier should (1) carefully plan how to manage through the recession period, and (2) how to expand logging operations in the recovery period. Both periods are equally important. Even when the mill capacity was higher in 2006-2007, logging capacity continued to decline. Thus, stabilization of the disinvestment trend is paramount. This will be difficult given that operating rates for the forest industry are low. Nevertheless, taking thoughtful and intelligent actions now to minimize the rising pressure on logging capacity.
- **Quotas** – Re-think the procurement order system with an objective of stabilizing wood production for core loggers/suppliers and minimizing downtime. This means that production commitments by both the purchasing companies and logging contractors. Current economic conditions make it very important to consider how to allocate production among suppliers so they can come through this difficult time in position to expand production capacity when the economy recovers.
- **Timber Supply** – Address the real or perceived insecurity of suppliers regarding timber availability with new approaches to timber purchase support and joint long-range planning on timber availability.
- **Communication/Planning** – Address a lack of timely, clear communications and business planning. Comments in the survey indicate a significant lack of communication about important information that could help logging contractors reduce uncertainties in their current recession era business operating environment. A lack of communication and planning can lead to strained relationship and loss of trust. Improved communications could result in a more stable contract force and higher supply security for manufacturing companies.
- **Capital Availability** – Innovative actions may be required in this area in the future. However, capital will likely become available if the contractor's business environment can be improved through successful resolution of the previously mentioned issues. The financial community needs to see a firm commitment from the forest industry to improve stability in the logging/trucking contract supply chain.
- **Logging-Trucking Business Actions** – Suppliers must understand the pressures on manufacturing companies as they try to survive during the most severe down-turn in orders seen in over 20 years. Every attempt must be made to reduce costs to get through this difficult time because the industry will need dependable professional suppliers more than ever when the economy recovers. The months ahead must be carefully planned to maintain businesses and be in position to quickly recover markets as the mills are able to build order files and product demand returns to historic levels. Thus, suppliers should maintain close communication with major customers and help each other plan accordingly. Manufacturing will probably not return to late 1990's levels but tremendous efficiencies are often gained through down-turns.