Introduction to Sawmill Improvement

John “Rusty” Dramm
Forest Products Utilization Specialist

USDA Forest Service, State & Private Forestry, Madison, Wisconsin
Why is small diameter so expensive to process?
Softwood Small-Log Resource

- **Volume**—6 in. log only has 1/4 the cubic volume of a 12 in. log of the same length
- **Value**—lower average $/MBF than larger logs
- **Log quality**—not poor, but moderate and uniform
- **Processing**—well suited to automation, scanning & optimization technologies
- **Products**—dimension, studs & boards
Trend toward smaller logs means managing marginal sawlogs
Concept of the Marginal Sawlog

(Hallock 1967)
Solution to the Marginal Sawlog Problem

- Simple solution—don’t saw logs smaller than the line of marginality
- Reality—All mills saw logs from both sides of the line of marginality
- The trick is to process a log mix having an average log diameter greater than the line of marginality
What can we do so small wood can be used more economically?

1. Lower costs
2. Raise value
3. Combination of both
Lower the Cost Curve
Lowering the Cost

- Log procurement—buy logs at lower prices
- Improved harvesting efficiency & mechanization
- Sawmill technology—automation, speed & efficient conversion of logs into lumber
- Economies of Scale—large scale operations
- Single-pass log breakdown
- Mill design (large log & small log sides)
Raise the Value Curve
Raising the Value Curve

- Marketing—get better prices for lumber & mill residues
- Improve product line—what products generate the highest revenue (e.g., studs vs. boards)
- Value-added products—tongue & groove paneling
- Increase grade yield—for large factory lumber logs
- Increase lumber volume recovery (LRF)—for small softwood logs
Rank these in order of importance for your operation.

- Production
- Recovery
- Grade Yield
- Safety
- Quality