FOREST BIOMASS LOGISTICS: CHALLENGES AND RESEARCH ISSUES

Bob Rummer, USDA Forest Service, Forest Operations Research
THE BIOMASS SUPPLY CHAIN

Feedstock Supply
- Inventory
- Silviculture
- Genetics
- Productivity
- Sustainability
- Wildlife
- Markets
- Policy
- Land-use
- Landowners

Harvest and Processing
- Integrated ops
- Biomass harvest
- Efficiency/Cost
- Field processing
- Feedstock quality
- Field storage
- Impacts
- Life Cycle Analysis

Transport Logistics
- Product form
- Density
- Efficiency/Cost
- Siting

Conversion
- Feedstock quality
- Process technology
- Efficiency/Cost
- Markets

$1B  $1.5B  $0.8B  $12B
Figure 37—Woody biomass demand for energy in the South under low-, medium-, and high-consumption scenarios; with demand from traditional forest industry and availability from urban wood waste, 2010 to 2050.
BIOMASS HARVESTING

- Existing conditions
- Desired Outcome
UNDERSTORY HARVESTING
SHORT ROTATION HARDWOODS
WOODY BIOMASS LOGISTICS

- Feedstock specific, no universal system
- Cost-limited, no pot o’ gold for anybody
- Forests have other social values and competing uses
- Scale of industry is critical—
  + 9500 trucks/truckers?
  + 1500 logging contractors?

www.srs.fs.usda.gov/futures
WOODY BIOMASS RESEARCH ISSUES

- What types of forests will provide supply?
- What kind of systems will be used?
- What are the feedstock quality specs?
- What is the impact of removal on forests?
- Lots of room for innovation—5% savings in harvest costs is worth $150M/yr