WOOD ENERGY SCENARIOS AND SOUTHERN MARKETS

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BACKGROUND

- Previous billion ton reports did not explicitly consider competition for wood with conventional products.
- This update incorporates wood energy and conventional wood products market interaction.
- Developed and analyzed 6 scenarios with 3 levels of wood energy demand in conjunction with 2 levels of housing growth and 2 levels of pine plantation growth.
- Use of global, national, and regional timber market models.
BASELINE SCENARIO: DEMAND & SUPPLY DRIVERS

- Derived from the USDA Forest Service 2012 Baseline Scenario
- Single family housing growth returns to long-term average by 2020 (1.1 million)
- Historical relationship of fuelwood demand with respect to GDP
- About 26% increase in wood energy use by 2040 relative to 2010 level
- Assumes current rate of plantation growth
- Weaker projected U.S. dollar favoring export
- Declining timberland area- 2010 RPA A1B scenario
BASELINE SCENARIO: DEMAND DRIVER

Baseline Single Family Housing Start Growth

Baseline Wood Energy Demand: National Level
Declining timberland area (about -0.15% per year) mainly due to urbanization

Projected timberland area for 2010 RPA A1B scenario
ALTERNATIVE SCENARIOS: WOOD ENERGY LEVEL

- **Low wood energy**: Based on historical relationship between fuelwood demand and GDP
  - 138 million m³ (73 million dry short ton) by 2040 (26% more from 2010 level)

- **Medium wood energy**: Based on announced pellet demand (FORISK consulting) and EU renewable energy requirement
  - 205 million m³ (108 million dry short ton) by 2040
  - 86% more from 2010 level
  - 50% more above baseline

- **High wood energy**: Double medium energy demand, assumes a boost in plantation growth
  - 273 million m³ by 2040 (145 million dry short ton) by 2040
  - 150% more from 2010 level
  - 100% more above baseline
The top quartile of housing starts from 1959-2011 is at least 10% above the long-term average

Indicates a possibility of achieving higher growth rate

Assumed housing growth represents 10% increase above baseline

SF housing starts increase to 1.2 million by 2025

Remain at that level thereafter
ALTERNATIVE SCENARIOS: MANAGEMENT INTENSITY

- The high energy scenario assumes a boost in plantation growth
  - 50% above current FIA growth rate by 2040

- Based on assumption that timber supply response occurs due to increased timber demand for energy
  - Increased use of selected genetic stocks and/or best practices for plantation management
SCENARIO: SUMMARY

Demand/Supply Driver

Housing growth
- Medium
- High

Wood energy growth
- Low
- Medium
- High

Plantation growth
- Current
- High

Medium – Low (Baseline)
- Medium - Medium
- Medium - High
- High - Low
- High - Medium
- High - High
MODELS

- United States Forests Products Module (USFPM) in conjunction with Global Forest Products Model (GFPM)
  - Partial market equilibrium model of the U.S. and global forest products market
  - Land use/timberland area projection is exogenous

- Southern Regional Timber Supply (SRTS) model
  - More detailed timber supply model of U.S. South
  - Demand for timber products is exogenous

- Projected outcome came from integrated runs of two models
- Projected biomass feedstock amounts were provided to FORSEAM as inputs for further runs
RESULTS: FUEL FEEDSTOCK SUPPLY BY REGION

- Low Energy
- Medium Energy
- High Energy
Roundwood pulpwood used for energy

Logging residue used for energy
RESULTS: COMPETITION FOR WOOD

- Roundwood pulpwood used in conventional products
- Total paper and paperboard production
SUMMARY & CONCLUSIONS

- Results show tradeoffs among fuel feedstock sources (e.g., logging residues, small roundwood) and between end uses (e.g., wood energy and conventional wood products).

- Increased wood energy demand coupled with increased housing demand raises both fuel feedstock prices and small roundwood prices.
  - Makes both recovery of logging residues and the diversion roundwood pulpwood to wood energy use economically feasible.

- The demand for wood energy competes with the demand for wood for conventional products.

- Less pulpwood is available for production of panels and paper and paperboard products under the moderate and higher wood energy demand scenarios.

Photo: conserve-energy-future.com

Photo: Juergen Henkelmann, Alamy
Wood energy demand in the context of southern forest resource markets
WOOD ENERGY DEMAND IN THE CONTEXT OF SOUTHERN FOREST RESOURCE MARKETS

- Evaluated the conditions and characteristics of Southern forests and timber markets that are relevant to wood energy

- Identified factors include
  - Changes in non-energy demand for softwood and hardwood pulpwood
  - Changes in demands for sawtimber
  - Existing age class distribution and replanting
Changes in non-energy demand for softwood and hardwood pulpwood
Changes in demand for sawtimber

![Graph showing changes in demand for sawtimber and all other uses](chart.png)
WOOD ENERGY DEMAND IN THE CONTEXT OF SOUTHERN FOREST RESOURCE MARKETS

- Effect of the ‘sawtimber overhang’
THANK YOU

Photo: Kentucky Department of Parks