Additional Information:

Logging Residues

Quantity

The Subregional Timber Supply (SRTS) model was used to estimate and predict logging residues for the southeastern U.S. SRTS uses U.S. Forest Service FIA data to project timber supply trends based on current conditions and the economic responses in timber markets (Abt et al. 2000). Abt et al. (2000) note that SRTS is a partial equilibrium market simulation model that can be used to analyze various forest resource and timber supply situations. It uses a biological inventory projection model and a conventional supply/demand framework to project future timber prices and inventories given exogenous assumptions about land area and demand.

SRTS was developed initially to provide an economic overlay to traditional timber inventory models, e.g., ATLAS (Mills and Kincaid 1992), and to develop a consistent methodology for disaggregating the impacts of national and global models, e.g., TAMM (Adams and Haynes 1996), that treated the South as a homogenous supply region (Abt et al. 2000). Timber market and inventory modules are the two major SRTS model components**.** Market parameters are first used to solve for equilibrium price changes, where the market is defined by all of the included subregions. Price and supply shift information from the individual regions are used to calculate harvest change by subregion.

The internal inventory module in SRTS is based on the GRITS model (Cubbage et al. 1990). GRITS extrapolated forest inventories based on USDA Forest Service FIA estimates of timberland area, timber inventory, timber growth rates, and timber removals. GRITS classifies data into 10-year age class groups by broad species group (softwoods and hardwoods) and forest management type (planted pine, natural pine, oak-pine, upland hardwood, and lowland hardwood). FIA data by species group, forest management type, and 10-year age class are summarized for each relevant region in the analysis. Land area trends by forest management type are exogenous to the model. Within a management type, the model can allocate harvest across age classes based on starting harvest proportions, current inventory proportions, or oldest age class first (Abt et al. 2000).

Cost

The Fuel Reduction Cost Simulator (FRCS) as modified for the Billion Ton Study (Perlack et al. 2005) by Dykrsta (2008) was used to estimate the costs of harvesting logging residues (Fight et al. 2006; Stokes 1992). The original FRCS model was designed to simulate fuel-reduction treatments in the Interior West, where wildfire is a significant problem (Dykstra 2008). The FRCS was substantially revised by Dykstra (2008) including the development of new procedures to simulate harvests in the North (North Central and Northeast), the South, and the coastal West as well as the Interior West. Logging residue costs are estimated for “chipping tops and limbs at the landing” and “in woods harvesting of sub-merchantable material.”

In the modified FRCS model the following harvesting operations are assumed for biomass collection (Dykstra 2008):

- Manual felling and whole-tree extraction, either with conventional skidders or with cable systems; the simulator uses cable systems if the average ground slope is 40% or more;

- Mechanized felling and whole-tree skidding where mechanized felling is not used with cable yarding.

For ground-based logging (defined as “in woods” logging residue in this report), the FRCS model calculated the production rates and costs for both of the possible alternatives (manual felling and mechanized felling). The model then selected the lower-cost alternative for use in deriving the supply curve for the Billion Ton Study which is the same approach that is used in the BioSAT model. The variable cost inputs for the FRCS model (e.g., diesel fuel, labor wages, etc.) are updated bi-monthly in the BioSAT model. Forest resource input data were obtained from the logging residue estimates of the SRTS model (Abt et al. 2000).

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