

GEORGIA FORESTRY
COMMISSION



Biomass Assessment Services for Industry

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Introduction

Recent concerns with energy security, energy costs, rural economies, and environmental impacts of fossil fuels have increased interest in the use of *forest biomass* for energy. Forest biomass can be obtained directly from the forest in the forms of trees or portions of trees. It can also be obtained from forest product manufacturing facilities in the form of by-products and from developed areas in the form of waste wood products, tree trimmings, and tree removals for development.

Assessments of existing forest biomass amounts that could be available are necessary in planning the development of a forest bioenergy industry. Assessments are needed to determine the best regional areas to target for development of this industry and they are needed to determine the economic viability of a planned facility at a specific location.

Forest Biomass Data

The U.S. Forest Service Forest Inventory and Analysis (FIA) program is designed to collect information concerning forest resources and serves as the best source of data for initial forest biomass assessments covering large areas. The FIA program collects data by fixed plot measurements throughout forests in the US, by conducting timber product output (TPO) industry surveys, by performing logging utilization studies, and by conducting other related research. All of the data collected within the FIA program has the potential to be useful in planning and analyzing forest biomass use. The data and information on the program in the southern US can be obtained at <http://srsfia2.fs.fed.us/>.

Regional Assessments

Statewide assessments of forestry biomass in Georgia have been conducted by the GFC and by private firms using FIA data. Additional statewide assessments are being performed by the University of Georgia, North Carolina State University and others to apply more complex and detailed analysis using timber growth and yield models, remote sensing, and other tools combined with FIA data. In 2006, the GFC chose to extract county-level data from the FIA databases as a basis and guide for prospective bioenergy industries. This data was displayed using a geographic information system and has been used to determine the best locations for industries to acquire biomass feedstocks. The GFC included the following attributes in this system: pine timberland less than 20 years old, volume of small diameter pine, logging residue volume estimates, mill residue volumes, and urban wood waste volumes. Maps from these assessments, along with information on existing industry biomass use, are provided to prospective companies, depending upon their feedstock needs and other logistical requirements for mill siting. A subset of these maps are included as an Appendix to this document.

Site-Specific Assessments

Bioenergy companies rely on the GFC and private firms specializing in timber supply to conduct forest biomass assessments around specific sites that are targeted for mill placement. The GFC originally performed detailed assessments that included detailed reports, analysis, and extensive data tables. Due to limited staff time and an increase in requests for assistance, the GFC now performs assessments that include extensive data tables accompanied by a two-page summary sheet. Industries typically perform their own analysis of the data and/or hire private firms to conduct a secondary detailed assessment of biomass availability.

The site-based assessments normally cover a 50 and/or 75 mile radius because of transport costs of biomass. Data is selected on a per-county basis within this radius. The assessments include the following data attributes:

- Timberland amounts by:
 - Forest type – important to separate planted pine, natural pine, and hardwood
 - Age structure – provides evidence of availability through thinning, etc.
 - Ownership – federal vs. private, or more detailed
- Forest biomass volumes by
 - Species or species groups
 - Merchantability for other products
 - ✓ Diameter; 5" – 8.9" diameter is lower value, 100% harvestable
 - ✓ Diameter >9' diameter is higher value for other products, but also indicates level of potential residues from sawmills
 - Non-merchantability for other products
 - ✓ Tops, and branches of trees >5" diameter
 - ✓ Trees less than 5" diameter in stands at merchantable age
- Growth and drain levels of merchantable wood - recent data
- Logging residue amounts – recent data
- Other forest-related biomass amounts – recent data
 - Land clearing for development
 - Mill residues
 - Urban wood wastes

The individual site assessments can also include an analysis of the data. The analysis must consider recovery rates of the estimated biomass amounts, new or planned competing industries that are nearby and other limitations. Recovery rates are very important and are affected by:

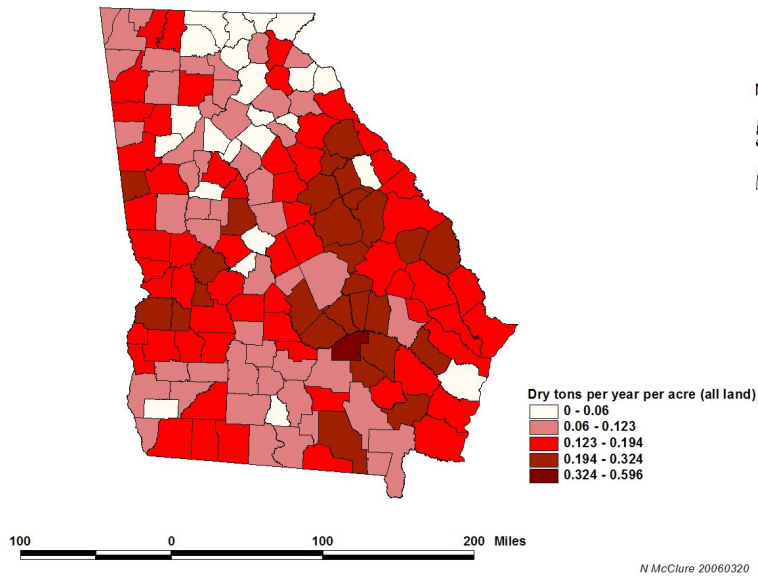
- Ownership and their willingness to harvest
- Logistics of harvests
- Economics of harvest and transport
- Regulatory limitations
- Limitations imposed by the industrial facility

The GFC considers forest biomass harvesting to be very similar to the existing forestry operations in Georgia. Current timber harvesting in much of the state involves high utilization rates of trees followed by removal and/or control of residual trees and vegetation to prepare for reforestation. The same regulations, environmental practices, landowner expectations should be considered on traditional forest harvests and biomass harvests. There are some additional logistical and economic limitations with

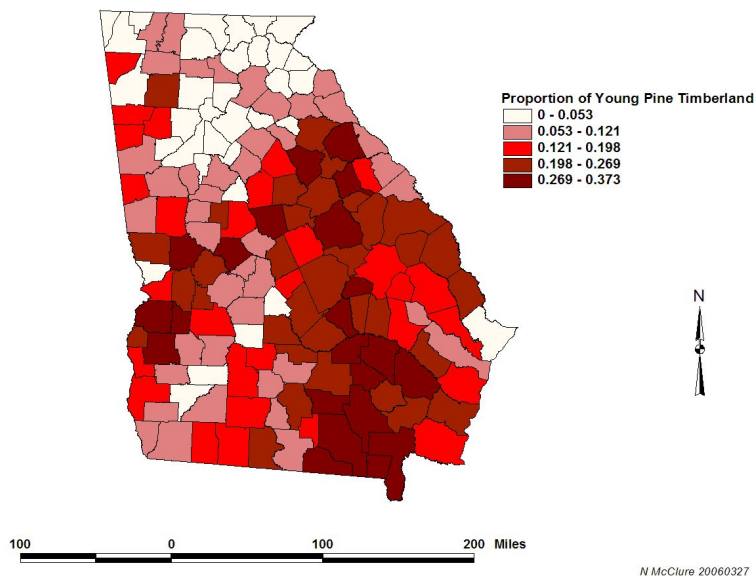
biomass harvests of tops and branches. There will also be some new quality standards on biomass imposed by specific facilities. In addition, the GFC expects some additional voluntary or regulatory considerations in biomass harvesting practices. Individual site assessments should consider any of these issues that might be appropriate for the biomass procurement area and specific industry.

Appendix: Maps of Relative Forestry Biomass Resources by County
 Source: USFS Forest Inventory and Analysis Program and Timber Product Output Reports

Georgia Logging Residues



Pine Timberland Less Than 20 years Old as Proportion of Total Land



Merchantable Biomass in Smaller Pines

