SAFER
SOUTHEAST AGRICULTURE & FORESTRY ENERGY RESOURCES ALLIANCE

Implications of Legislative Woody Biomass Definitions

SAFER Briefing Paper
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Overview

The definition of renewable woody biomass is critically important to the Southern region's ability to qualify for state and federal funding for biomass to energy projects and to meet renewable standards for fuel and power. With over 16 different definitions of woody biomass existing in current legislation and many others in proposed legislation, the Southeast Agricultural & Forestry Energy Resources Alliance (SAFER) commissioned the report, *Implications of Legislative Woody Biomass Definitions*. This report is focused on the impact of alternate woody biomass definitions on the South's[i] ability to meet a renewable electricity standard (RES).

Two issues surrounding the definition of "renewable woody biomass" that this report addresses are:

- Concern about the health of the nation's forests and the potential strain a biopower industry might have on those forests.

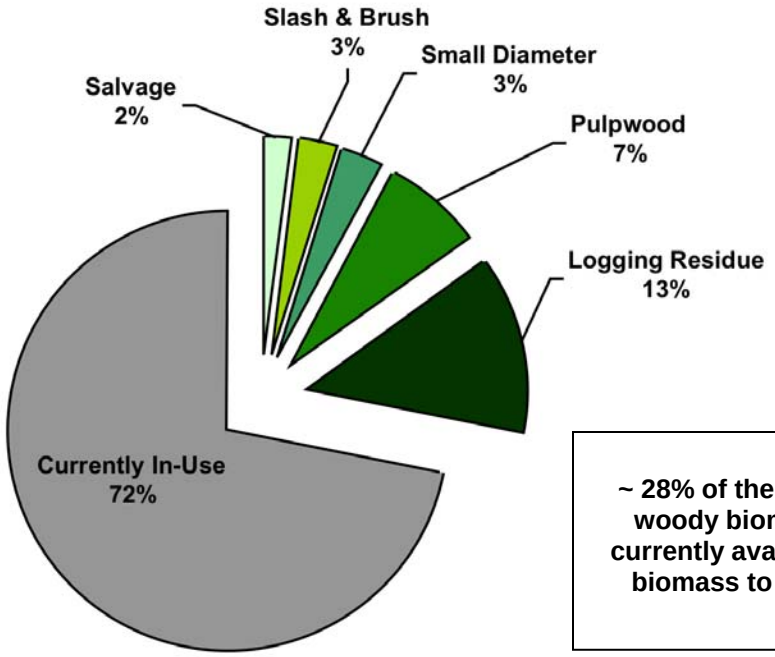
- Concern that a new market for biomass will increase the costs of raw materials for existing wood products industries.

Key Findings

1. Many legislative definitions of woody biomass are inconsistent with the way in which traditional timber products are grown, harvested, and sold making it extremely difficult to calculate or project the amount of woody biomass available under each scenario.

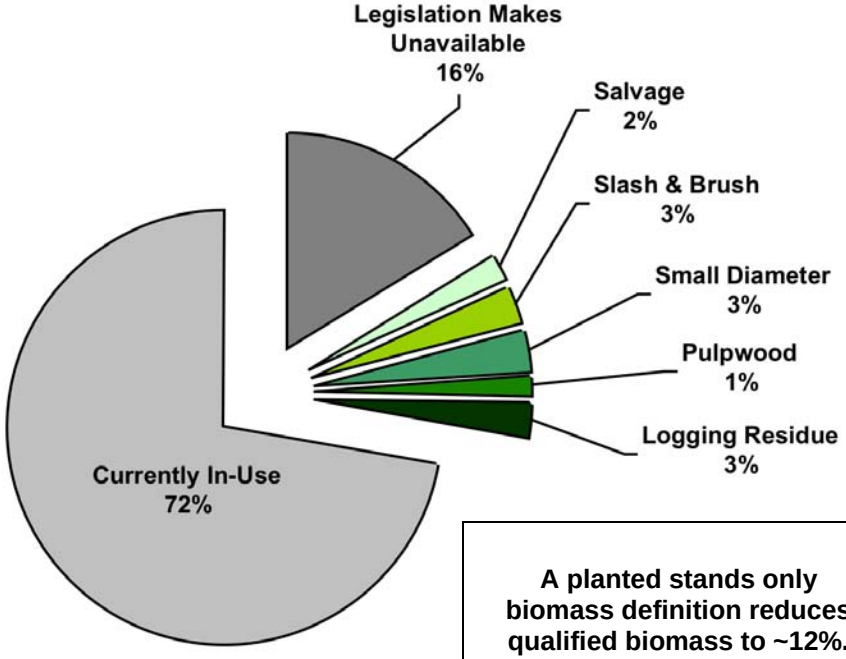
2. After accounting for the woody biomass that is consumed by traditional industries, 28 percent of the South's woody biomass inventory is available for biomass to energy development. (Figure 1) Of this 28 percent, 63 percent is considered underutilized (i.e. logging residues, slash & brush, plant residues, and salvage).

Figure 1. Woody Biomass Availability



~ 28% of the South's woody biomass is currently available for biomass to energy

Figure 2. Woody Biomass Availability w/ Planted Stands Only Restriction



A planted stands only biomass definition reduces qualified biomass to ~12%.

3. Legislative definitions of woody biomass can significantly reduce the amount of biomass available for energy use. For example, by excluding *naturally* regenerating forests from the list of eligible woody biomass, the available biomass decreases from 28 percent to approximately 12 percent (Figure 2).

4. To meet a five percent RES solely with woody biomass, the South would need only one percent of the total unrestricted woody biomass supply in a scenario that assumes increased plant efficiency and utilization rates. [ii]

5. This one percent supply level is consistent across most of the individual Southern States with the notable exception of those that have higher electricity demand and lower woody biomass supply, such as Texas, where a 5 percent energy standard target would require a 5 percent supply contribution, and Florida a 3 percent contribution.

6. In the low-efficiency scenario[iii], the model predicts that the South can meet a phased-in 15 to 17 percent standard before competing with traditional timber markets.

7. In the high efficiency scenario[iv] of increased plant efficiency and utilization rates, a phased-in 15 to 20 percent standard can be met before competing with traditional timber markets.

8. The biomass market is estimated to only be 40 percent of the value of the pulpwood market, suggesting that there could be some competition in the future, though improved technologies and increased growth rates might mitigate this competition.

9. It is estimated that a theoretical biomass market would only be eight percent of the value of the sawtimber market, suggesting that it is unlikely that private landowners will shift their resource from sawtimber to biomass. Although, any change in the market could cause prices to vary.

Conclusions & Recommendations

Considering the results of this project, SAFER recommends the following:

1. Effective development and deployment of energy legislation needs to include both clear and descriptive definitions that are consistent with how woody biomass is grown, measured and procured. For example, provide a single, universal applicable definition of pre-commercial thinnings, natural stands, artificial regeneration, etc. Definition specifics may be best done in the regulatory/implementation process versus in the legislation itself.

2. Restrictions on which types of woody biomass are eligible to meet renewable electricity standards could artificially constrain the resource, and put the South at a disadvantage relative to other regions of the country.

3. A phased-in approach is critical to allowing for the development of the plant efficiencies and increased utilization rates where increased efficiencies and utilization rates could result in the South meeting a 15-20 percent RES without affecting current woody biomass markets.

4. Because there is disparity between where the highest electricity demand exists and where woody biomass is available, it is necessary to allow for flexibility in how states can comply with energy standards.

5. While this project focused on using woody biomass only as a means to meeting a renewable electricity standard, the Southern states would also utilize energy efficiency, wind, and solar energy resources to meet these standards.

Woody Biomass & Biomass Definition Database

One product of this project is the *Woody Biomass & Biomass Definition Database.* This database is available upon request for researchers and policymakers to run their own woody biomass scenarios. Users are able to select the parameters they wish to include/exclude and determine their affect on a state's ability to meet energy standards with woody biomass.

To access this database, please contact Charity Pennock at cpennock@southern.org.

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[i] For the purpose of this project, the South refers to: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

[ii] The "utilization rate" is the fraction of the standing biomass that can be removed offsite given the existing technical and economic limits as opposed to how much could be produced if there were no technical or economic limits.

[iii] The low-efficiency scenario assumes 26.25% energy efficiency, 6,400 BTU/LB, air dry, 20% moisture. This scenario represents current technology and lower heating values of wood.

[iv] The high-efficiency scenario assumes 40% energy efficiency, 8,600 BTU/LB, bone dry, no moisture. This scenario represents gains in technology efficiencies and higher heating values of wood.