

How Will Our Forests Be Impacted by a Woody Biomass Energy Market?

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3/17/2006

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Oh! So Dennis, you say you're the one who can tell us how a biomass market will impact forest stands?

Liar, Liar, Liar!!!!!!!

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Guiding Principles of Forest Management on Which We Can All Hopefully Agree

- If the forest management activity:
 - Improves the species composition which enhances conservation purposes (wildlife, aesthetics, water quality, ecosystem integrity), or
 - Enhances the health and vigor, or
 - Improves tree quality, or
 - Creates needed renovation disturbance, or

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Guiding Principles (continued)

- If the forest management activity:
 - Creates enough income to discourage the conversion of the land to development purposes, and
 - Does not compromise desired habitats, cultural resources or water quality, then

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..... The Forest Management Activities are Good!



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The Woody Biomass Energy Market Will Evolve in NC

- What factors will determine its general evolution?
 - Price of fossil fuels
 - The General Assembly
 - Regulatory agencies (DAQ, others)
 - Federal or state incentives
 - The coming "carbon market"
 - Commercial-scale viability of "better" conversion processes (esp. liquid fuels)
 - Could be a large market or not much!

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Factors Associated with Market “Evolution” Will Impact the Kinds of Stand Management Activities Possible

- The size of the overall market (this impacts delivered price)
- The size of the LOCAL market
- Land-specific incentives
- What we decide we want!

What are the elements of an evolving woody biomass market which may additively create the total market?



EXISTING USE - Residues and Wood Wastes

- Maybe 225+ plants with 300+ boilers
- Sawmills
- Furniture plants
- Dry kilns
- Co-generators
- Brick plants
- Many long-term users of renewable



EXISTING USE – Several Woods Chips Users

- Craven Wood – New Bern
- TriGen – Kenansville
- Dorthea Dix Hospital - Raleigh
- Maybe a couple of others



NEW TIER OF USE?– Institutional Space Heat and Thermal Chilling

- Schools (Vermont, Montana)
- Hospitals
- Dept. Corrections
- Military Installations
- Municipalities



NEW TIER OF USE? – A Renewable Portfolio Standard (RPS) for NC

- Would create an immediate market for biomass
- Purchase from co-generators (existing and new)
- Co-firing coal plants



NEW TIER OF USE? - Biorefineries

- Ethanol
- Bio-Oil
- Bio-diesel
- Higher-value yet?
- Pulp mills maybe among the best suited
- On-site processing



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What does this “evolution” have to do with stand impacts?

- There are varying logging costs for the kinds of stand management opport.
- And, loggings costs (per ton) vary with many factors:
 - The lower the volume per acre, the greater the cost
 - The smaller the stems, the greater the cost
 - The smaller the total harvest, the greater the cost
 - Partial harvests (thinnings, improvement cuts) more costly than clear cutting)

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Increasing demand for woody biomass will increase prices for biomass which will create an increasing set of possibilities for forest stands.

- First, “gleaning” or better utilization during harvesting
- Then, renovating degraded and/or grossly understocked or overstocked stands
- And, improving existing stands
- Additionally, incentives (esp. for special lands)

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Very Important Point!

- Each type of treatment opportunity opens up a new additional supply.

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First, Better Utilization During Logging (what is being done now)

- Usually only requires the addition of a chipper and someone who will use and pay enough to get the material to the user
- May provide little or no money to the landowner
- Reduces or eliminates site preparation costs

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Results of Better Utilization

- A more uniform stand if done with a clear cut
- Better stocking with higher volumes
- Better economic opportunity



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Second, Stands Needing “Renovation” – Their Characteristics

- Usually a result of past high grading
- Often understocked (2.4 million acres less than 60% stocked)
- Slow growth rates
- Low commercial value species
- Crooked/decadent stems
- Off-site species
- Often means start over

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Results of Stand Renovation

- Faster growth rates
- Better stocking
- Healthier forests
- Higher carbon sequestration
- Opportunity for the landowner to manage for higher value products
- Often more uniform stands

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Renovation Impacts



versus



versus



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3rd, Timber Stand Improvement

- Various forms of timber stand improvement including
 - Crop tree selection
 - Cull tree removal
 - Hardwood thinning
- Often shown as somewhat overstocked or understocked in FIA data



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Improvement Cutting Can

- Target diseased or damaged trees
- Target poorly formed trees
- Target low-value species
- Target invasive trees
- Target off-site species
- Favor highest-value stems and species
- Result in productive stands which produce high-value products

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4th, Special Categories Which Will Require Incentives

- Natural pocosin types where fire has been suppressed
- “Firewise” communities
- National forests?
- Smaller tracts

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What Will Not Happen in the Forest!

- Sawtimber becoming energy wood
- Veneer becoming energy wood
- Poles and pilings becoming energy wood
- Chip 'n saw becoming energy wood

Why Not???

- Current delivered prices for energy chips maybe \$15-20 / ton
- With a developed or locally heavy-demand market, maybe \$25-28
- Pine sawtimber \$49.70 per ton
- Oak sawtimber \$49.70 per ton
- Pine chip 'n saw \$36.13 per ton
- Pine plylogs \$67.50 per ton
- Pine poles \$73.50 per ton

So, How Are We Doing with the Guiding Principles in a Developed Woody Biomass Market?

NEED	YES	NO	MAYBE
Improves species composition	X		
Promotes forest health	X		
Improves tree quality	X		
Creates disturbance for stand renovation	X		
Creates more income for landowners	X		
Does not compromise desired habitats, other resources			X

Are Better Stand Management and Healthier Forests a Result of a Biomass Market, or a Goal?

- If it is a goal, then some efforts must be made to ensure markets are created where the need is greatest.
- Remember haul distance will be maybe 25 to 50 miles max.
- Will require distributed generation – i.e, a state woody biomass portfolio
- Good argument for incentives
- Will not happen by accident!

It's Up to Us!!!



Questions???



Craven Wood Energy