

**Beyond Biohype:  
A Progress Report on Biomass for  
North Carolina**

**How Much Resource Do We Have?**

**Chris Hopkins**

**September 10, 2008**



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**Topics Covered**

- Status and Harvest of Forest Resource
- Descriptions of Woody Biomass Resource Available from Forests
- Estimates of Energy Offset from Biomass Harvests
- Non-energy Impacts on Forestry



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**Data Sources**

- FIA Mapmaker  
[www.ncrs2.fs.fed.us/4801/fiadb/fim21/wcfim21.asp](http://www.ncrs2.fs.fed.us/4801/fiadb/fim21/wcfim21.asp) (North Carolina 2006, 2002, 1990, 1984)
- SRS TPO [srsfia2.fs.fed.us/php/tpo2/tpo.php](http://srsfia2.fs.fed.us/php/tpo2/tpo.php) (North Carolina 2005)



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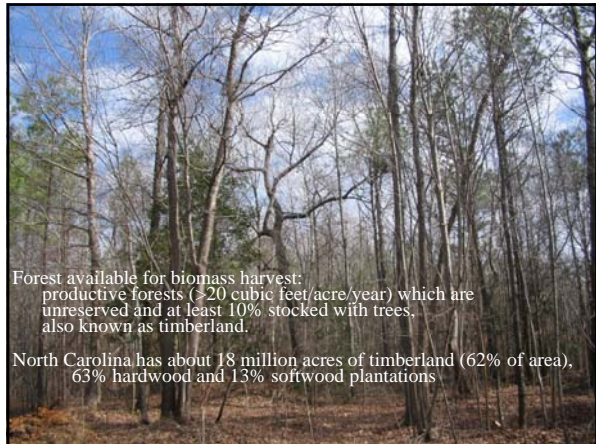
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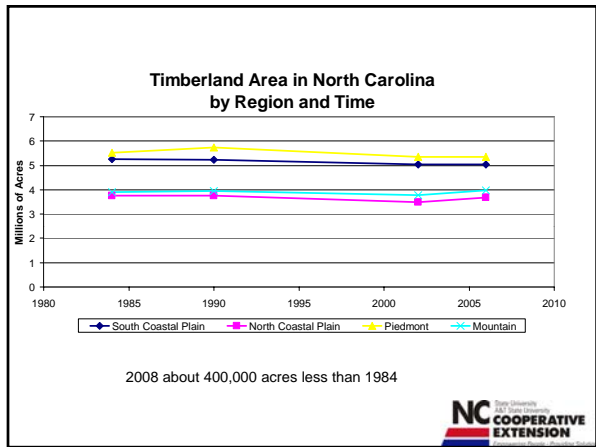
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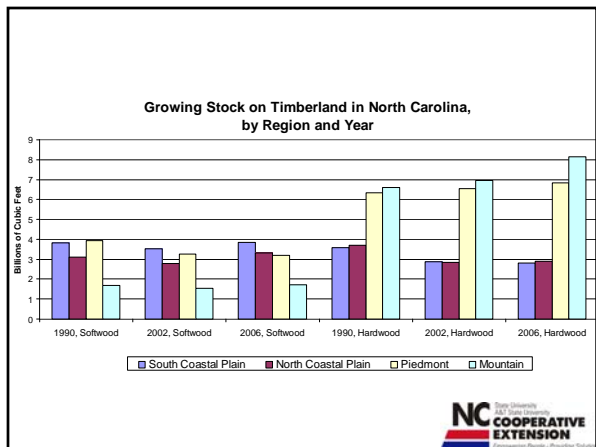
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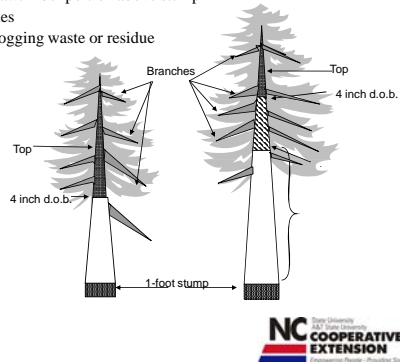
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- Biomass Residues are the woody portion of tree available for conversion to energy:
  - non-pole, non-sawtimber portion above stump
  - tops and branches
  - also known as logging waste or residue



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Volume to weight conversion from Timber MartSouth and FIA assumptions\*:  
softwood green: 73.8 lb/cf = 5350 lb/cord / 72.5 cf/cord  
hardwood green: 75.7 lb/cf = 5800 lbs/cord / 76.6 cf/cord  
\* note that bark weight is included in the wood.



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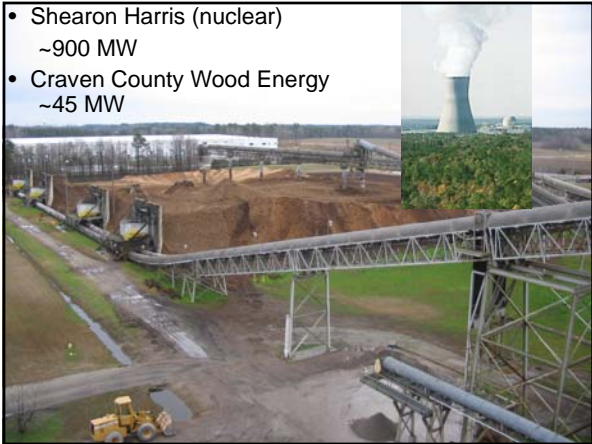
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- Shearon Harris (nuclear)  
~900 MW
- Craven County Wood Energy  
~45 MW



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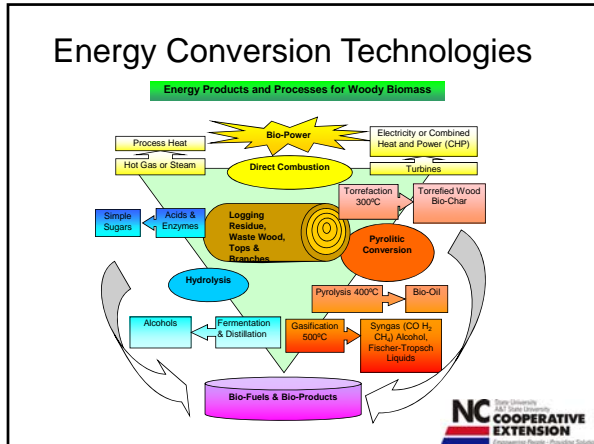
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### Scale of TPO Removals and Energy Implications

- Typically we assume that biomass will be used for
  - energy by direct combustion
    - 14,016 green tons/MW/year
    - We use about 15,000 MW in NC.
  - Liquid fuels
    - Maybe 90 gallons ethanol per dry ton of biomass
    - We use about 5.5 billion gallons annually in NC.

**NC COOPERATIVE EXTENSION**

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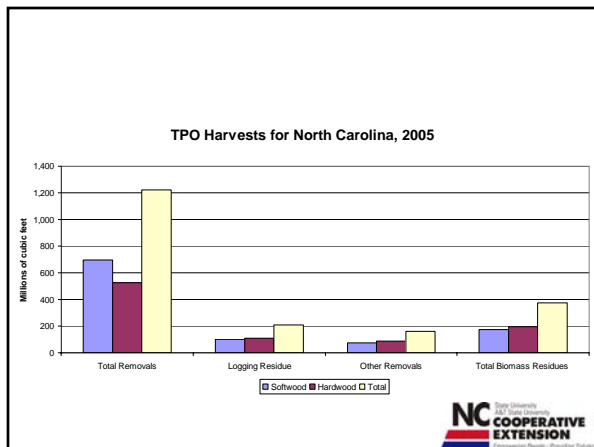
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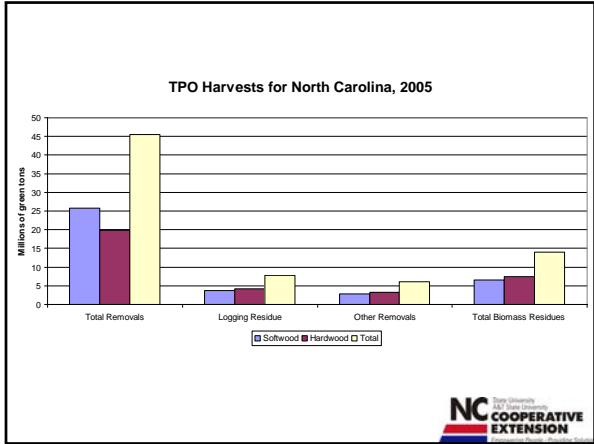
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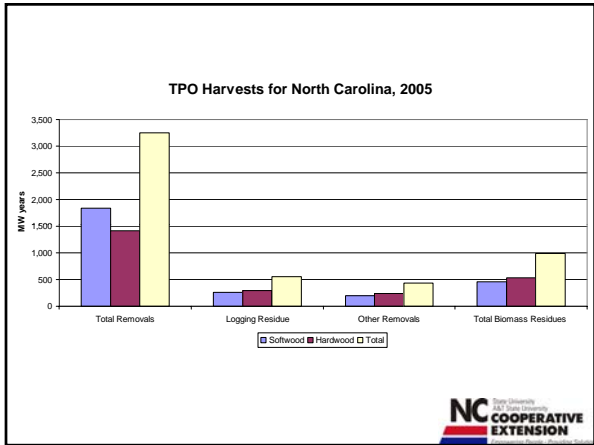
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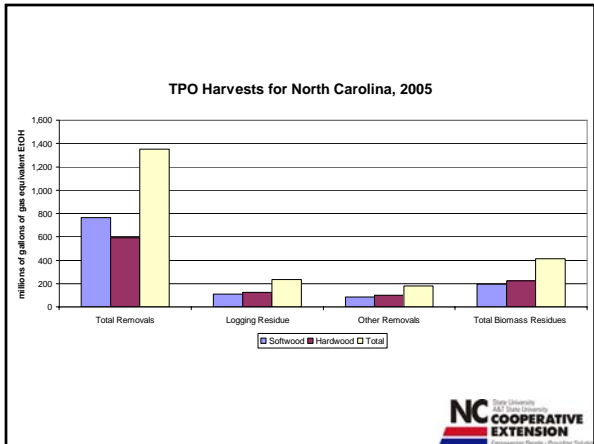
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### Results of Simulation Study of Forest Biomass Residue Harvest:

- Currently NC timberland produces:
  - ~ 2.5 green tons/ac/year
  - 53% biomass and pulpwood size products
  - 47% sawtimber size products
- With density management we could shift to sawtimber products
  - 34% biomass and pulpwood size
  - 66% sawtimber size products
- Value to landowner (stumpage)
  - biomass ~\$2/green ton
  - sawtimber ~\$30/green ton (\$20-47/green ton)
- Shifting 19% of production to sawtimber is worth
  - ~2.5 green tons/acre/year \* 19% \* (\$30-\$2)/green ton = \$13/acre/year



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### Questions?

- Thanks for your time and attention.



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