

BioEnergy Markets for Municipal Yard and Wood Wastes or... Urban Biomass Markets

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Urban Biomass- What is it?

- Residential Landscaping Debris



- Urban Tree Debris, Landclearing Debris

- Wood Residues



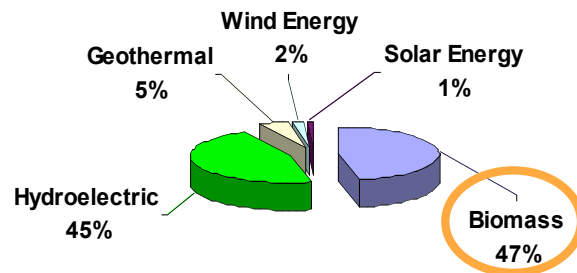
Important Events in Florida Urban Biomass

- 1988- Solid Waste Act- banned vegetation from Class I landfills
- 1993 legislation recognized biomass fuel as recycled product, not incineration
- 1994-1997- large urban biomass combustion facilities start-up
- 2005- \$60 per barrel oil and up



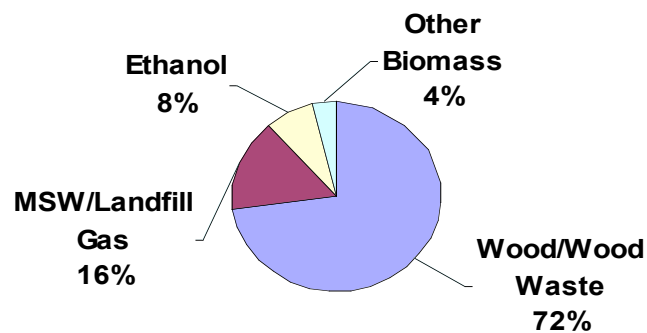
Biomass and Wood Energy- The largest source of renewable energy in the US

Sources of All US Renewable Energy, 2003



Biomass energy includes ethanol and landfill gas, but the biggest segment is the use of wood as boiler fuel

Sources of Biomass Energy, 2003



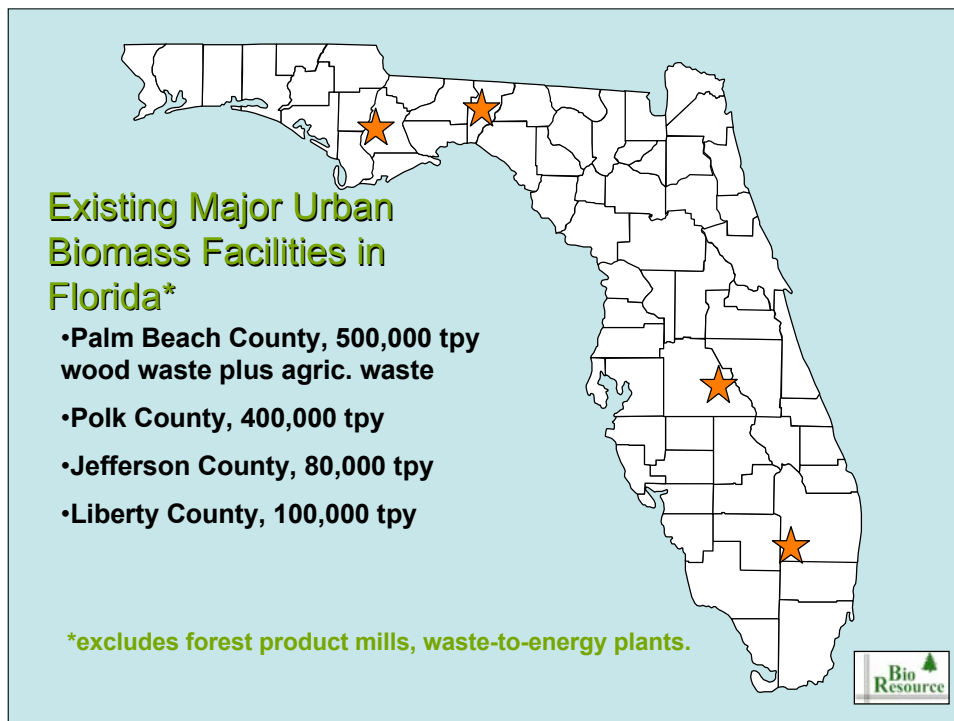
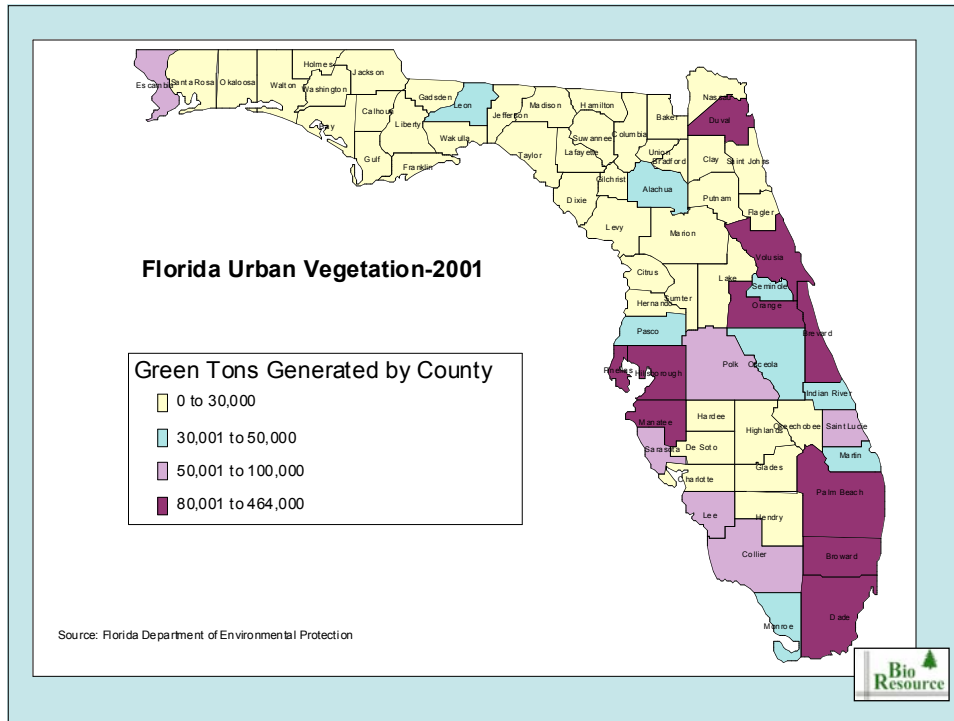
Present BioEnergy Markets for Florida Urban Biomass

- Electrical generation-
 - Independent Power Producers
 - Municipalities
 - Investor owned Utilities
- Direct Combustion-industrial heaters/dryers



Approximately 1.5 million tons of Florida urban biomass are processed and delivered to electric generating stations each year.



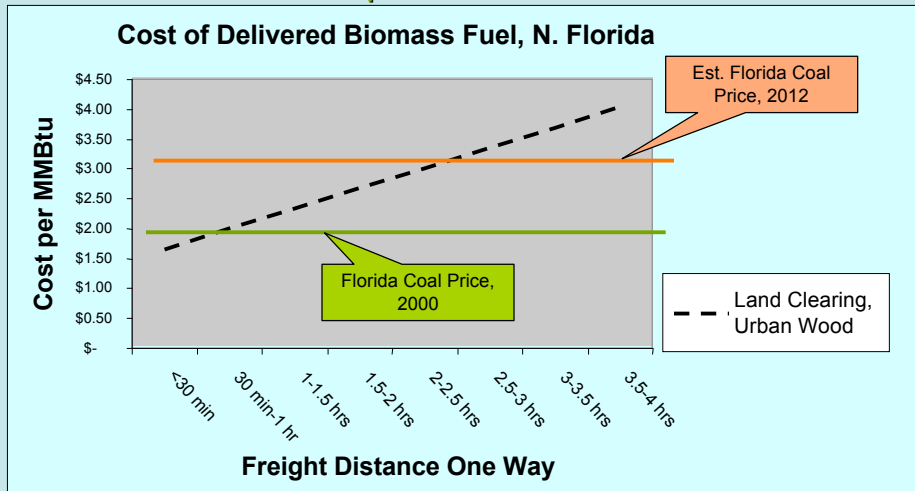


The use of urban biomass for energy in Florida--

- creates jobs
- increases local tax base
- reduces consumption of fossil fuel while preserving landfill space.



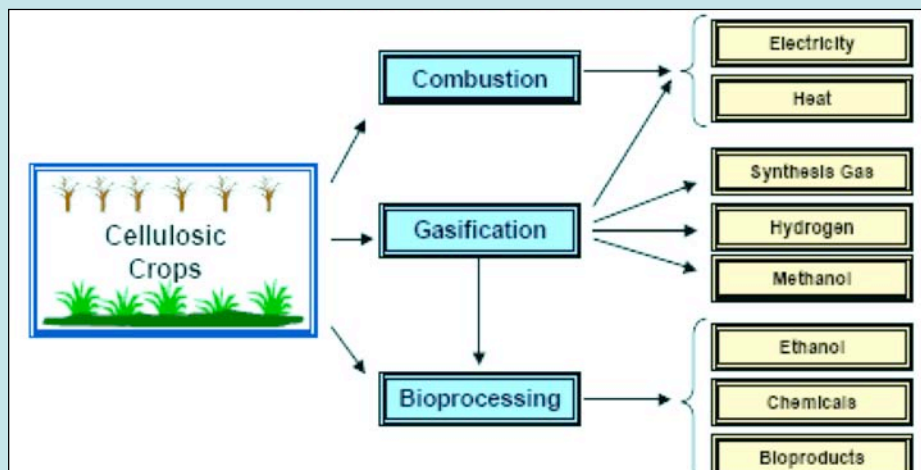
Biomass may see increased use as coal and oil prices rise.



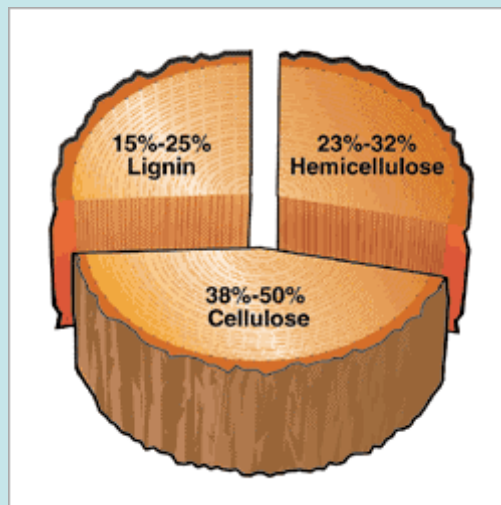
Projected 2012 Florida coal price allows urban biomass from over 2-1/2 hours away to compete with coal.



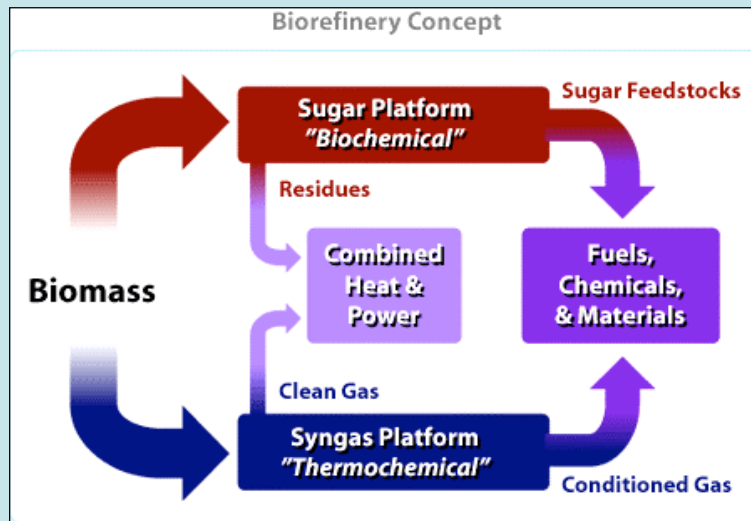
The future of BioEnergy-new conversion technology



The three main chemical components of woody biomass determine its best use



Current Proposal for Federal Funding is up to \$80 million for a 1,000 ton per day "Biorefinery"



Summary of Florida Urban Biomass Markets

- BioEnergy represents the largest single source of renewable energy available in the US
- Current Fla. urban biomass markets are mostly for fuel, in power plants or at forest products industries



Summary of Florida Urban Biomass Markets (cont.)

- Emerging technology may lead to using Florida Urban Biomass in production of
 - Petrochemical substitute
 - Ethanol
 - Bioproducts
- Use will rely on quality, consistency, reliability

