

Renewable Energy from Forests: Does Going Green = Making Green?

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Reasons for Interest in Renewable Energy

- Use Domestic Sources of Energy
- Reduce Fossil Carbon Emissions
- Reduce Energy Costs
- In reality, few if any sources provide all three, most provide only two. Tough choices result.

Markets for Forest-Based Energy

□ Wood Pellets

- Technology available
- Kyoto / CO2 targets driving, primarily exports to EU

□ Liquid Fuels

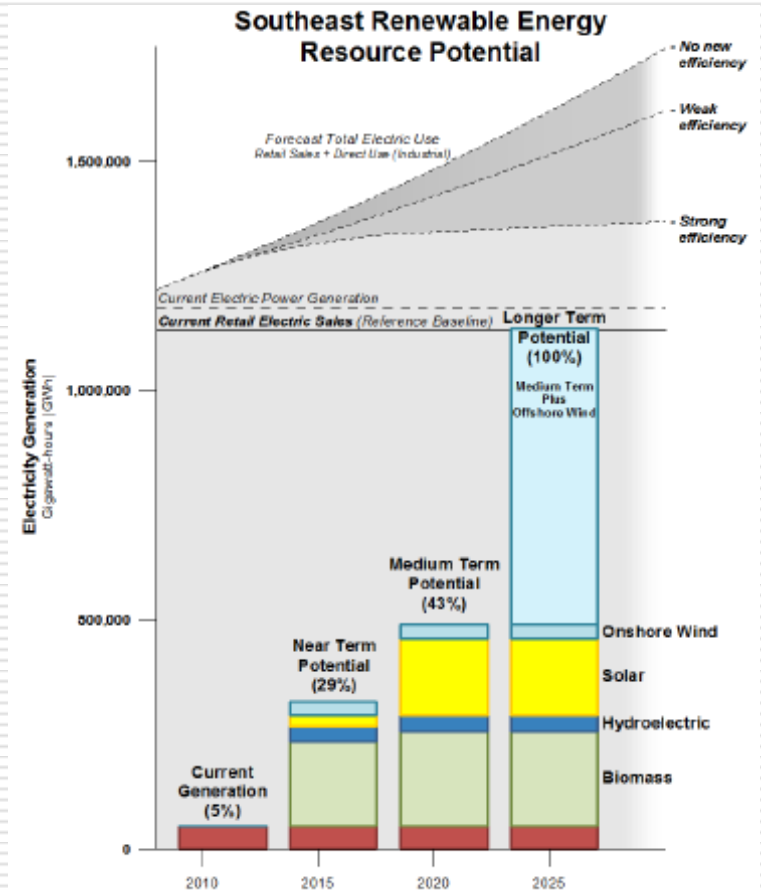
- Technology under development for cellulosic ethanol
- Approximately 30% of USA and EU energy use is transportation

□ Electric Power Generation

- 40% of US energy use is electricity
- Technology is available now at scale
- Government mandates here or coming soon in USA
- This is the elephant in the room (or the woods)

Electricity – Biggest Market

- ❑ Renewable Electricity Standard – 20x20 or 25x25
- ❑ Either goal is very ambitious.
- ❑ Efficiency & conservation are crucial to meet goal.
- ❑ In the South, biomass offers the greatest potential in the near term.
- ❑ The forests are here.
- ❑ Technology exists at scale.
- ❑ Wind & solar have limited potential today in South.



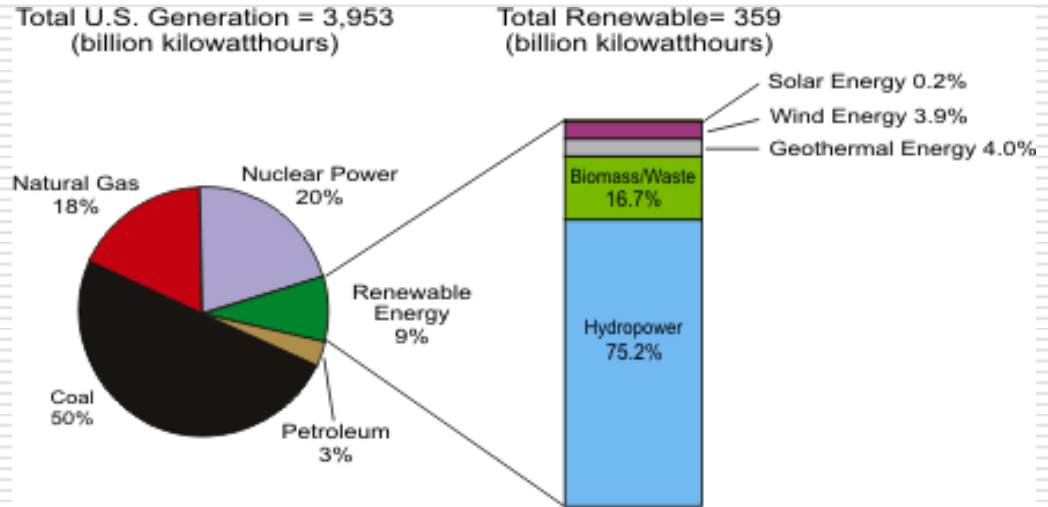
Electricity – Impact on Georgia Forest Industry

Georgia capacity

= 36,500 MW

At 10,000 green tons per year for each MW...

moving 1% of current capacity to wood requires 3.65 million green tons/yr



Source: Energy Information Administration

Current forest removals = 50 million green tons per year

Current forest growth = 68 million green tons per year

Current announced biomass using facilities will require ~10 million green tons per year in Georgia (most of this is for electricity).

Announced North American Bioenergy Projects

Type	#	000 GT/Yr	Avg/Plant
Wood Pellets	31	10,474	338
Electricity	49	23,991	490
Cellulosic Ethanol	8	2,315	289
TOTAL	88	36,780	

Largest pellet and electricity plants are 1+ million ton/year scale.

Can All of These Be Built?

- ❑ Probably not – see recent RISI and F2M reports.
- ❑ Some current wood users will not survive as wood prices escalate with the entry of wood energy projects.
- ❑ But, we continue to see pulpwood consumption decline in North America, over 8 million tons in 2008.
- ❑ New mill press releases notwithstanding, NONE of the announced plants can be sourced primarily on wood wastes. They will primarily consume pulpwood as do pulp mills.
- ❑ Economic slowdown, credit scarcity, and collapse of fossil fuel prices are slowing the construction of announced projects.
- ❑ Markets will sort this out in time and subsidies/mandates/etc. may favor new energy producers over traditional industry.

Sustainability Issues

- ❑ Big current “buzz word” in green markets world.
- ❑ The definition of this term is a critical policy issue.
- ❑ There are legitimate science-based issues about nutrient losses with more aggressive harvesting of forest biomass, primarily on sites with known nutrient issues.
- ❑ There are also emotion-based concerns voiced by well-meaning people and groups who want to protect forests generally but also want green but non NIMBY energy.
- ❑ Both concerns are leading to the adoption of guidelines for “sustainable biomass harvesting” by states – these are often more political than scientific guidelines.

Obstacles

- ❑ Currently low and recently volatile fossil fuel prices
- ❑ Government policies that attempt to pick winners rather than encouraging innovation broadly
- ❑ Installed infrastructure favors liquid fuels over electricity for transportation
- ❑ Electricity grid and pricing policies favor large generators
- ❑ Consumer actions (as opposed to answers to polls) still indicate a strong preference for lower cost energy
- ❑ Politicians follow consumers (voters)
- ❑ Current credit and economic conditions
- ❑ Scale – many alternatives are still only proven on a small scale, yet our demand require larger scales

Does Going Green = Making Green?

- Without government intervention, typically not in the wood to energy game at today's prices. (1Q09)
- Several things could change this...
 - Federal Renewable Electricity Standard
 - Federal Cap & Trade Mandates on Carbon
 - Higher fossil fuel prices
 - Significant changes in consumer behavior
- Conservation and improved efficiency are important.
- Forests can provide a significant portion of renewable energy targets and do so fairly quickly, but they alone cannot meet the overall long-term goals often mentioned by politicians today.

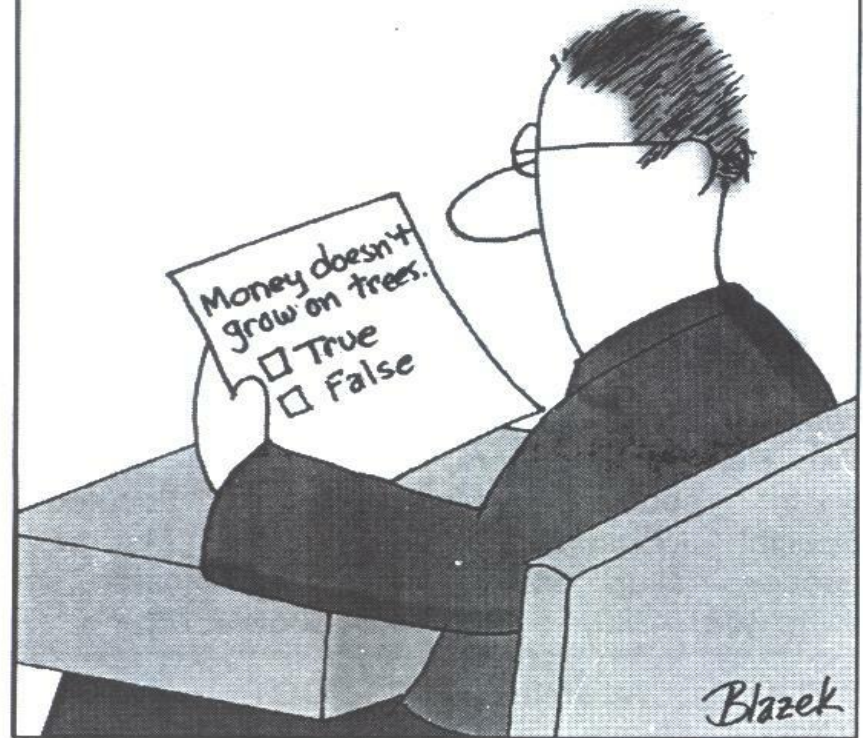
Questions?



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