Hurricane Update: Lessons Learned

National Bio-energy and Wood Products Conference

Denver, Colorado

March 14-16, 2005

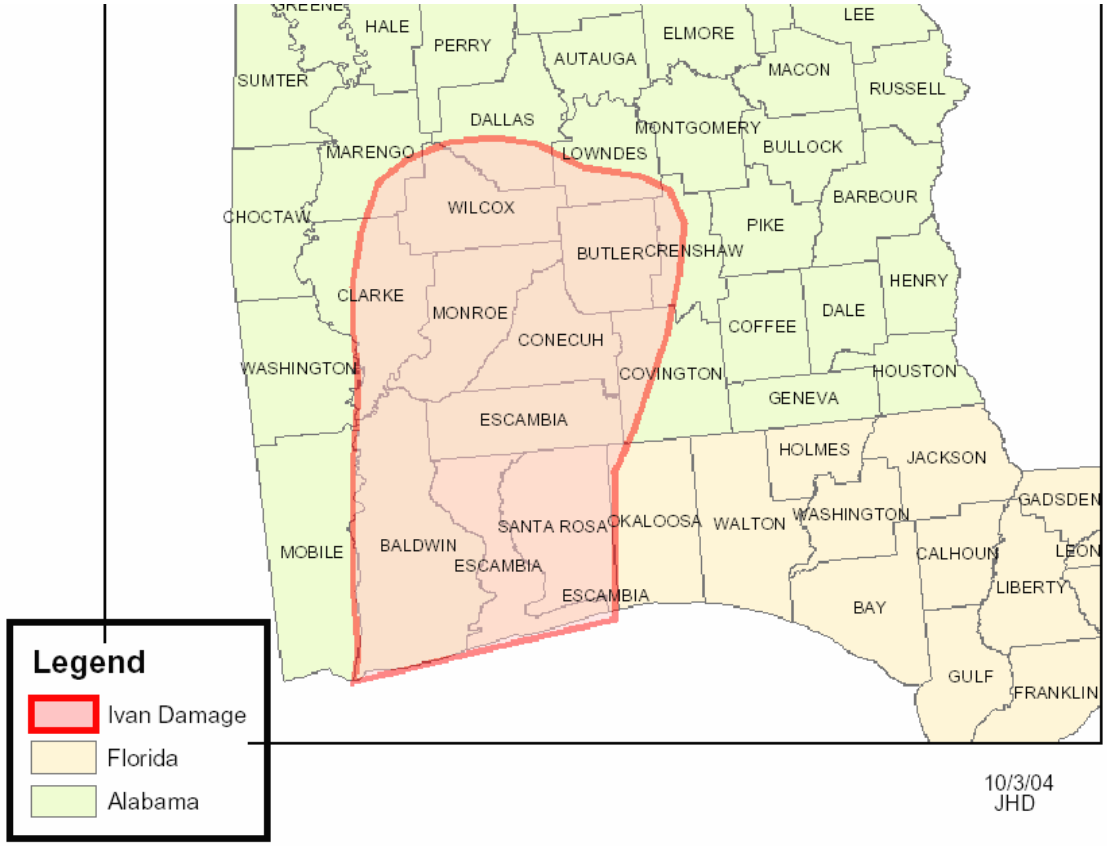
IVAN Disaster and Recovery in Alabama's Wood Basket

September 16, 2004

First Things First

- Assessing the Impact and establishing priorities
- Restore Communities and provide shelter
- Open Roads and emergency Routes
- Power and Supplies

Forest Resource Damage Assessment
$700 million and counting!



Governors Forest Forest Recovery Task Force

October 4, 2004

- Timber Utilization
  - Storage facilities
- Governmental Affairs
  - NPDES Permitting, Transportation Policy
- Communications
  - Landowner meetings, Newsletters, Tax seminars
  - Scorekeeping
- Harvesting and Transportation
  - Safety, Rail and Truck Transport
- Forest Health and Restoration
  - Seedlings and Assistance

Recovery Task Force Actions

- Proclamation from Governor – truck weight variance
  - Reciprocal agreements from adjacent states
  - Moved valuable logs long distances
- Damage Assessment
- Consulted with Hugo experts
- Formed and dispatched working committees
- Set goals and track progress, regularly report progress
- Wet Storage Workshop and ADEM support
- Landowner Communication
- Cost Share programs for landowners (AFC)

Task Force Actions That Worked/Opportunities

WORKED WELL

- Formation of Forest Recovery Task Force
- Load Wt Variance
- Reciprocal Agreements
- Wet storage
- Blue Stain marketing
- Establishing goals
- Tracking progress
- Landowner communication
- Logger safety
- Southern Linc
- Additional crews moved in to salvage area
- Loggers able to run

OPPORTUNITIES

- **FEMA connection**
- **Road clearing**
- Fuel Availability
- **Pre-move equipment**
- **Increase emphasis on biomass recovery**
- Access to hardwood
- Southern Linc coverage

HURRICANE IVAN SALAVGE SUMMARY – September 12, 2005

Damage Estimates	Pine ST	Pine PW	Total Pine	Hwd ST	Hwd PW	Total Hwd	Total
Tons (000)	3,332	305	3,637	4,169	113	4,282	7,919
Value ($000)	$163,814	$1,557	$165,371	$130,293	$732	$131,025	$296,396
Recovery Targets							
Tons (000)	999	226	1,225	500	19	519	1,745
Value ($000)	$49,144	$1,153	$50,297	$15,635	$124	$15,760	$66,056
Percent of Volume	30%	74%	34%	12%	17%	12%	22%
Percent of Value	30%	74%	30%	12%	17%	12%	22%
Recovery Progress							
Tons (000)	1,174	1,212	2,386	113	759	872	3,258
Value ($000)	$57,705	$6,187	$63,892	$3,531	$4,933	$8,463	$72,355
Percent of Volume	35%	397%	66%	3%	674%	20%	41%
Percent of Value	35%	397%	39%	3%	674%	6%	24%

Recovered 65% of Pine Volume
And 38% of Pine Value

Recovered 41% of Total Volume
And 24% of Total Value

GOAL HAS BEEN MET AND EXCEEDED
BY THE ALABAMA LOGGING INDUSTRY

Logging Residue

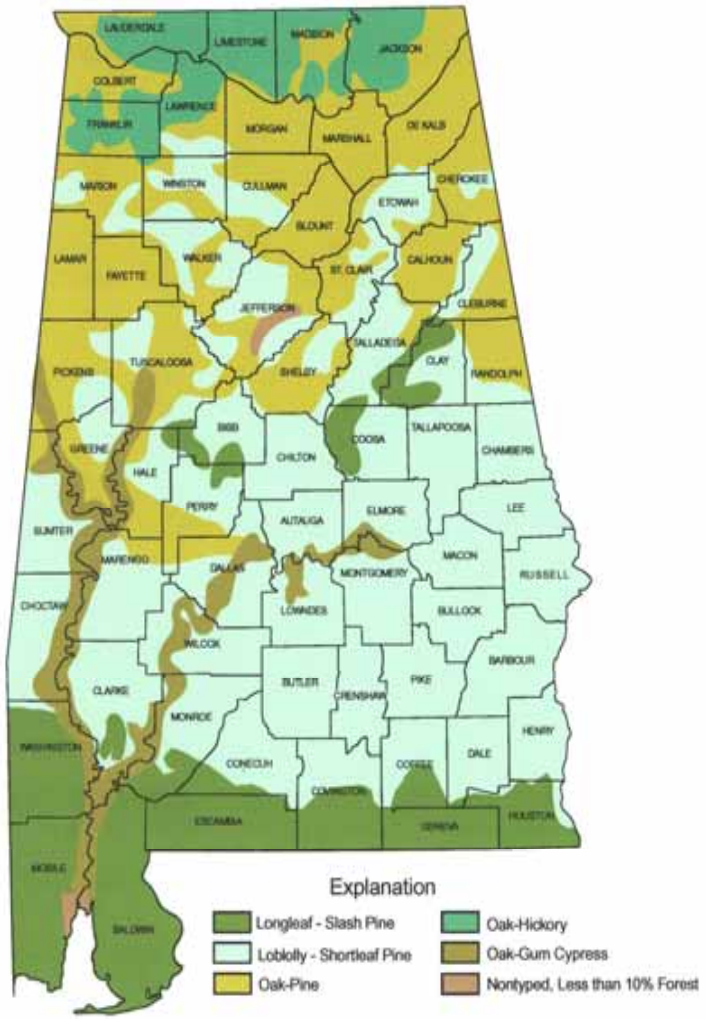
- Alabama generates 2.6 million dry tons annually from logging
- Most logging residue is not recovered
- These residues represent a cost to subsequent forest operations

Finding Markets?Approximately 15% of pine saw timber volume is left as woody debris, for hardwood almost 24% according to USFS research

- Alabama Could recover 5.4 million tons of forest residues annually
- Amount equal to 15 million barrels of crude oil
- These residues are currently not recovered and represent a cost to logging operations

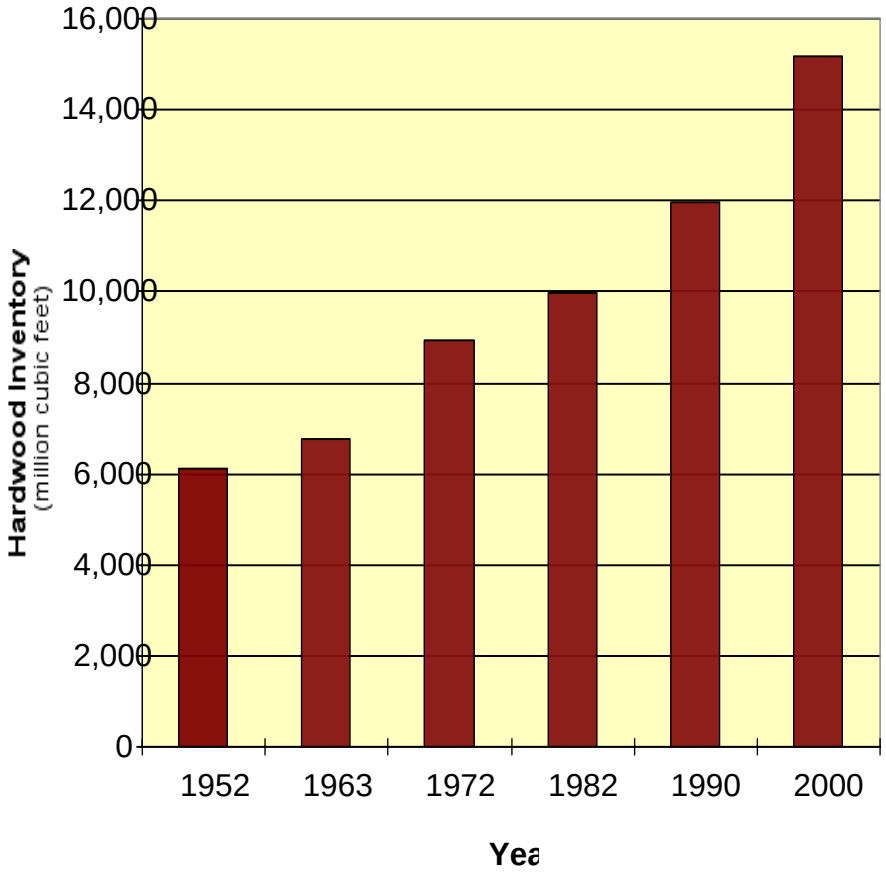
Alabama Forest Resource

- 23 Million acres Timber
  - 46% Hardwood
  - 35% Pine
    - Approximately 20% plantations
  - 19% Mixed Pine Hardwood
  - 900 Million Tons of Dry woody biomass
  - **Production off 22% since 1997 or about 7 million tons per year**



Sustainable Resource???

- *Alabama's total timber inventory is 138% larger than it was fifty years ago, and is the largest ever recorded*
- *Alabama's annual harvest increased by 150% between 1963 and 1998. Harvests peaked in 1998 and have declined by about 25% since then*
- *Alabama's* **pine timber inventory** *is* **125% larger than it was fifty years ago,** *and is the largest ever recorded.*
- *Alabama's* **hardwood timber inventory is 150% larger** *than it was fifty years ago, and is the largest ever recorded*



Source: USDA Forest Service, Alabama Forestry Commission, &

Alabama Business Acquisitions and Mergers

Mead & Westvaco

Gulf States & Rock-Tenn

Weyerhaeuser & Willamette

Bowater & Alliance Forest Products

Koch-Georgia-Pacific & Fort James

Plum Creek & The Timber Company

International Paper & Champion International

Weyerhaeuser & Trus Joist International

Weyerhaeuser & MacMillan Bloedel

International Paper & Union Camp

Stone Container & Jefferson Smurfit

Bowater & Avenor

James River & Fort Howard

Kimberly-Clark & Scott Paper

Madison Dearborn & Boise Cascade

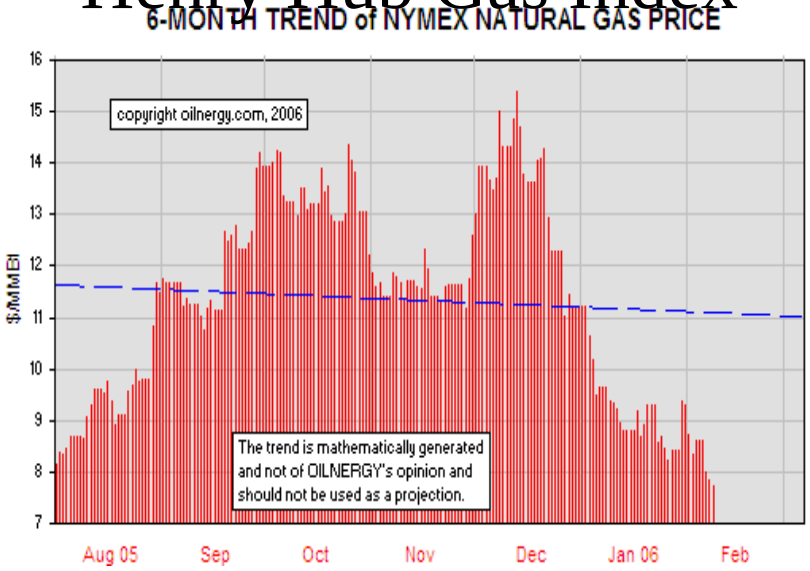
What about bio-refining and energy???

- Co Firing Blended Fuels Coal/ Biomass
- Direct Fired / Steam Turbine
- *Gasification Combined Cycle Systems for wood need to be tested*
- *Bio Refining Fuels and Cellulose products Systems need to be tested*

Natural Gas and Energy Costs ?

- Tenaska Peeking Plant
Billingsly AL

- Henry Hub Gas Index



Bio Products, Fuel, and Power
What are the Benefits?

- Forest Resource
  - Reduce reforestation costs as well as improved watershed management and increased utilization of timber
- Environment
  - Carbon Emissions, SOX,NOX, Mercury from fossil fuels increase annual renewable resource to the energy stream. Lower energy input from forest resources than annual crops.
- Rural Economic Development
  - Contracts for rural development from annual renewable source
- Power Interconnection
  - Reliable supply with smaller units at intersections inside the grid

Logging with no energy Market

Logging with energy market

Benefits to Forest Management

new markets for timberland owners
- new jobs to grow, harvest & transport woody biomass fuels
- new incentives to invest in productive forests
- new investment in energy conversion technologies

reduction in greenhouse gases & noxious emissions from fossil fuels
- additional carbon sequestration from managing forests for energy

Lower site preparation costs

Barriers to Developing Forest Biomass Markets

- Public Perception
  - Needs Advocacy and public awareness to support National Energy Security and rural economic development with the benefits to the environment
  - Must correct lack of understanding to sustainable forestry, watershed management, and overall benefit to air and water quality impacts
- Policy
  - Regulatory rules fail to recognize renewable resources and provide support
  - Utility Interconnection and overall value to distribution to the grid
  - Lack of state support or credit to advance development
  - Uncertainty of technology and lack of training to advance access
- Cost
  - Tax parity for fuel processor
  - Cost of conversion from forest through product breakdown
  - Long term Economic incentives

Outlook for adding wood to the energy stream

- 1) Increased Use of Woody Biomass Within the Forest Industry
  - mills still using natural gas are converting steadily to wood

  2) Growing Interest in Woody Biomass in Other Industries
  - mills using natural gas are interested due to cost factors
  - mills using coal & fuel oil are interested due to environmental factors
  - unfamiliarity & complexity = risk- initial capital investment
  - economic incentives are definitely growing, but are not compelling

  3) Use of Woody Biomass by Electric Utilities Is the Key to Development of a Woody Biomass Fuel Industry
  - including a small percentage in the fuel mix could have big impact
  - incentives are needed to induce utilities to action

  4) Ethanol conversion technology must be proven to be considered potential for blended liquid fuel for equipment

  5) Bio refining for new cellulose fibers for plastic component replacement

What are we waiting for?

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