MINUTES OF A JOINT MEETING
BETWEEN LEE COUNTY BOARD OF COMMISSIONERS
SANFORD CITY COUNCIL
BROADWAY TOWN COMMISSIONERS
LEE COUNTY ECONOMIC DEVELOPMENT CORPORATION
The McSwain Extension Education and Agriculture Center
2420 Tramway Road
Sanford, North Carolina
Wednesday, November 13, 2012
6:30 P.M.

The City Council met jointly with the Lee County Board of Commissioners, Broadway Town Commissioners, and the Lee County Economic Development Corporation on Wednesday, November 13, 2012, at 6:30 P.M., at the McSwain Extension Education and Agriculture Center located at 2420 Tramway Road, Sanford, North Carolina. The following people were present from the Sanford City Council:

Mayor Cornelia P. Olive
Mayor Pro Tem Sam Gaskins
Council Member Walter McNeil, Jr.
Council Member James Williams
Council Member L. I. (Poly) Cohen
City Manager Hal Hegwer
City Clerk Bonnie D. White

Absent:
Council Member Jimmy Haire
Council Member Charles Taylor
Council Member Rebecca Wyhof
City Attorney Susan Patterson

Crystal Morphis, from Creative Economic Development Consulting, LLC, advised that the Lee County Economic Development Corporation has engaged her firm to fill in until the end of March 2013 due to the retirement of Bob Heuts. She has been doing consulting work for ten years and she wants to be sure that Lee County does not miss out on an opportunity.

Ms. Morphis gave an overview of current activities from the Economic Development Corporation. She advised that there have been several inquiries - most of them have been interested in existing buildings such as the Redman Building, GKN, and This End Up.

Ms. Morphis introduced Phil Sheridan, Director of Industry Development at the North Carolina Biofuel Center. Mr. Sheridan explained the strategic plan of the Biofuel Center in bringing the biofuel industry to North Carolina. He stated that Lee County has a site located off of Colon Road that could be used due to the close proximity of the railroad beside the property and the bypass. The Central Carolina area has the right type of wood needed for the biofuel process, excess wood and several saw and lumber mills located nearby. They are performing a study on North Carolina's potential sites and hope to share the data with clients by the end of the year.

ALL EXHIBITS CONTAINED HEREIN ARE HEREBY INCORPORATED BY REFERENCE AND MADE A PART OF THESE MINUTES.

ADJOURNMENT

The meeting was adjourned at 7:35 P.M. upon motion of Council Member Walter McNeil, Jr. Council Member L. I. "Poly" Cohen seconded the motion and it carried unanimously.

Respectfully submitted,

Cornelia P. Olive

CORNELIA P. OLIVE, MAYOR

ATTEST:

Bonnie D White

BONNIE D. WHITE, CITY CLERK

Biofuels Center of North Carolina

Biofuels in North Carolina

Nov 13, 2012

Phil Sheridan
Director, Industry Development
Biofuels Center of North Carolina
psheridan@biofuelscenter.org

BIOFUELSCENTER.ORG

LEE COUNTY
ECONOMIC DEVELOPMENT
Southern Base of the Research Triangle Region

Biofuels Center of North Carolina

Biofuels in North Carolina

- Summary
  - Petroleum demand
  - Motivation for a biofuels industry
  - What are biofuels?
  - How to produce biofuels?
  - Biofuels Center of North Carolina
  - Feedstocks in North Carolina
  - Woody Biomass Assessment - Lee County Site

Biofuels Center of North Carolina

North Carolina Total Gasoline & Diesel Fuel Demand

5.2 billion GPY

All Sales/Deliveries by Prime Supplier

North Carolina Prime Supplier Gasoline and Diesel Sales Volumes, BGY									
Year	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Gasoline	4.28	4.30	4.21	4.24	4.22	4.03	4.10	4.14	4.05
Diesel No. 2	1.21	1.20	1.23	1.26	1.31	1.32	1.22	1.22	1.18
Total	**5.49**	**5.50**	**5.44**	**5.50**	**5.53**	**5.35**	**5.32**	**5.36**	**5.23**

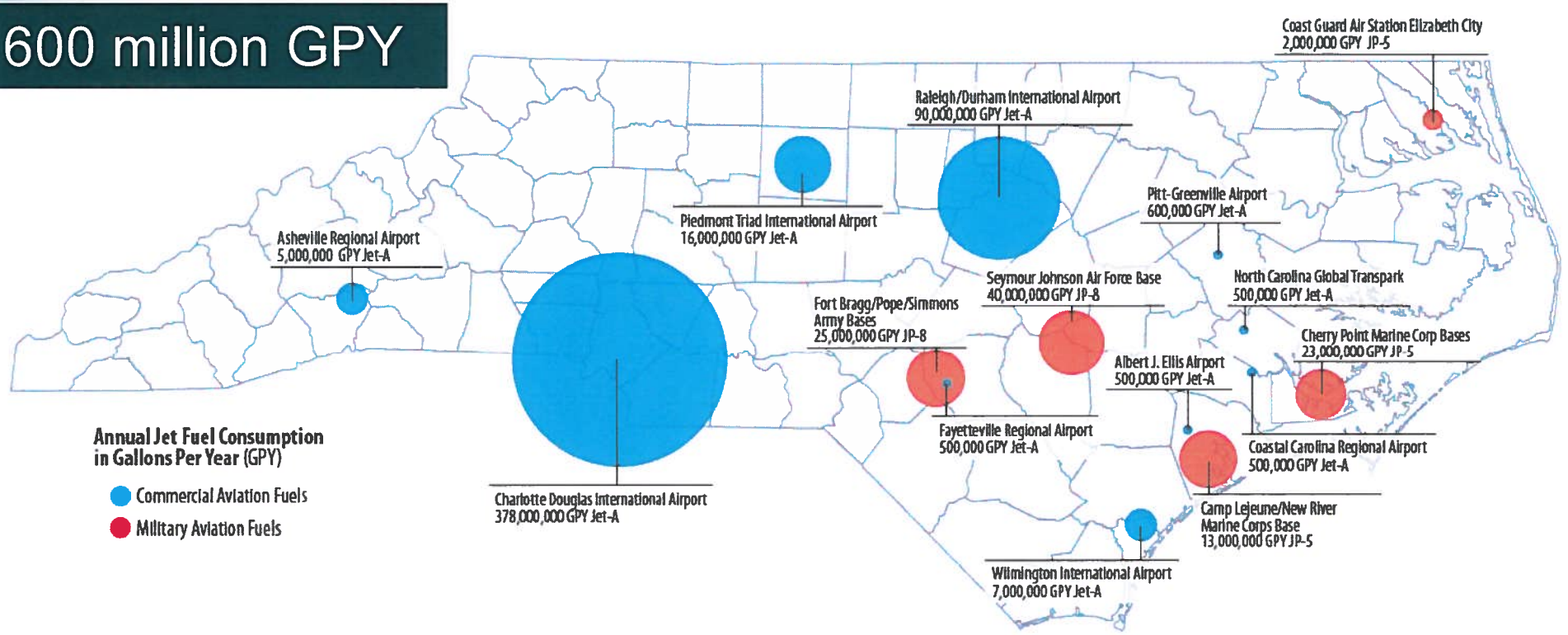
Energy Information Administration
Official Energy Statistics from the U.S. Government

http://tonto.eia.doe.gov/dnav/pet/pet_sum_mkt_dcu_SNC_a.htm

Biofuels Center of North Carolina

Aviation fuels in North Carolina

600 million GPY



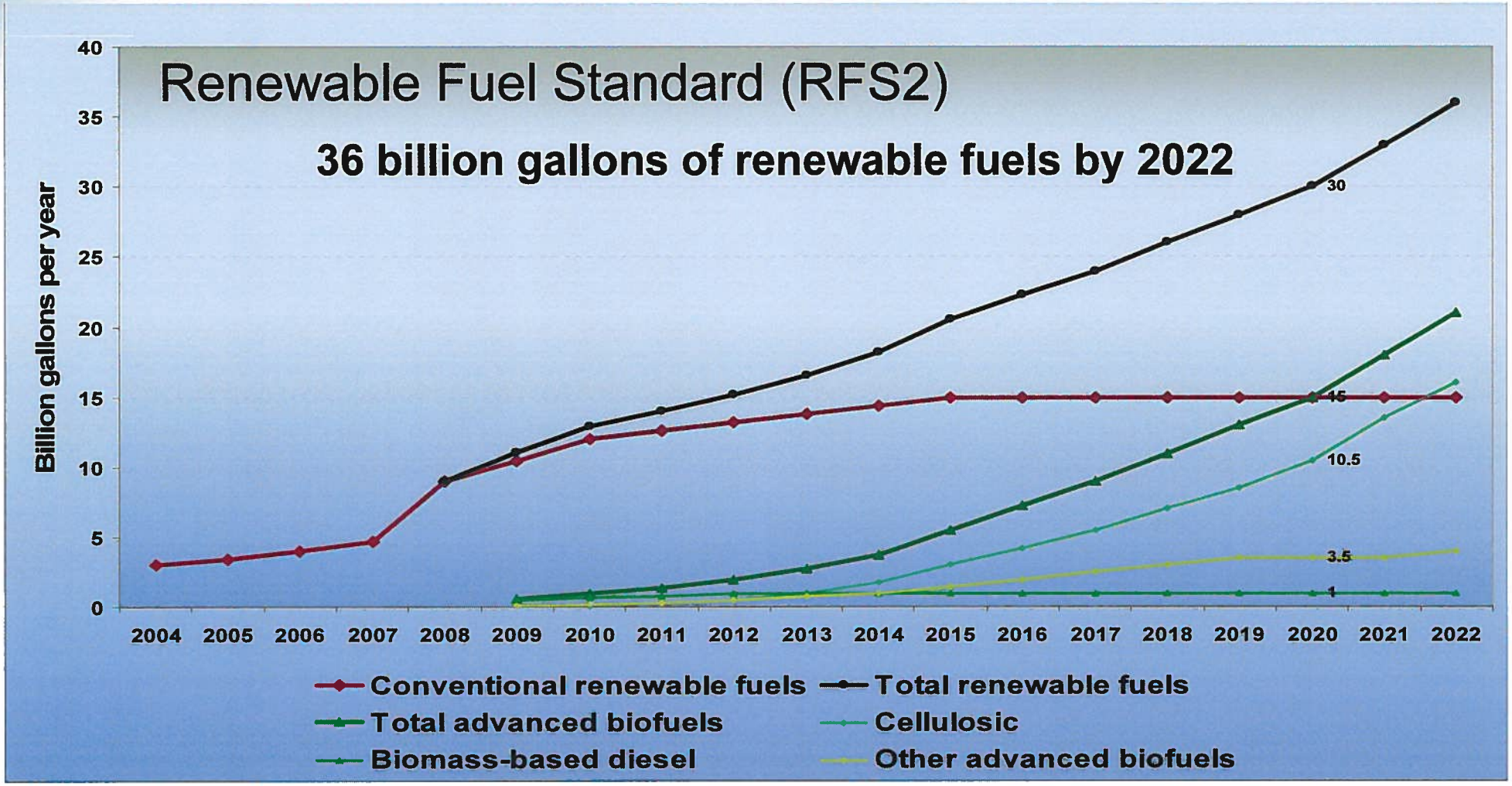
Biofuels Center of North Carolina

Motivation for a biofuels industry

- Petroleum price volatility
- National security
- Economic impact
  - Land owner opportunity
  - Direct jobs and investment
  - Keep the money in NC

Biofuels Center of North Carolina

Motivation for a biofuels industry



Source: ORNL

***US Energy Bill** (Energy Independence & Security Act 2007)*

Biofuels Center of North Carolina

What are biofuels?

- Conventional biofuels
  - Corn to ethanol
  - Seed oil and waste grease to biodiesel
- Advanced biofuels
  - Cellulose to ethanol, jet fuel, diesel
    - Biochemical – enzymes and fermentation
    - Thermochemical – gasification

Biofuels Center of North Carolina

Producing Biofuels – A Multi-factorial Decision Process

Land

- Current cropland
- Fallow land (CREP, etc)
- Marginal land
- Rangeland
- Forestland

Feedstocks

- Grain crops
- Woody biomass
- Switchgrass Miscanthus
- Animal wastes
- Agric. residues
- Bagasse
- Oil crops
- Other

Process technologies

- Enzymes and Fermentation
- Pretreatment to decouple lignin
- Pulping
- Gasification
- Thermo/chemical conversion
- Anaerobic digestion
- Transesterification

Output/Products

- Chemicals
- Ethanol
- BioGasoline
- FT Diesel
- Wood products
- Polymers
- Fuel Alcohols
- Gas fuels: methane, H2, syngas
- Ash, fertilizers
- Biodiesel

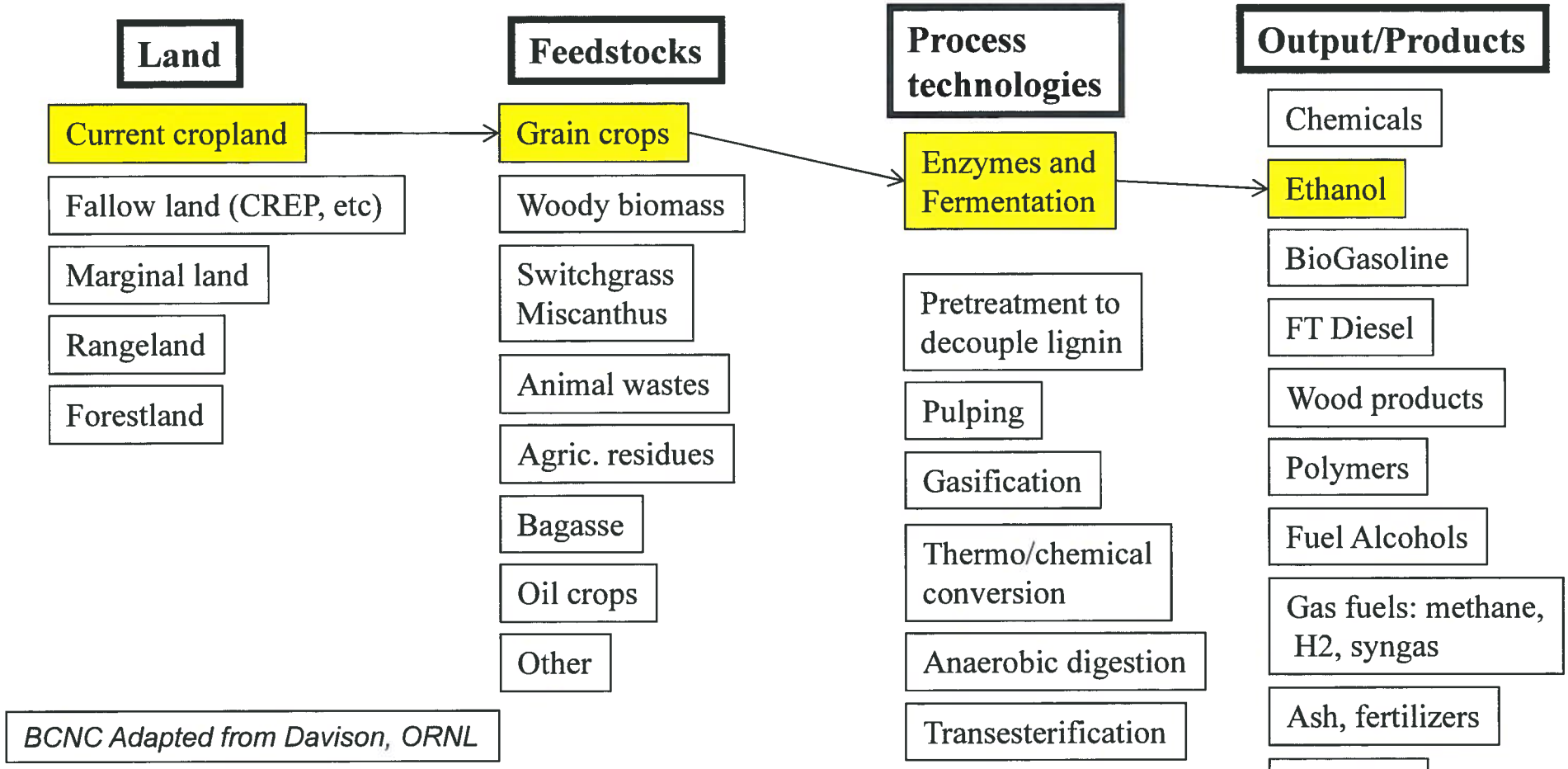
BCNC Adapted from Davison, ORNL

BIOFUELSCENTER.ORG

Biofuels Center of North Carolina

Producing Biofuels – A Multi-factorial Decision Process

1st Gen. Ethanol Biochemical Route

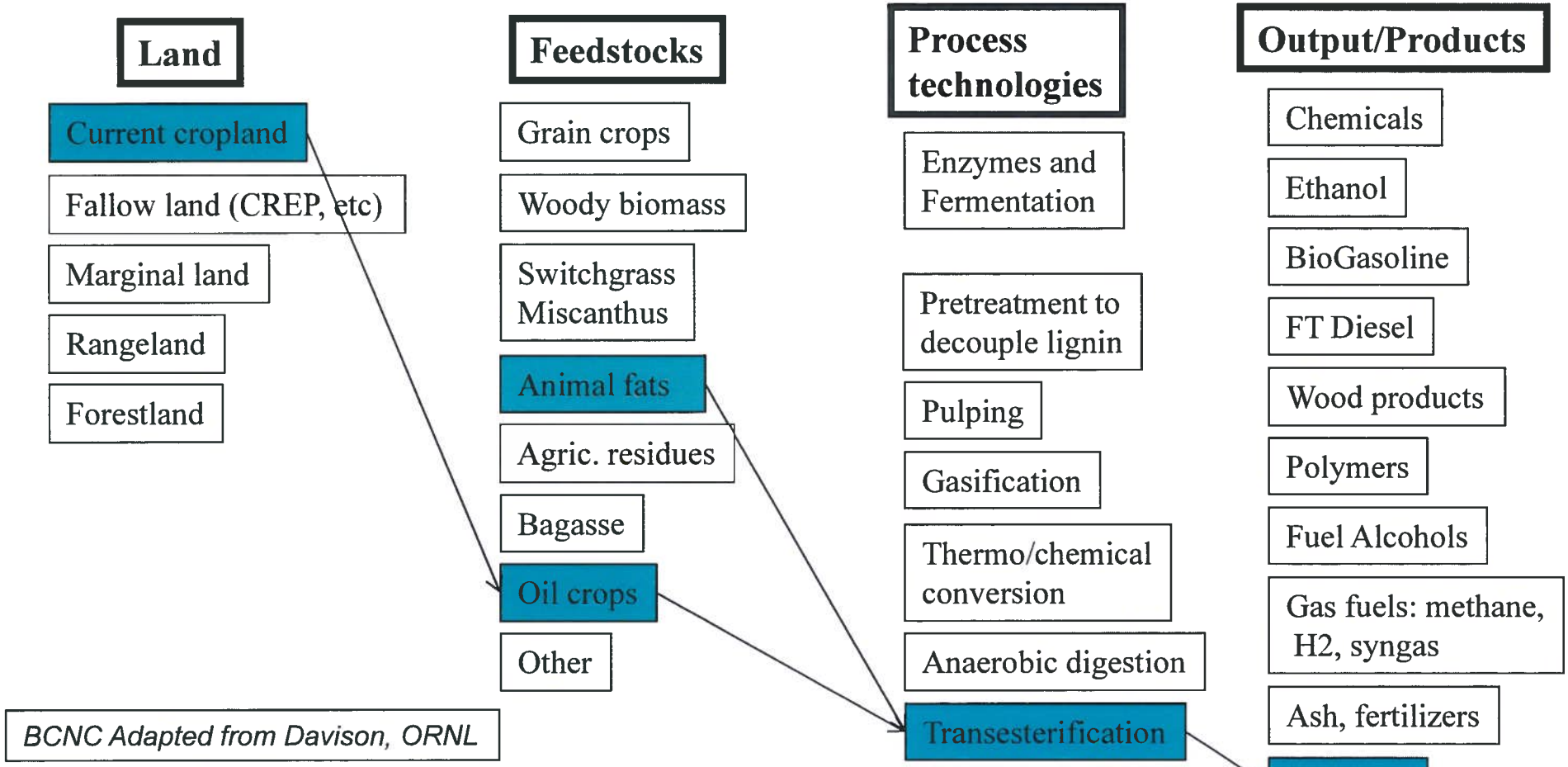


BCNC Adapted from Davison, ORNL

Biofuels Center of North Carolina

Producing Biofuels – A Multi-factorial Decision Process

1st Gen. Biodiesel

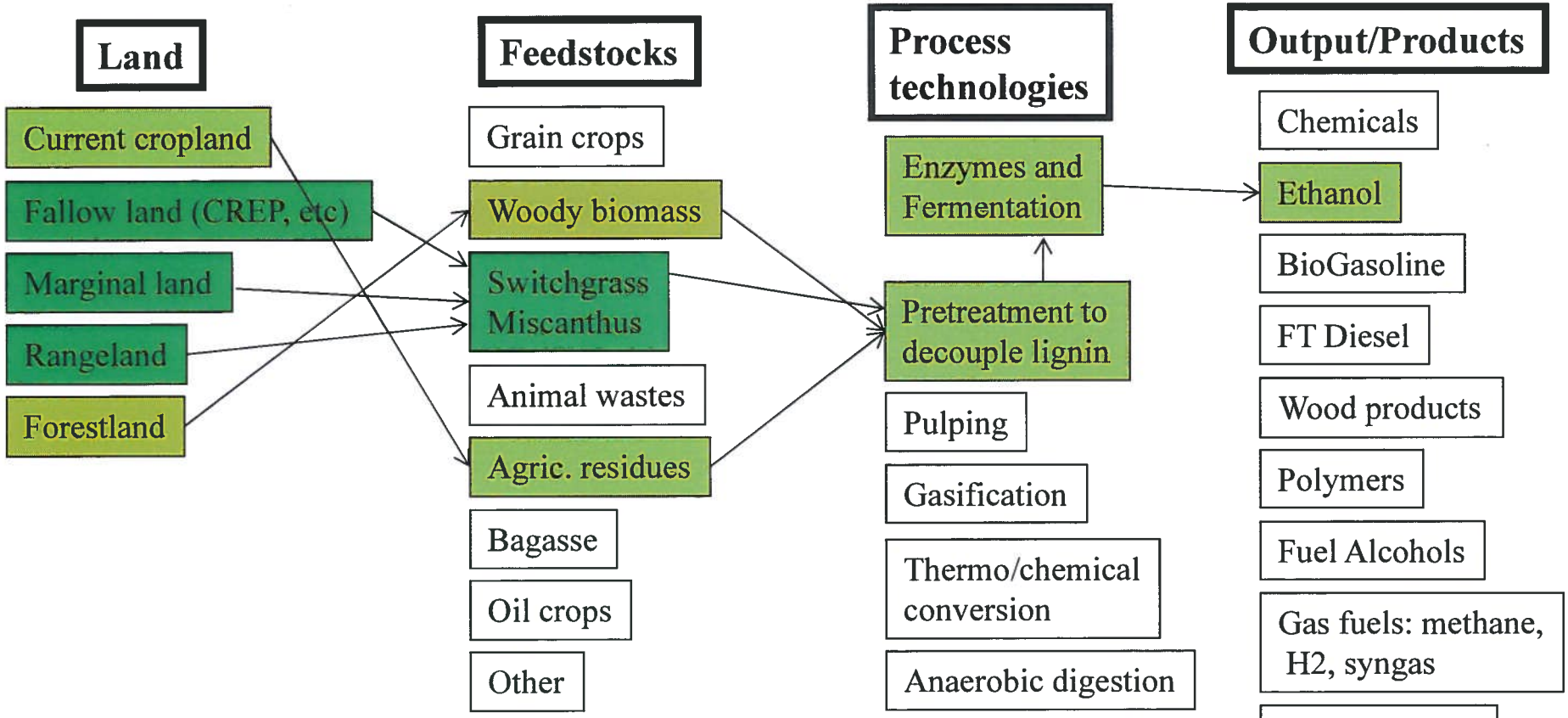


BCNC Adapted from Davison, ORNL

Biofuels Center of North Carolina

Producing Biofuels – A Multi-factorial Decision Process

2nd Gen. Ethanol Biochemical Route

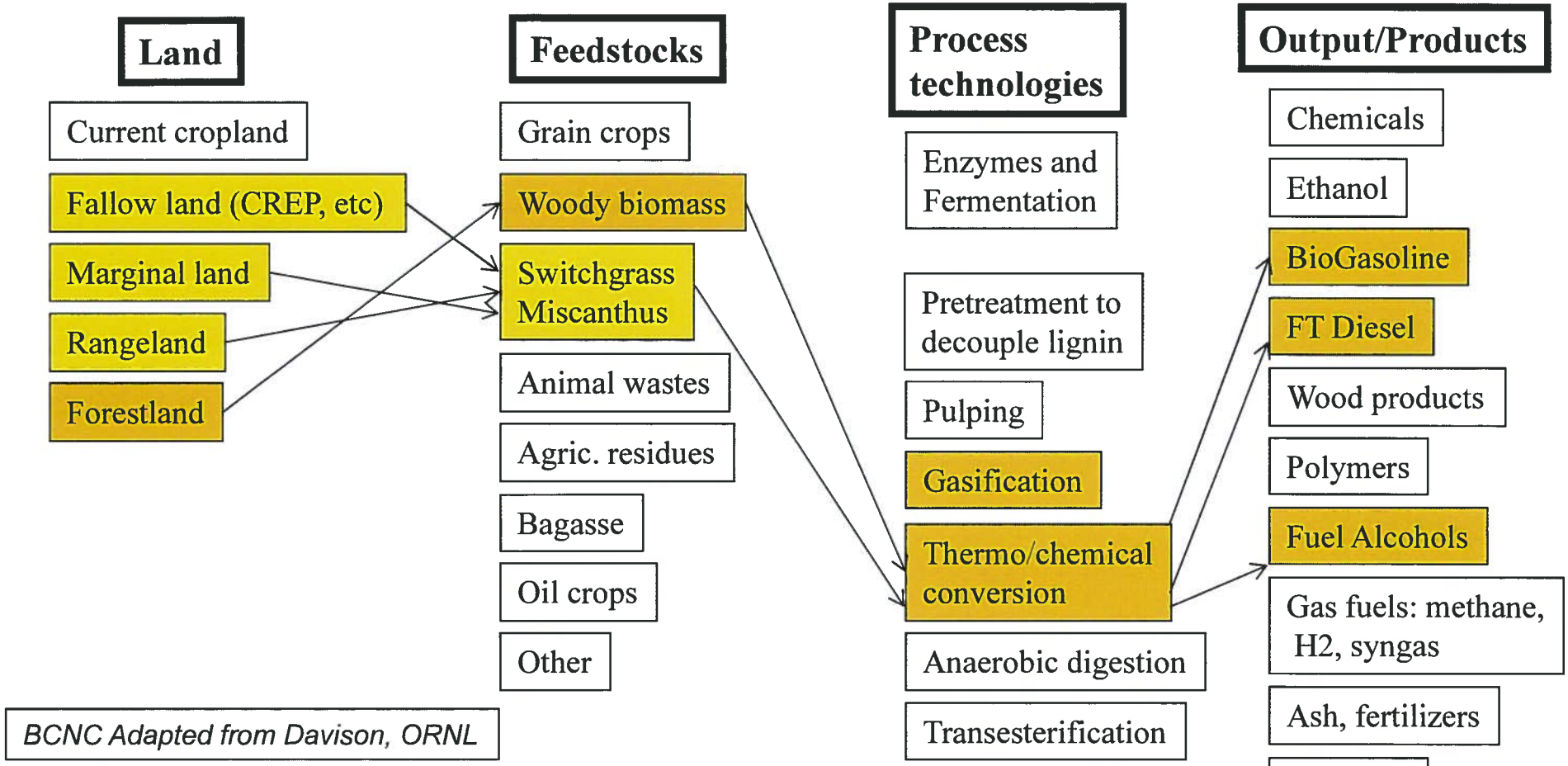


BCNC Adapted from Davison, ORNL

Biofuels Center of North Carolina

Producing Biofuels – A Multi-factorial Decision Process

2nd Gen. Biofuels Thermochemical Route



BCNC Adapted from Davison, ORNL

Biofuels Center of North Carolina

Biofuels Center of North Carolina

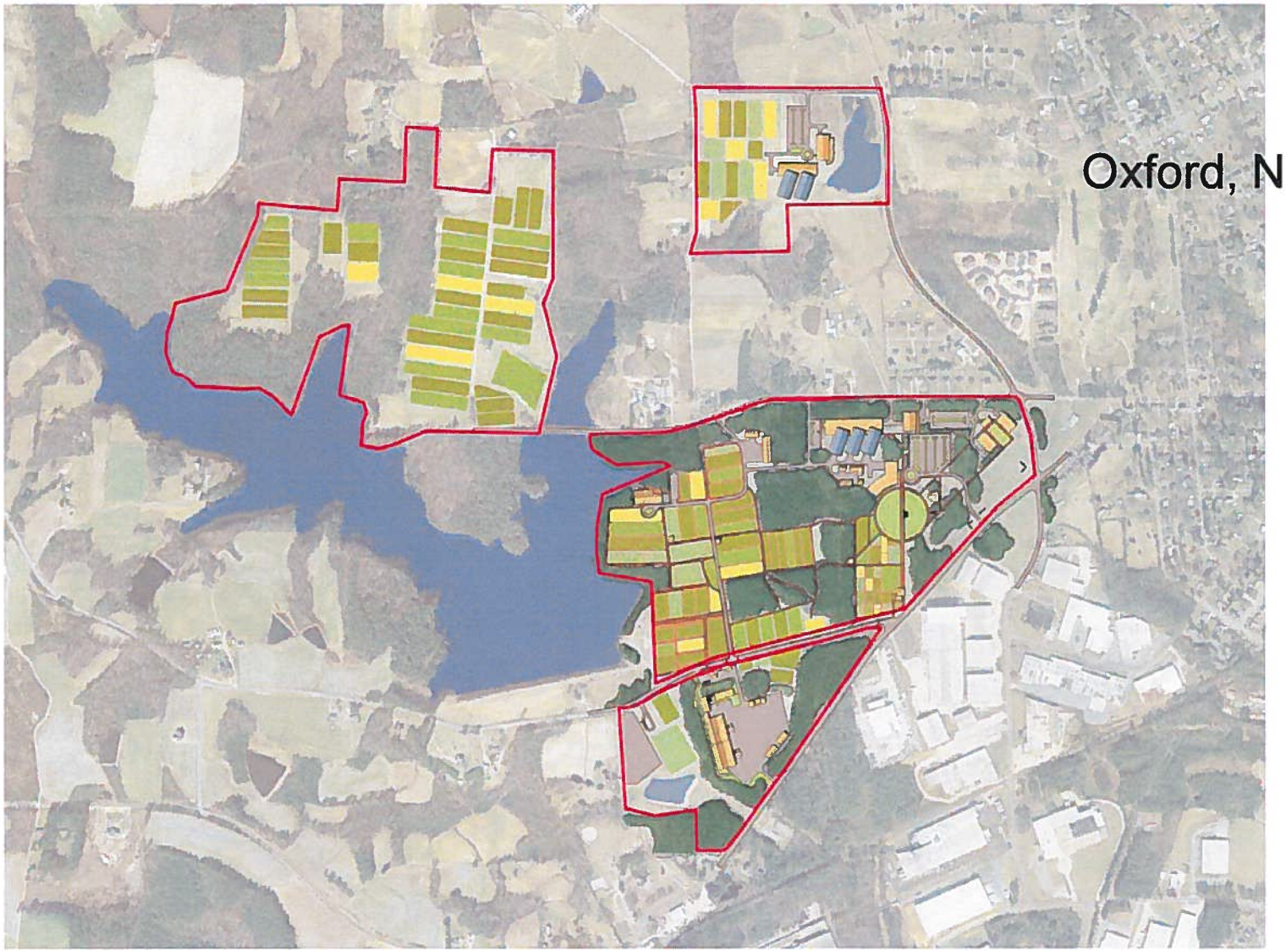
Mission:

- To facilitate and support the development of a sustainable biofuels industry across North Carolina.

Biofuels Center of North Carolina

Biofuels Center of North Carolina

North Carolina's Biofuels Campus 426 acres



Biofuels Center of North Carolina

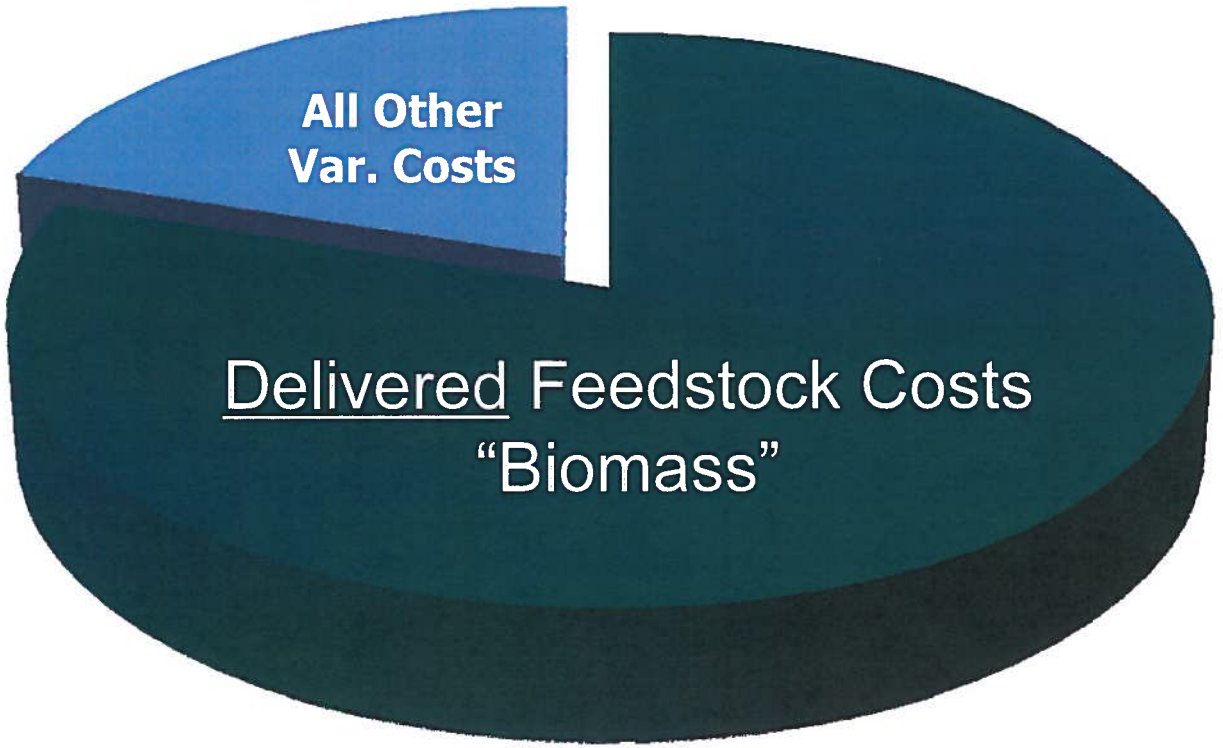
Identify competitive advantages

For industrial biotechnology:

•Biotechnology:	#3 in U.S.	57,000 jobs
•Ag Biotech R&D:	#1 in U.S.	7,700 jobs
•Agriculture:	$70 billion	700,000 jobs
•Forest products:	$23 billion	180,000 jobs
•Feedstocks:	energy grasses, MSW, wood	

Biofuels Center of North Carolina

Feedstocks



Biomass is Key for Biofuels projects

Biofuels Center of North Carolina

Identify competitive advantages

Feedstocks:

- Rural: 85% of 52,586 sq mi
- Climate: 60 deg F avg temp---40”-50” avg rainfall
- Farm land: 8 million acres
  - 600,000 acres of forage land (for energy grasses)
- Municipal Solid Waste (MSW): 7.6 million tons/year
- Forest land: 17 million acres---86% private

Biofuels Center of North Carolina

Feedstocks

Multiple grasses in the southeast

Trial crops in Williamsdale Farms: Duplin County NC

Biofuels Center of North Carolina

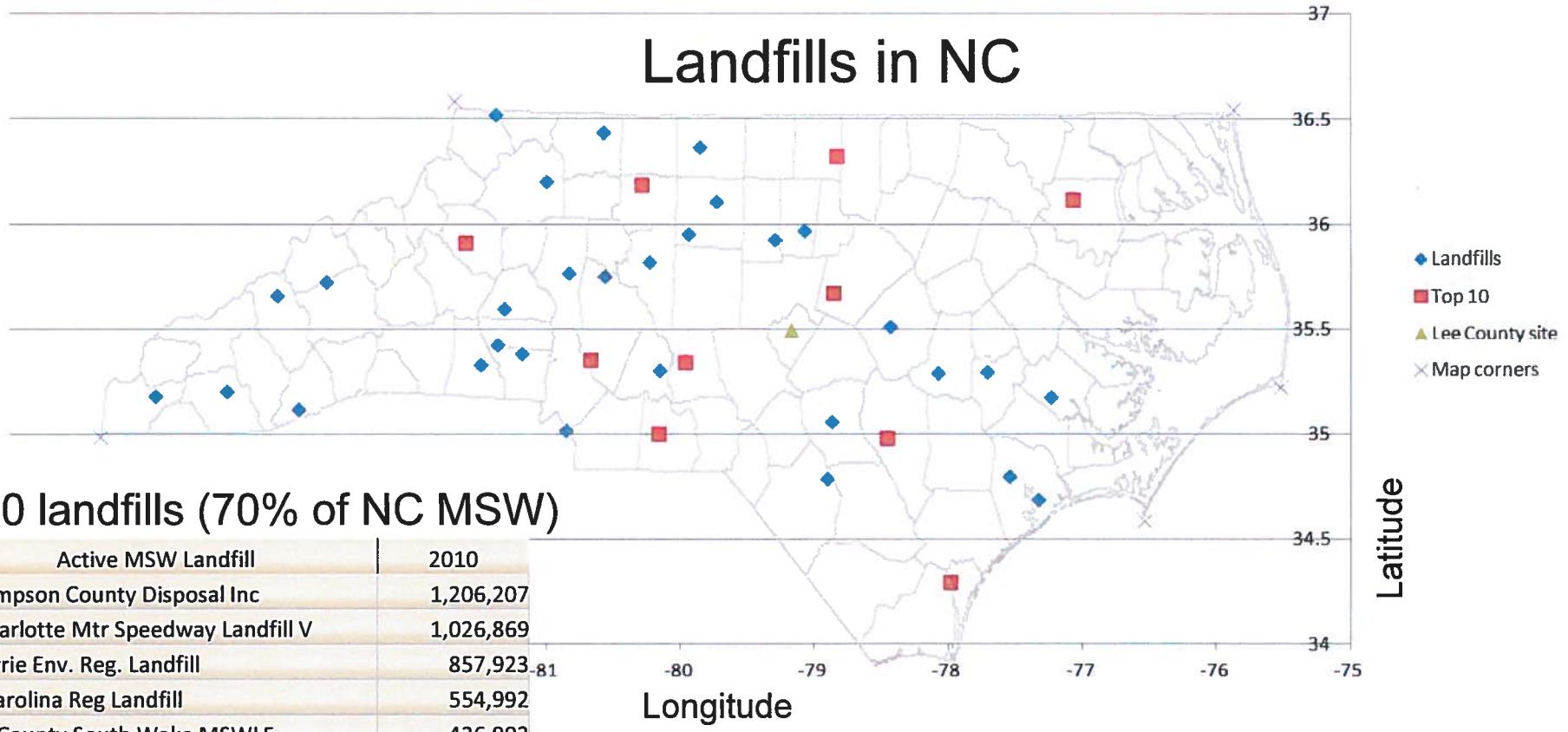
Feedstocks

Multiple grasses in the piedmont

Biofuels Center of North Carolina

Feedstocks

Municipal Solid Waste



Top 10 landfills (70% of NC MSW)

Active MSW Landfill	2010
WI-Sampson County Disposal Inc	1,206,207
BFI-Charlotte Mtr Speedway Landfill V	1,026,869
Uwharrie Env. Reg. Landfill	857,923
East Carolina Reg Landfill	554,992
Wake County South Wake MSWLF	426,903
Foothills Environmental Landfill	330,321
Chambers Development MSWLF	301,161
Upper Piedmont Reg Landfill	234,924
Hanes Mill Road Landfill	221,322
New Hanover County Landfill	171,243

Biofuels Center of North Carolina

Feedstocks

North Carolina Woody Biomass Project

Phase I. Quantify all of the wood available, prices and demand

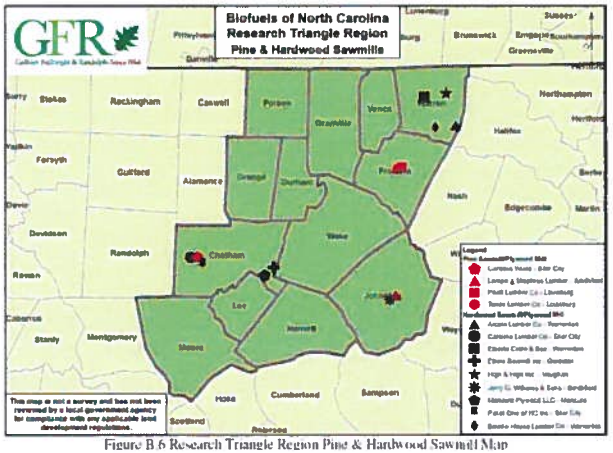


Figure B.6 Research Triangle Region Pine & Hardwood Sawmill Map

Phase II. Assess the utility infrastructure at 14 industrial sites near the wood

Phase III. Produce bankable, biomass report for each industrial site

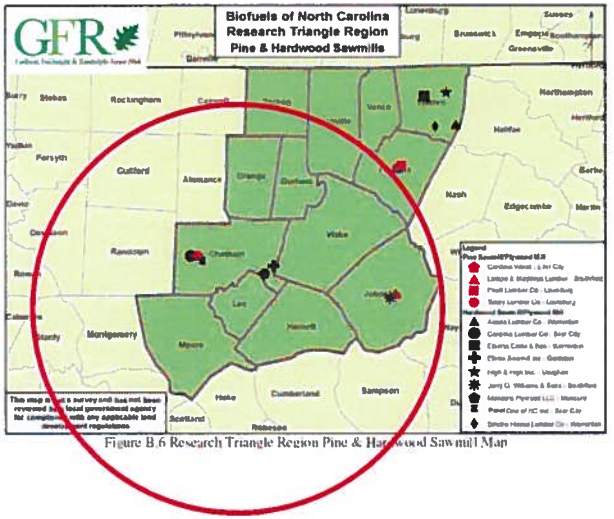
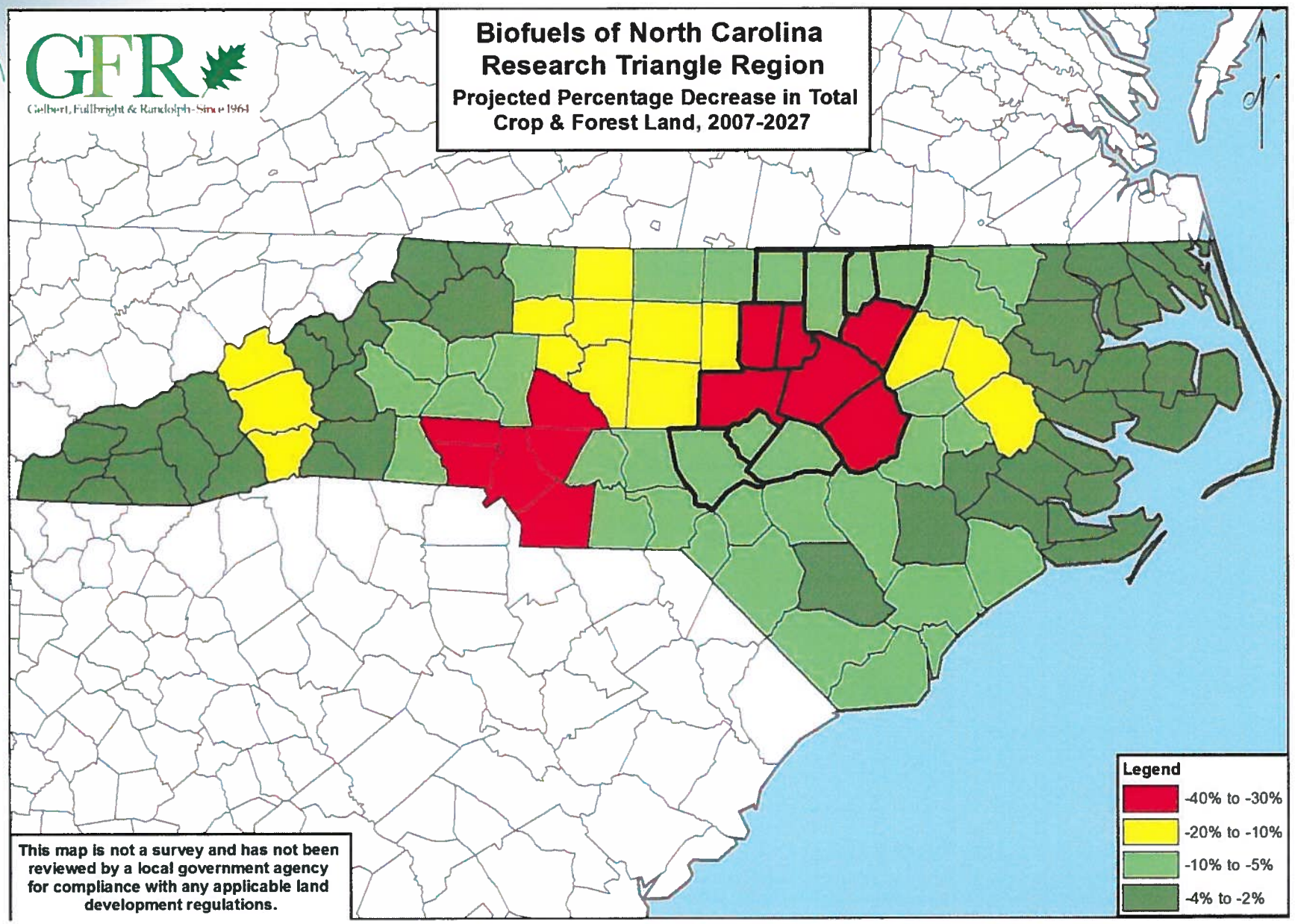


Figure B.6 Research Triangle Region Pine & Hardwood Sawmill Map

Biofuels Center of North Carolina

Phase I:Crop & Forest Land Decrease



BIOFUELSCENTER.ORG

Biofuels Center of North Carolina

Phase I: Wood Numbers

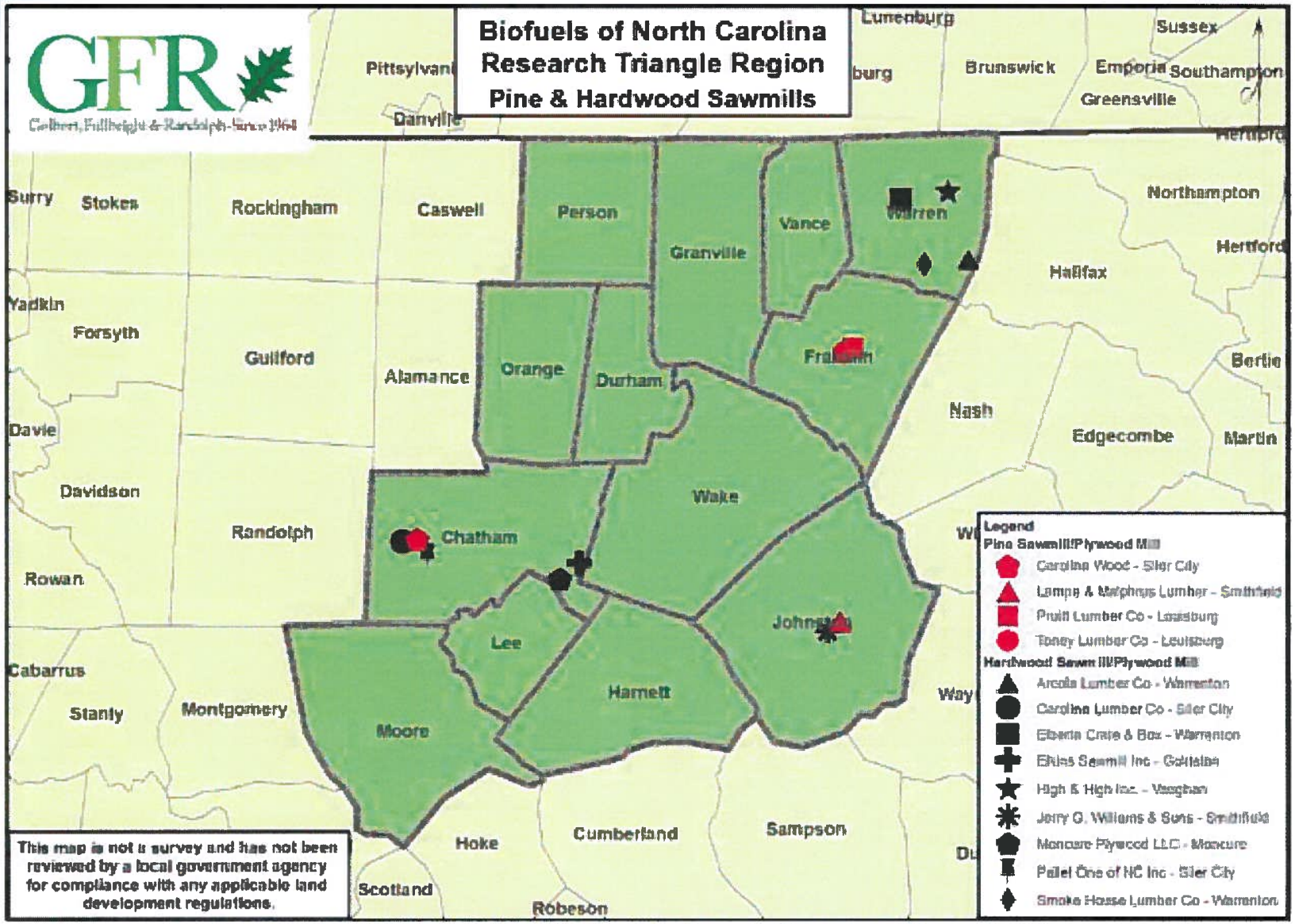


Figure B.6 Research Triangle Region Pine & Hardwood Sawmill Map

Biofuels Center of North Carolina

Phase I: Wood Prices

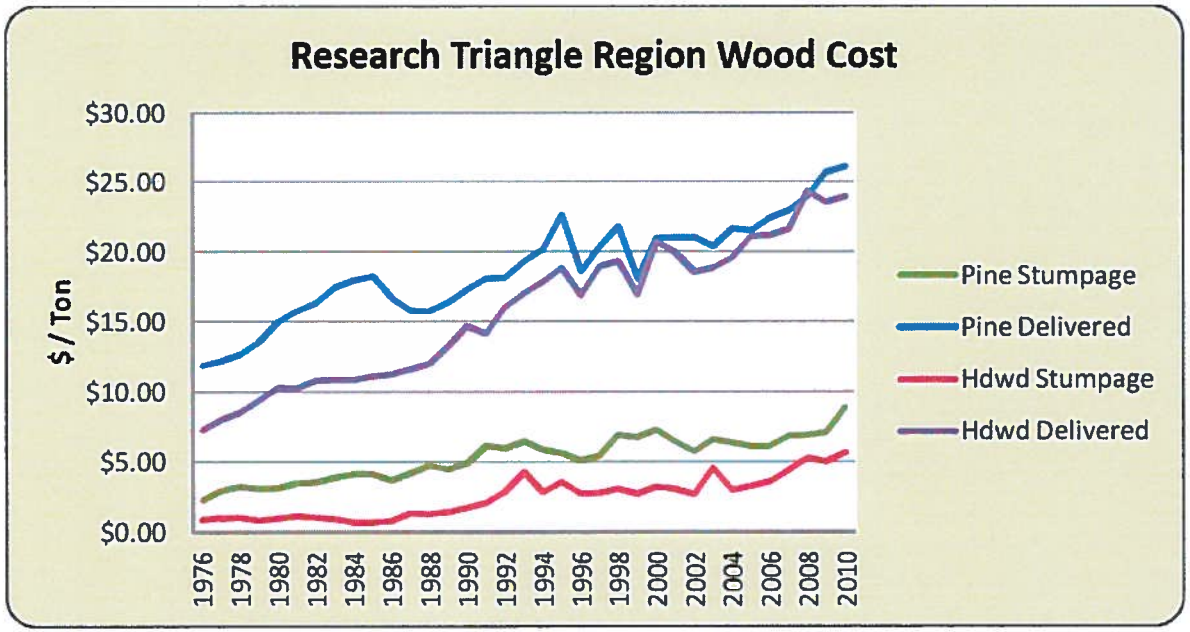


Figure B.1 Research Triangle 34 Year Wood Cost

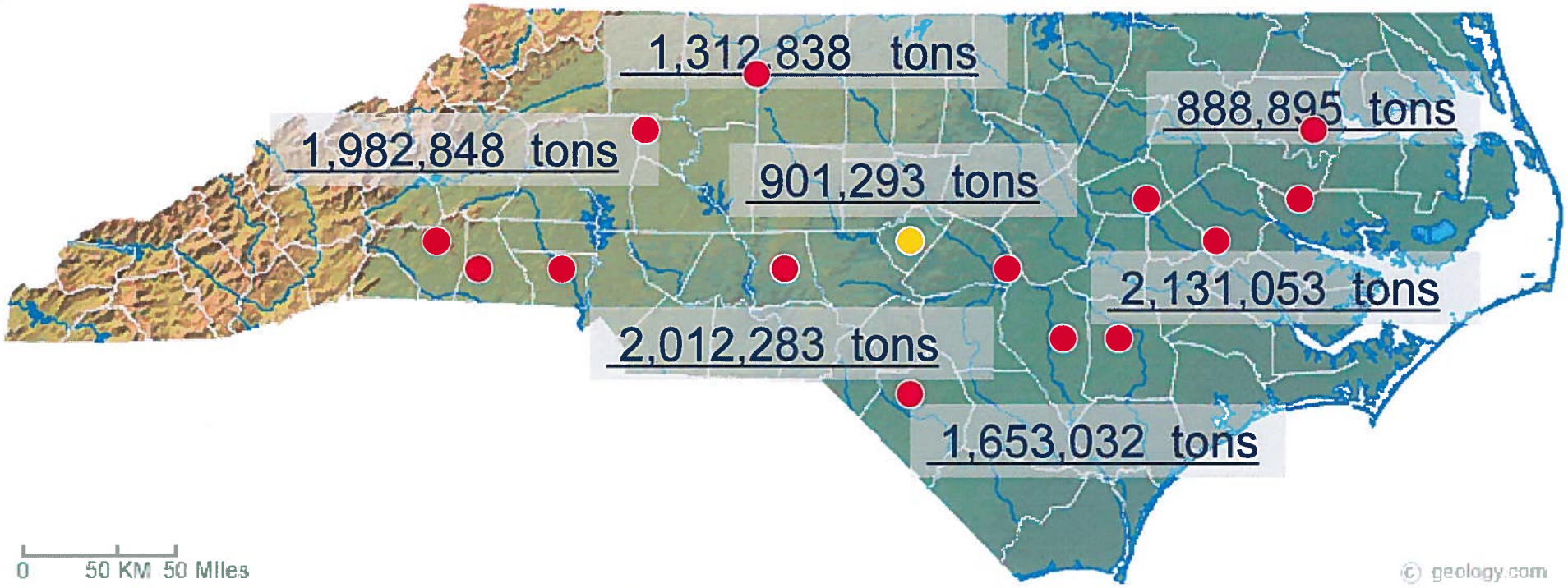
5. **Current Market Price of Materials**: Based on our market knowledge and the responses to our phone surveys, we have found the following ranges represent current market prices for fiber delivered to the mills in the region.

a.	Hardwood roundwood	$21.50 to $24.80 per ton
b.	Hardwood Chip Mill Chips	$37.00 to $39.00 per ton
c.	Hardwood dust	$18.00 to $22.00 per ton
d.	Hardwood Sawmill Chips	$27.00 to $29.50 per ton
e.	Pine roundwood	$23.50 to $26.60 per ton
f.	Pine Sawmill Chips	$27.50 to $30.50 per ton
g.	Pine Chip Mill Chips	$35.20 to $39.50 per ton
h.	Biomass	$19.00 to $23.25 per ton

*All prices include freight

Biofuels Center of North Carolina

Phase II: Site Assessment



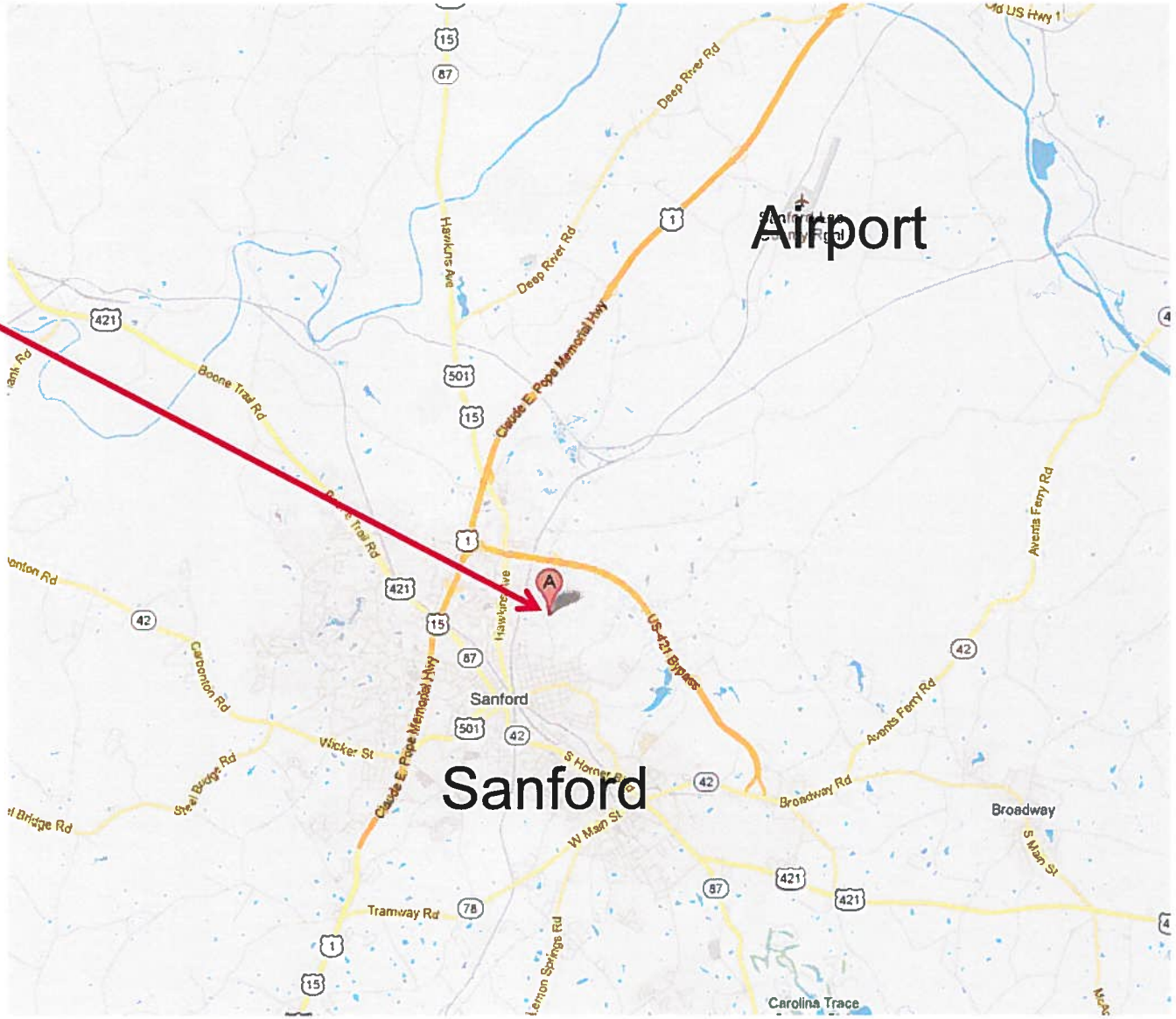
- Lee County Site
- Assessed biofuels industrial sites

tons — Sustainable feedstock supply, green tons, softwood and hardwood

Biofuels Center of North Carolina

Lee County Site

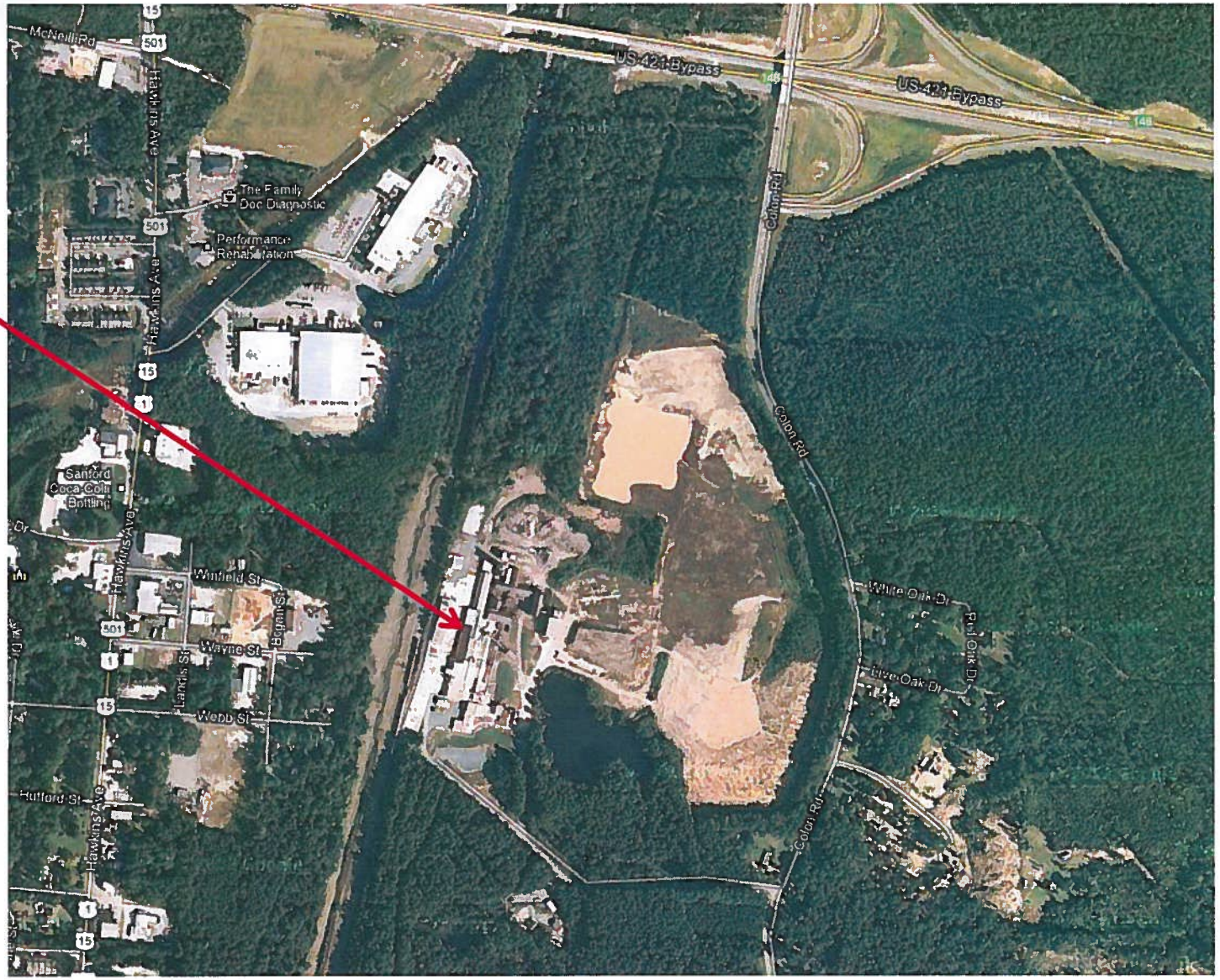
General Shale site



Biofuels Center of North Carolina

Lee County Site

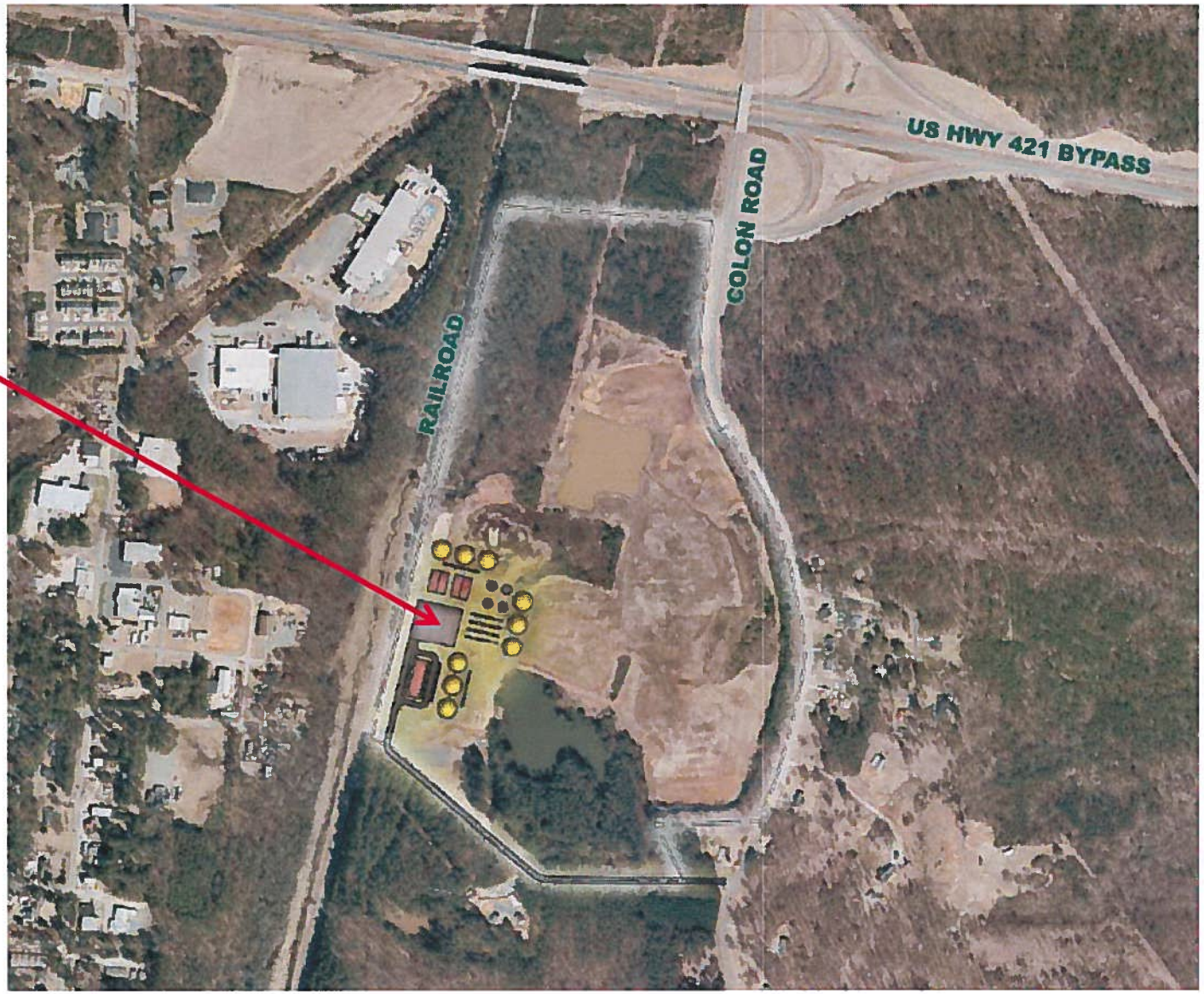
General Shale site



Biofuels Center of North Carolina

Lee County Site

Potential facility layout



Biofuels Center of North Carolina

Woody biomass project moving forward

- Nationally market entire project including 14 sites
  - Phase I and Phase II data
  - Keep Phase III data for client use only
- Develop site-specific projects
  - Wood
  - Mixed feedstock opportunities – MSW, grass etc
- Work with Commerce, Partnerships and local econ devs

Biofuels Center of North Carolina

Summary

- NC uses 5B GPY gasoline and 600mm GPY jet fuel
- Why biofuels? $17B leaves NC + jobs + investment
- Advanced biofuels: "liquid cellulosic biofuels"
- Biochem and Thermochem technologies
- Feedstocks: energy grasses, MSW and wood
- Lee County

Biofuels Center of North Carolina

Questions?

Phil Sheridan
Director, Industry Development
Biofuels Center of North Carolina
psheridan@biofuelscenter.org