

# Biomass Logistics and Site Selection



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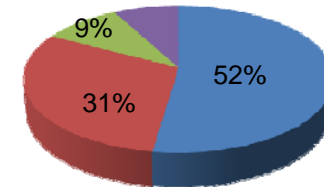
# About Strata-G



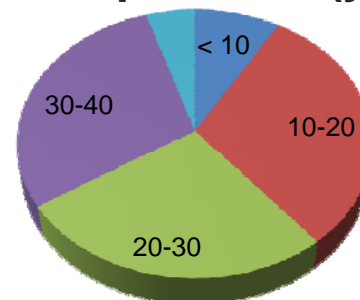
- **Founded by UT Agricultural Engineering graduate**
- **Approximately 120 staff**
- **Offices in Tennessee, South Carolina, Mississippi, and Alabama**
- **Senior Bioenergy Consulting Network**
- **People and Values Based**

**Education**

■ BA/BS ■ MASTERS ■ PHD



**Experience (yrs)**



# Awards



## 2008

- **Y-12 National Security Complex SB of the Year Award**

## 2007

- **Innovation Valley Navigator Award**
- **Dave Thomas Top 100 Adoption Friendly Workplaces**

## 2006

- **SBA Award of Excellence**

## 2005

- **ORNL UT-Battelle Veteran-Owned SB of the Year**
- **Bechtel-Jacobs Company Veteran-Owned SB of the Year**
- **Employers' Supporting Guard and Reserve Above and Beyond Award**

# Stewardship



**The careful and responsible management of something entrusted to one's care.**

– Merriam-Webster

# Bioenergy Logistics



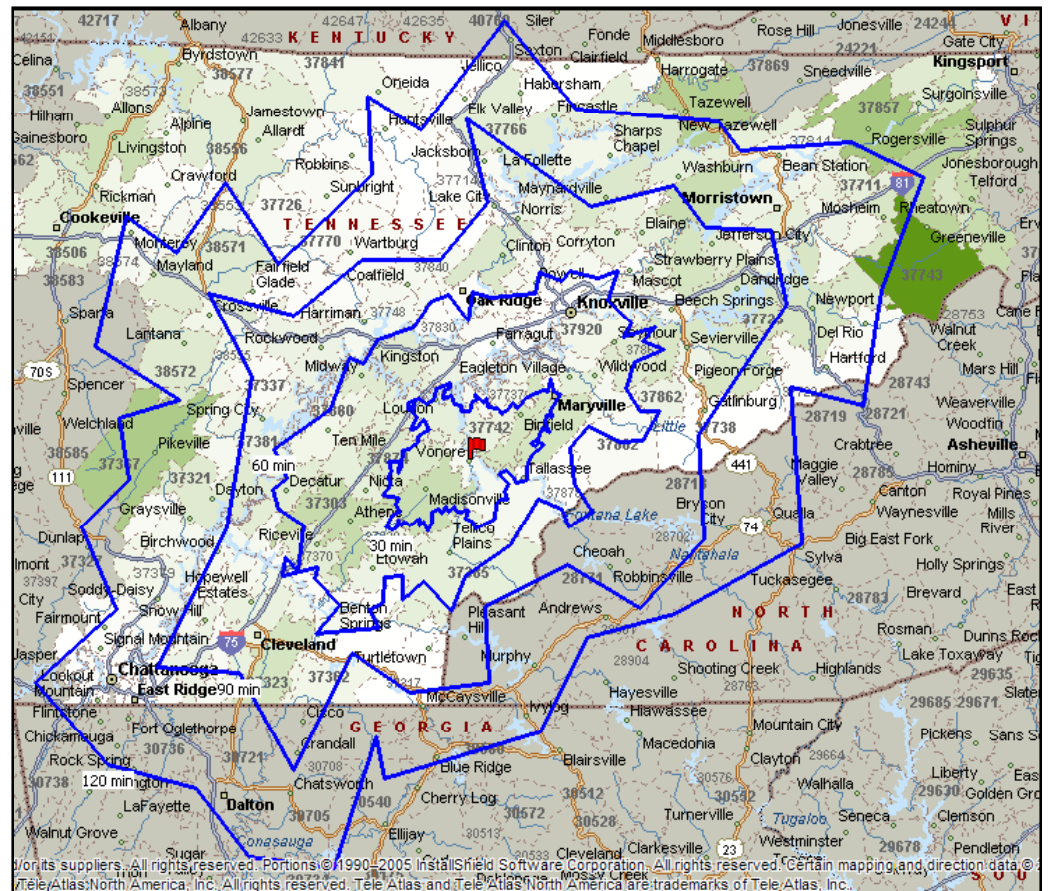
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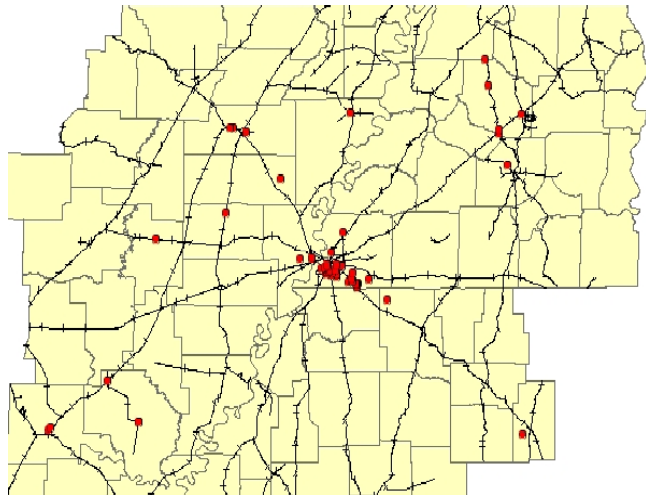
# Feedstock Analysis



- Location
- Availability
- Impact on process economics
- Least-cost solutions for a biorefinery complex



# Supply Chain Optimization



- **Transportation infrastructure**
  - road, rail, barge (capacities and costs)
  - cost per gallon per mode mile
- **Production, harvest, storage, and handling scenarios**
- **Best farm/forest to factory scenarios**
- **Product and byproduct distribution scenarios**

## Regional Studies



- **Logistical strengths and weaknesses**
- **Overall ability to move feedstock, biofuels, and bioproducts**
- **Proximity to areas of demand/consumption**
- **Opportunities to use existing agricultural infrastructure and equipment**
- **Potential for more biobased industries**

# Biofuels Site Selection



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# Site Selection



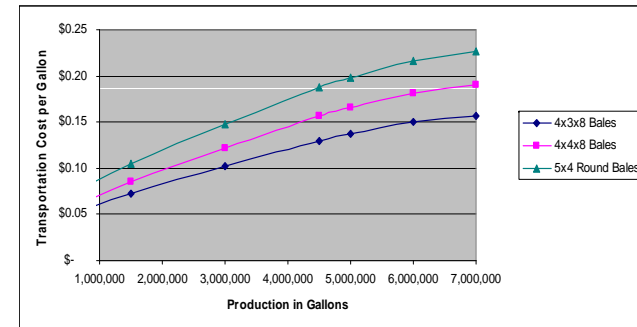
- **Network models based on optimized cost and demand**
- **Refinery site ranking**
- **Consider state or local subsidies**



# Logistics Due Diligence



- Validation of logistics and fatal flaw analysis for a wood pellet plant in Alabama
- Assessment of production, storage, transportation, capacities
- Cost per ton for each stage in the supply chain



							4x4x8
workdays per year = 80							12.34
Gallons per ton conversion rate = 80							Days on Hand = 4
Gallons/Year	Gallons/day	Tons/Year	Tons/day	Veh/day	Veh/Hr	Required Tons On Hand	
5,000,000	13,699	62,500	171	14	0.6	685	
10,000,000	27,397	125,000	342	28	1.2	1,370	
15,000,000	41,096	187,500	514	42	1.7	2,055	
20,000,000	54,795	250,000	685	56	2.3	2,740	
25,000,000	68,493	312,500	856	69	2.9	3,425	
30,000,000	82,192	375,000	1,027	83	3.5	4,110	
35,000,000	95,890	437,500	1,199	97	4.0	4,795	
40,000,000	109,589	500,000	1,370	111	4.6	5,479	
45,000,000	123,288	562,500	1,541	125	5.2	6,164	
50,000,000	136,986	625,000	1,712	139	5.8	6,849	
60,000,000	164,384	750,000	2,055	167	6.9	8,219	
70,000,000	191,781	875,000	2,397	194	8.1	9,589	
80,000,000	219,178	1,000,000	2,740	222	9.3	10,959	
90,000,000	246,575	1,125,000	3,082	250	10.4	12,329	
100,000,000	273,973	1,250,000	3,425	278	11.6	13,699	
120,000,000	328,767	1,500,000	4,110	333	13.9	16,438	
140,000,000	383,562	1,750,000	4,795	389	16.2	19,178	
160,000,000	438,356	2,000,000	5,479	444	18.5	21,918	
180,000,000	493,151	2,250,000	6,164	500	20.8	24,658	
200,000,000	547,945	2,500,000	6,849	555	23.1	27,397	

# Issues for Consideration



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# Critical Logistics Issues



- **Availability of biomass**
- **Density of biomass**
- **Inbound and outbound transportation options**
- **Equipment**
- **Consolidated supply points**
- **State and regional decisions on logistics – farm truck vs commercial, plans for year-round use of trucks, DOT issues, blends, regulations, etc.**

## How can counties help?



- **Partner on innovative ideas for pre-processing, transporting, and storing biomass**
- **Identify sources of non-food biomass**
- **Address infrastructure needs**
- **Actively pursue state and federal funding in this area**
- **Partner with the private sector in developing a successful bioenergy roadmap for the Southeast**

**Thank You.**



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