



CrossOver 2007
Bioenergy: From Fields to Wheels
September 4 - 5, 2007
HUB-Robeson Center, University Park

“IT’S THE FEEDSTOCK – TECHNOLOGY – LOGISTICSDUMMY”

Dr. Robert Capretto – Chairman, CTO
1337 Old Freeport Road Pittsburgh, PA 15238

866-855-2006

Robert E. Maloy - CEO
www.freedombiod.com



BIODIESEL OVERVIEW

- Renewable Environmentally Friendly Energy Source
- Used Mainly to Replace/Supplement Diesel Fuel
- Two Main Feedstock Categories – yellow grease/fat & vegetable oil
- Currently Displaces Only 0.3% of U.S. Diesel Consumption
- U.S. Government Tax Credits are Important to the Overall Economics



MARKET DRIVERS

- Carbon Emissions issues
- Federal & State Mandates
 - ULSD Requirements
 - Energy Act 2005
- Federal Environmental Support Through Tax Credits & Research
- Homeland/Energy Security



National Statistics

- Total Vegetable Oil and Fats in the U.S. = 35 Billion lbs/yr
- @ 7.5 Pounds per Gallon of Oil = 4.67 Billion Gal Biodiesel/ Yr - the Total Potential U.S. Production Today
- This is Still Only 12.6% of the Total Diesel Usage in the U.S. for Transportation, which is 37 Billions of Gallons per Yr.
- There was 250 Million Gallons of Biodiesel Produced in 2006 which was only 0.68 % of the Diesel used in the U.S. for Transportation



THE BIODIESEL TECHNOLOGIES



TYPES OF TECHNOLOGY

- Batch Systems (Gravity Separation) Up to 10 Million Gal/Yr Processes
- Continuous Systems (Pressurized Separation) Greater Than 10 Million Gal/Yr
- Thermal Depolymerization (Tyson Foods & Conoco)
- Neste Process

The DeSmet Ballestra Continuous Transesterification Technology has Been Chosen by FREEDOM ENERGY



THE FEEDSTOCKS



CONSIDERATIONS OF FEEDSTOCK

- Type of Fatty Acid Chains
- Cost
- Market Supply and Demand
- Meeting European Chemistry Standards
- Immediate Availability
- Adaptability to Processing
- What Happens to Feedstock Remnants After the Oil is Removed
- Soy Oil is the Best Option Today in PA and Most of the U.S. But New Technologies Using Other Feedstocks Will Reduce Future Costs



FEEDSTOCK OPTIONS

- Soy (dominant today)
- Canola (edible rape seed)
- Palm Oil (tropical plantations)
- Jatropha (African weed)
- Rape Seed (dominant in Europe)
- Algae (still in research)
- Yellow Grease (restaurants)
- Tallow (liquefied fats)



SOY OIL PRICE TREND

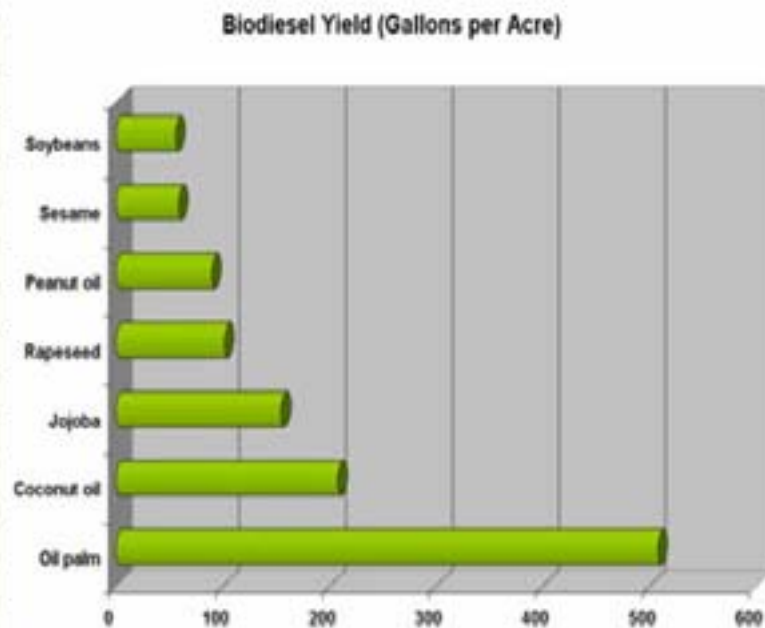
Historical Commodity Futures Charts for Soybean Oil (BO, CBOT), July 2007 (detailed line chart)





Approximate Crop Yields

Crop	lbs oil/acre	US gal/acre
corn	129	18
cotton	244	35
hemp	272	39
soybean	335	48
mustard seed	430	61
camelina	438	62
sesame	522	74
safflower	585	83
peanuts	795	113
rapeseed	893	127
olives	910	129
jatropha	1420	202
oil palm	4465	635





One Form of Algae Production





LOGISTICS



Dow Haltermann
CUSTOM PROCESSING



Outputs

Every 10 MM Gallons of Biodiesel Needs...

2400



Truck Movements

or

500



Rail
Movements

or

25

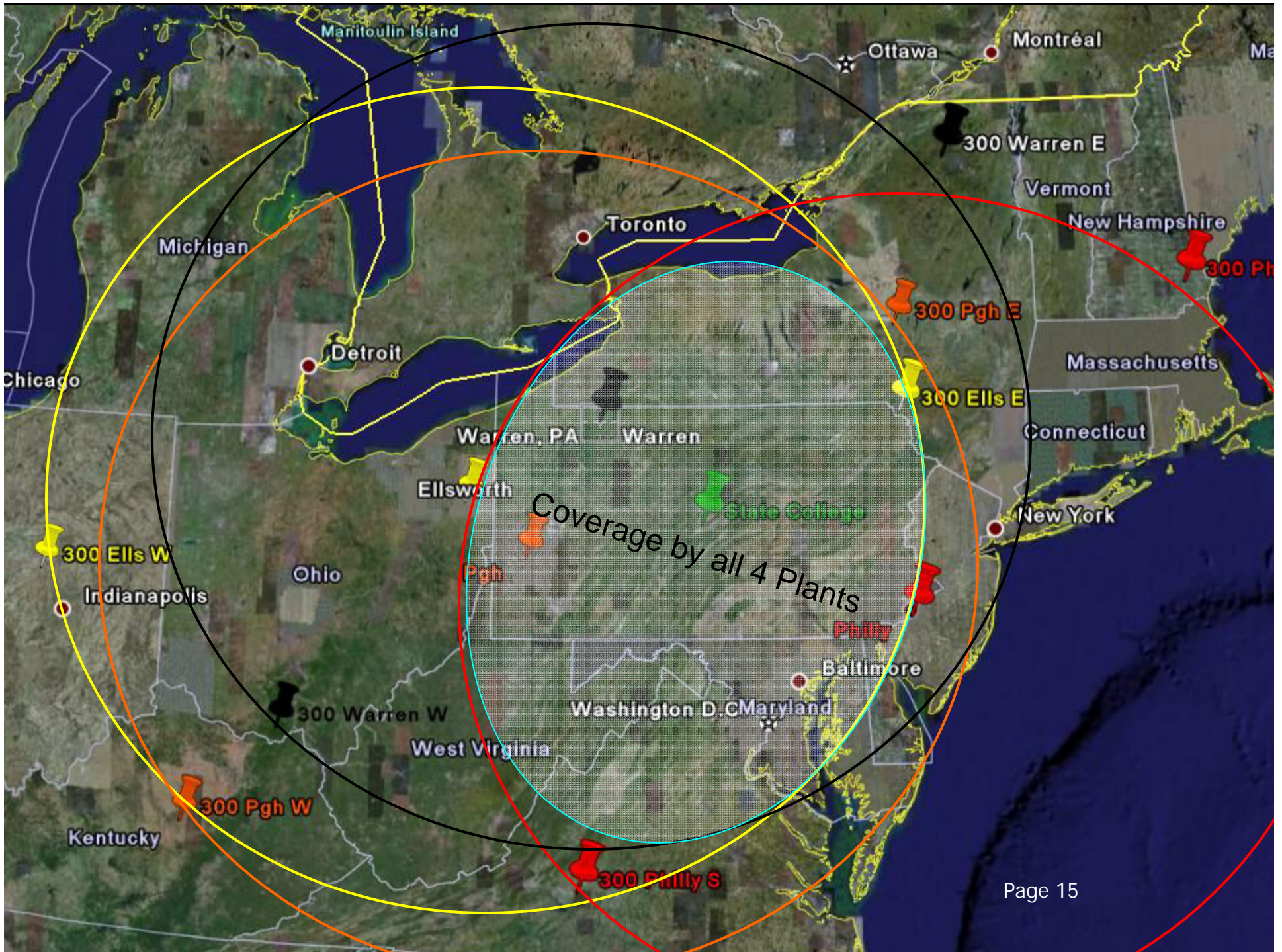


Barge
Movements



1

Pipeline





THE BUSINESS



BUSINESS DRIVERS

- A Renewable Diesel Fuel Source that is Competitive with Petroleum Diesel
- Made with 93% American Produced Raw Materials
- Environmentally Better Emissions
- Energy Security
- Excellent Lubricating Properties for Ultra Low Sulfur Fuels



GOVERNMENT SUPPORT

- State and Federal Tax Relief
- Loans and Grants
- Pennsylvania is a Leader in Alternative Fuels



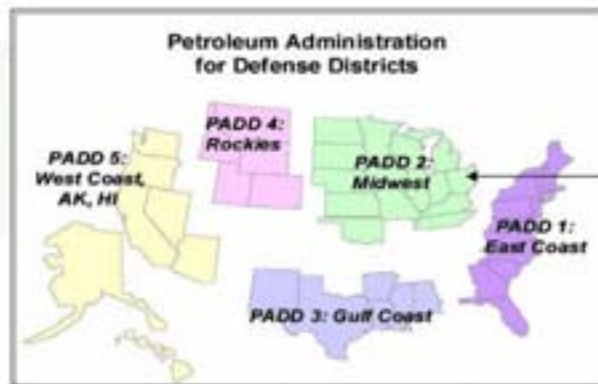
REGIONAL BIODIESEL DEMAND

Production Profile - Infrastructure Challenges

TransMontaigne Product Services Inc.

Logistical Infrastructure Challenges

- ~ Largest demand segments east of Mississippi
- ~ Increased logistical / distribution challenges as product shipped from Midwest to meet East Coast demand
- ~ Demand led higher price environment



PADD	Bio Production Capacity (000' Gallons)	Annual Diesel Demand (000' Gallons)	Blended (B5) Demand (000' Gallons)	Demand Strength (000' Gallons)
I - East	47,750	23,908,416	1,195,421	1,147,671
II - Midwest	243,400	18,937,296	946,865	703,465
III - Gulf Coast	127,850	10,871,532	543,577	415,727
IV - Rocky Mtn	28,000	2,560,068	128,003	100,003
V - West	24,765	8,434,692	421,735	396,970

1.14 Billion Gallons

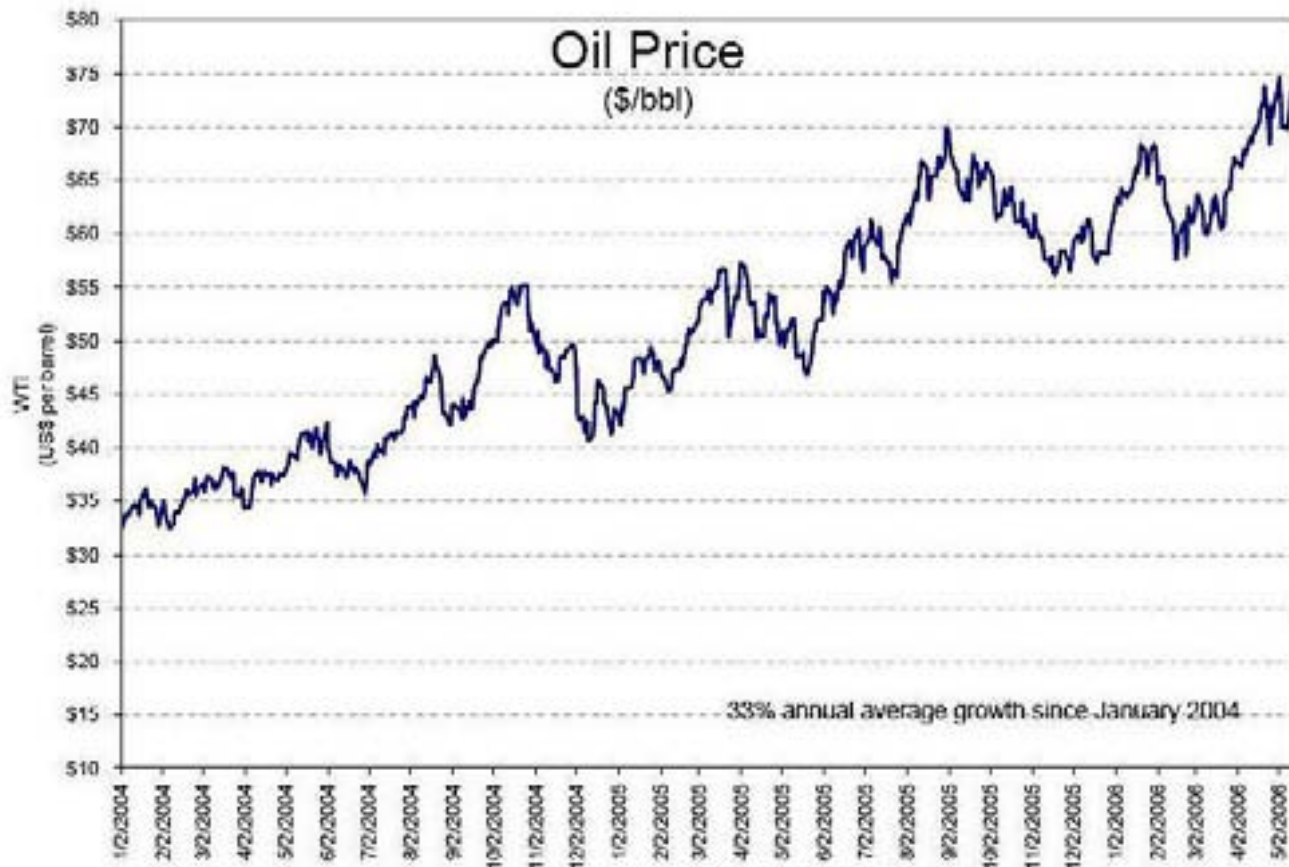


The Fuel Supply Chain.
Managing Assets, Distribution and Supply Chain Services



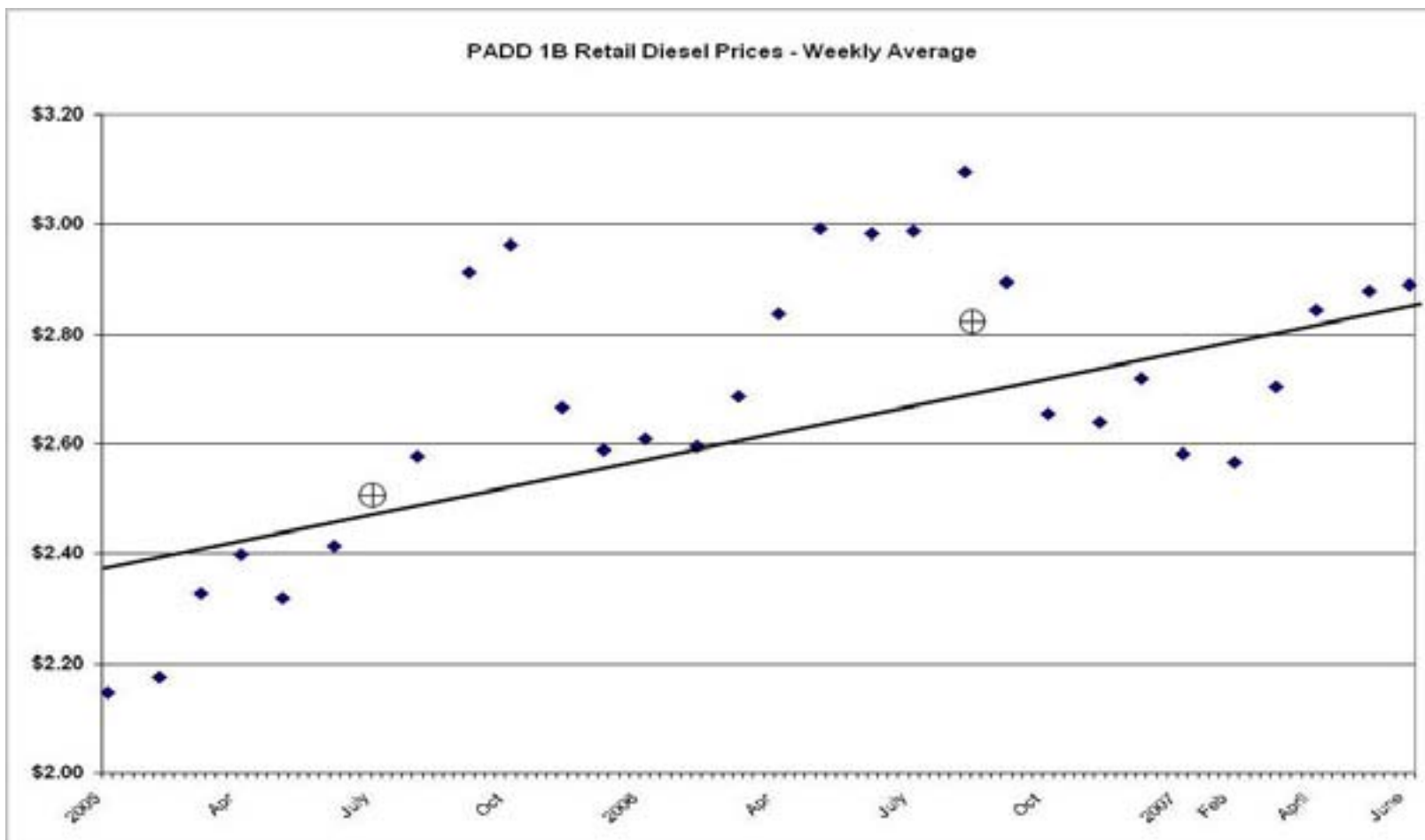


CRUDE OIL PRICE TREND





PADD 1B Monthly Average Retail Price



Source: Energy Information Administration



OPIS NEWSLETTER 1st Qtr 2007


National Renewable Fuel Feedstock/Component Cost Index

Feedstock/Blendstock	Location/Source	Spot Price
Soy Oil	Central Illinois - USDA	\$.292/lb.
Com	Kansas City - USDA	\$3.825/bu.
ULSD	OPIS National Average	\$1.713/gal.
Low Sulfur Diesel	OPIS National Average	\$1.805/gal.
RBOB	OPIS National Average	\$1.736/gal.
Ethanol	OPIS National Average	\$2.234/gal.
Unleaded RFG	OPIS National Average	\$1.632/gal.

National Renewable Fuel Averages

Ethanol Spot	Ethanol Rack	Ethanol Blended Rack Gasoline (5.7%)	Ethanol Blended Rack Gasoline (10%)	E85 Racks	E85 Retail (w/tax)	Biodiesel B100	Biodiesel B20 w/ULSD	Biodiesel B20 w/LSD	Biodiesel B5 w/ULSD	Biodiesel B5 w/LSD	Biodiesel B2 w/ULSD	Biodiesel B2 w/LSD
2.234	210.459	180.853	169.498	203.526	1.830	309.170	190.131	200.116	184.772	185.263	185.038	186.591

Key Renewable Fuels Regional Averages

NORTHEAST		Ethanol Spot	Ethanol Rack	Ethanol Blended Rack Gasoline (5.7%)	Ethanol Blended Rack Gasoline (10%)	E85 Racks	E85 Retail (w/tax)	Biodiesel B100	Biodiesel B20 w/ULSD	Biodiesel B20 w/LSD	Biodiesel B5 w/ULSD	Biodiesel B5 w/LSD	Biodiesel B2 w/ULSD	Biodiesel B2 w/LSD
		2.225	--	--	164.336	--	--	315.117	183.200	218.180	181.300	193.168	180.900	191.142

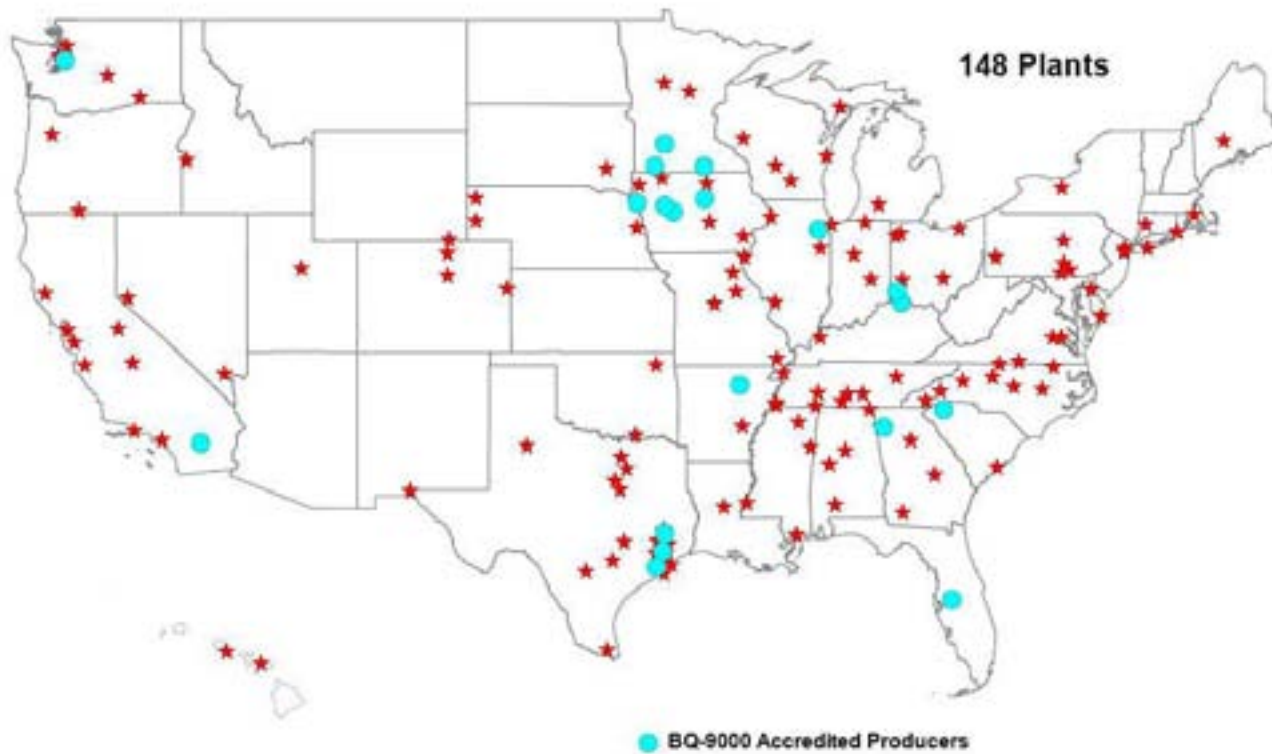
\$3.15 /gal. retail pump price for biodiesel still true in July



EXISTING BIODIESEL PRODUCERS



Commercial Biodiesel Production Plants (June 7, 2007)





...and - DON'T FORGET THE
PENNSYLVANIA FARMERS WHO
RAISE THE SOY BEANS !



FREEDOM ENERGY, LLC



WHO IS FREEDOM ENERGY ?

- Regional Multi-plant Biodiesel Start-up
- Established, Proven Technology
- Management Team with Extensive Operating Experience



FORMULA FOR SUCCESS

- Regional Approach Allows Us to be a Low Cost Producer
- Proven Management Team
- Best Logistic Operation Through Third Party Companies
- Access to Future Technologies Through the USDA & Penn State University
- Produce a Quality Product Through BQ-9000 Certification Standards



A COLLABORATIVE ATTITUDE

We are currently finalizing agreements with the Penn State Biomass Energy Center and the USDA Research Service to work together at a production / research facility here in State College



BECOMING THE LOW COST PRODUCER

- Manage today's **Feedstock** costs (80% of the production cost)
- Be Ahead of the Industry with Emerging **Technologies** Through Joint Ventures with PSU, the USDA & Others Coming to Market
- Manage the **Logistics** of Raw Material "in" and Biodiesel Product "out"



FREEDOM ENERGY PLANT LOCATIONS AND CAPACITIES

REGIONAL MARKET STRATEGY

1. ELLSWORTH (near Youngstown) - 30 MMgy Build in Yr. 1
STATE COLLEGE, PA - 2-1/2 MMgy Build in Yr. 1
2. PHILADELPHIA - 30 MMgy – Build in Yr. 2
3. PITTSBURGH - 30 MMgy – Build in Yr. 3
4. WARREN, PA - 15 MMgy – Build in Yr. 4



SUMMARY

- Strong, Proven Management Team
- Proven Technology
- Regional, Multi-plant Low Cost Approach
- Strong and Growing Market Demand
- Limited Supply in the Target Market
- Strong Research Capabilities and Relationships