

Bioenergy Development Challenges and Opportunities

Southern Bioproducts And Renewable Energy Conference

by

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Frazier, Barnes & Associates

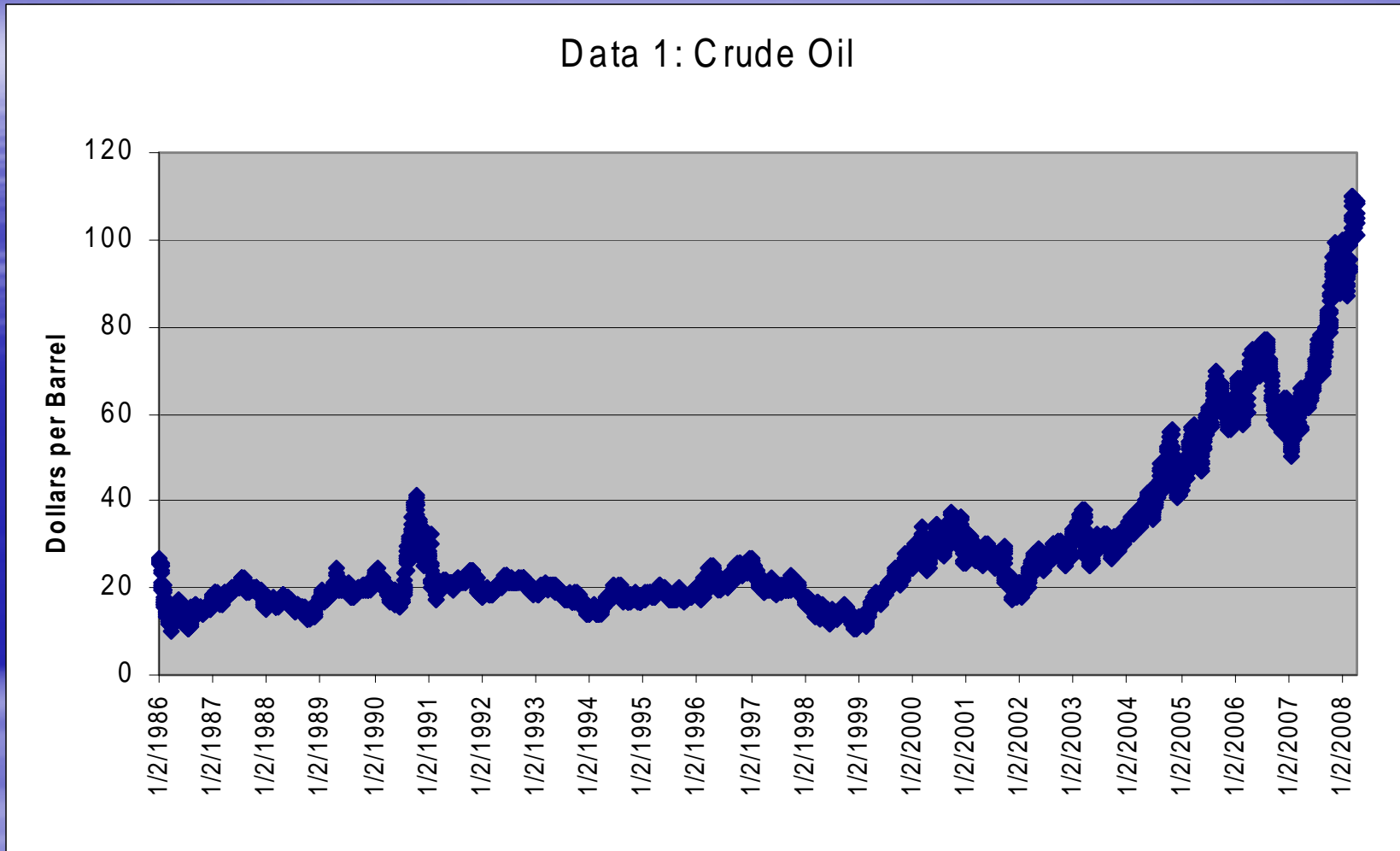
- **Technical and Marketing Consulting Firm Established in 1996**
- **Headquartered in Memphis, Tennessee**
- **Specializes in Value-Added Processing of Agricultural Based Feedstocks**
 - Bioenergy Production (Ethanol, Biodiesel and Biomass)
 - Fractionation
 - Oilseed Processing/Vegetable Oil Refining
 - Biomass to Energy
 - “Green” Electrical Power Production
- **FBA Focuses on Project Development Services**
 - Feasibility Studies/Business Plans
 - Project Development/Implementation
 - Process Technology Evaluation/Selection
 - Owners Representative Services
 - Capital Procurement & Financing

"At the moment there is enough oil
in the market and no need to
change OPEC's output."

OPEC secretary general, Abdullah al-Badrithe
04.07.08, 6:32 AM ET

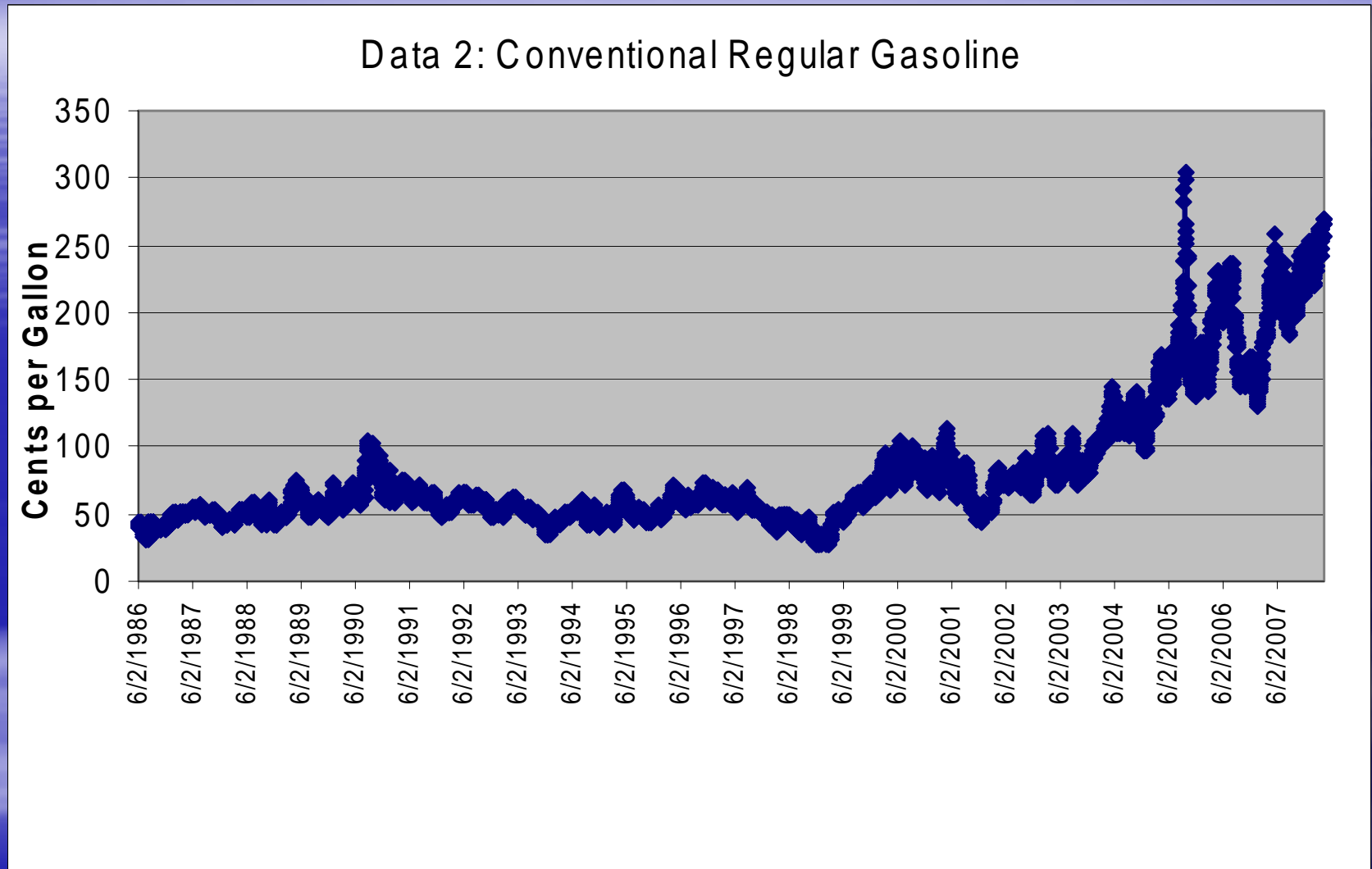
Crude Petroleum Futures

Data 1: Crude Oil



Source: Energy Information Administration

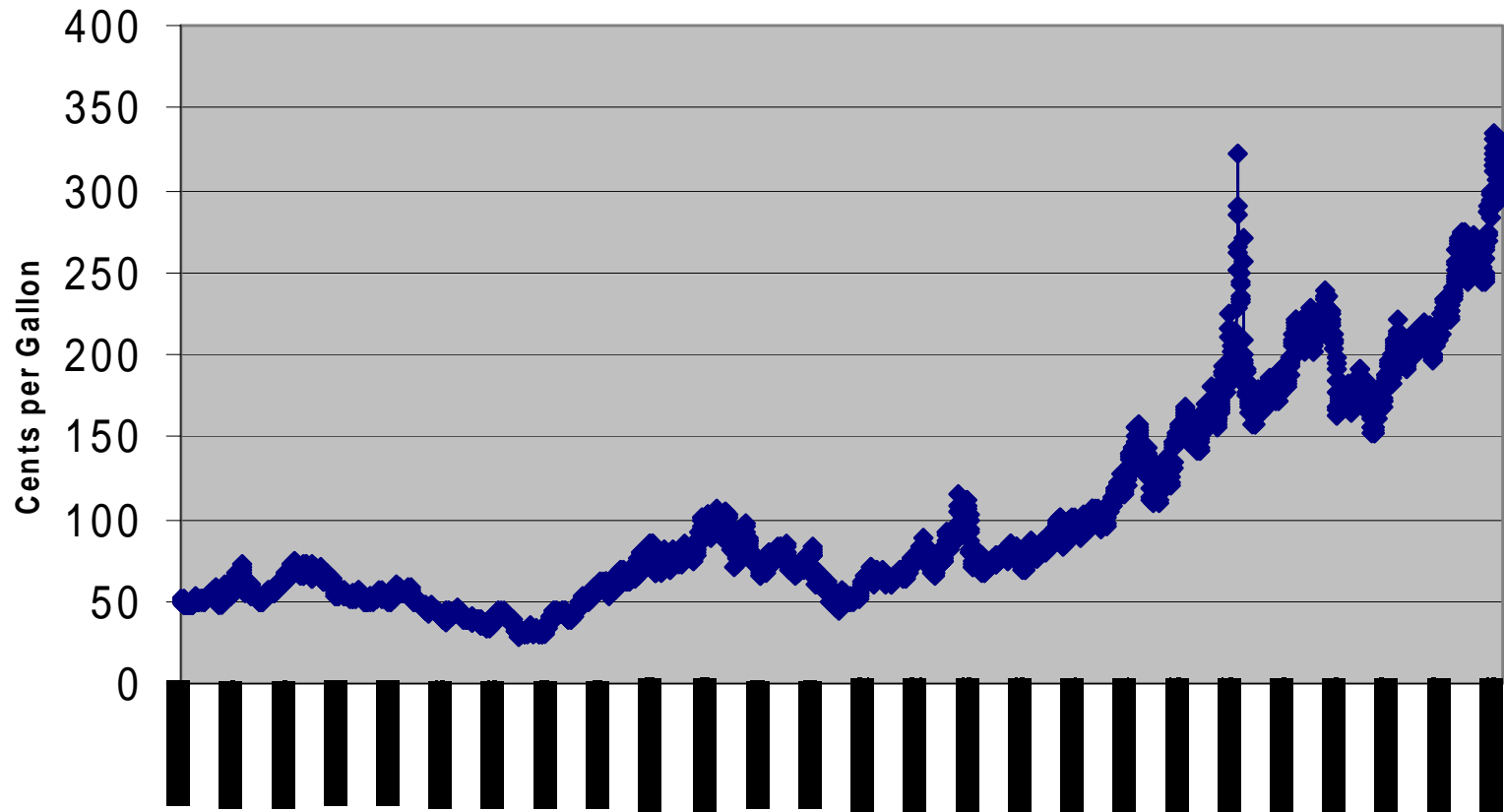
Gasoline Prices



Source: Energy Information Administration

Diesel Fuel Prices

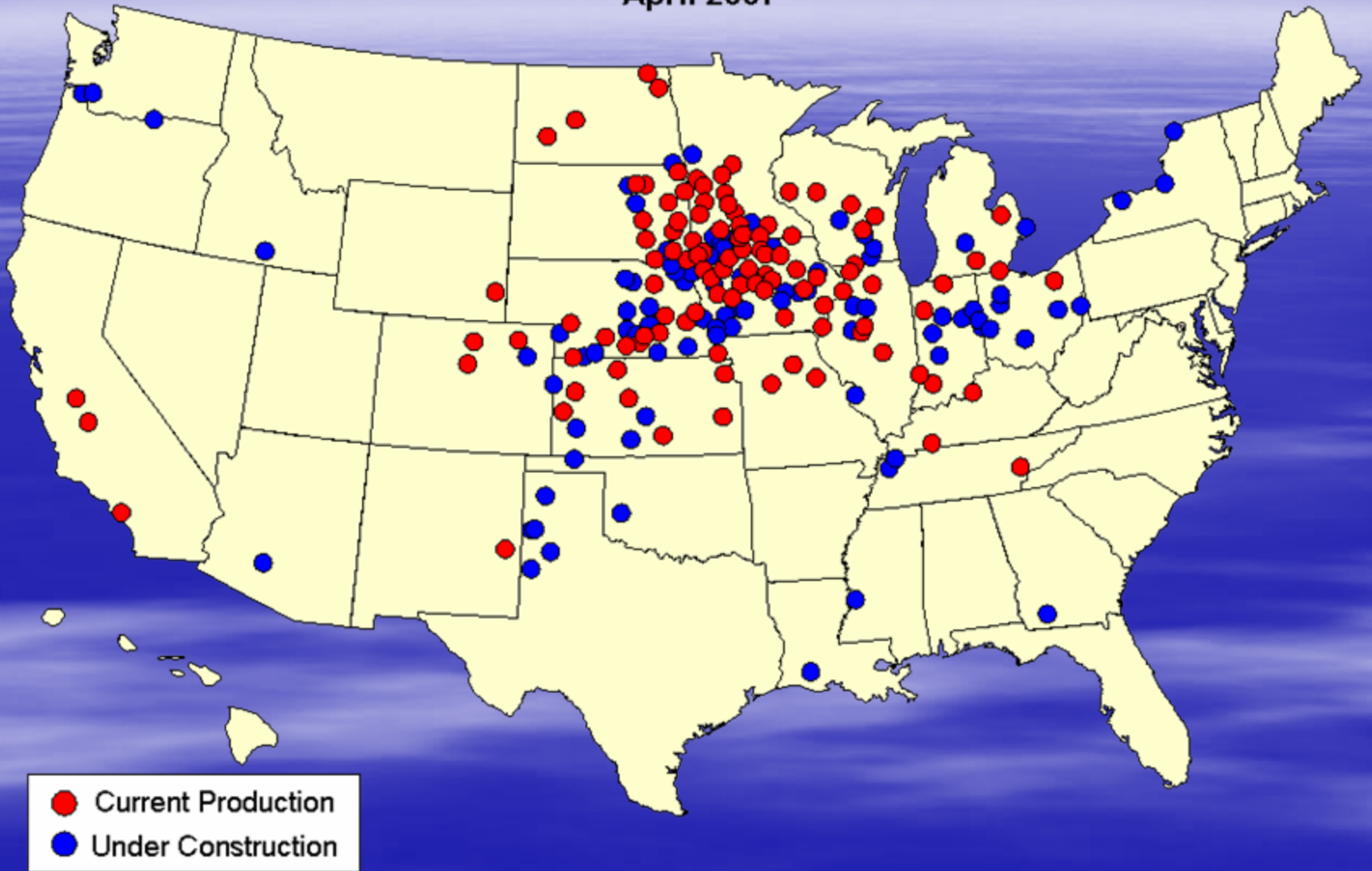
Data 7: Low-Sulfur No. 2 Diesel Fuel



Source: Energy Information Administration

Ethanol Plants Current and Under Construction

April 2007



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Steps to Commercializing a Bioenergy Project

1. *Feasibility Analysis*
2. **Site Analysis**
3. **Marketing Plan**
4. **Business Plan**
5. **Business Entity Formation**
6. **Preliminary Engineering**
7. **Equity and Finance Procurement**
8. **Detail Engineering**
9. **Plant Construction**
10. **Plant Commissioning**
11. **Initial Operations**

Bioenergy Project Investment Factors

**Feasibility Study	**Permitting- Air, Water
	- Construction Permits, Operating Permits
**Business Plan- Initial & Final	
	**Site Plan
**Site Selection & Cost	- Preliminary Layout, Roads and Rail Access
-Site Due Diligence & Environmental Assessment	
	**Capital Cost
**Utilities: Water, Gas, Electricity, Sewer	
	**Product Marketing Agreements
**Economic Development Planning	- Biodiesel, Glycerin, Soybean Meal, Hulls
- Tax Abatements, Enterprise Zones, Other Incentives	
	**Transportation Services
**Feedstock Procurement Plan	- Truck, Rail, Barge Rates and Logistics
-Feedstock Cost, Quality, Supply Agreements	
	**Risk Management
**Technology Selection and Vendor Negotiation	
- scope of work, Capital Cost, Operating Cost, Guarantees, Schedule	**Plant Management & Staffing
**EPC Determination	**Financing Arrangement
	- Equity, Partners, Terms
**Competition	
	**Government Incentives
**Petroleum Prices	

Watch the Investment “Focus” Factors

- *Feedstock Availability, Cost and Security*
- Capital and Operating Cost
- Capital Availability and Cost
- *Petroleum and Bioenergy Prices*
- Competition
- Transportation Costs
- By-Product Prices
- Government Incentives
- *Technology Changes*

Biggest Bioenergy Challenges

- Secure your Feedstock
- Secure Off-Take Agreements
- Secure CAPITAL/FINANCING!

Potential Bioenergy Pitfalls

10 Potential Pitfalls in Starting a New Bioenergy Project

1. Lack of a clearly defined mission
2. Inadequate planning
3. Failure to use good advisors and consultants
4. Lack of member leadership
5. Lack of member communication
6. Inadequate management
7. Failure to identify and minimize risk
8. Overly optimistic assumptions
9. Not enough capital investment
10. Inadequate communications to all stakeholders