

*Biodiesel in America  
Growing the Fuel Supply*

Dean Cordle  
AC & S, Inc.



# *United States 1973*

- ✦ On October 17, 1973 OPEC announced they would no longer ship oil to countries who supported Israel in the Yom Kippur war
- ✦ OPEC quadrupled the price of crude oil



# *Kuwait 1991*

✦ More than 600 oil wells were set ablaze



*September 11, 2001*





Chavez –  
Ahmadinejad  
9/11/06

*5-yr anniversary of 911: anti-American conference of 100 countries in Cuba*

*Following week, both spoke at UN in New York – President Bush referred to as “the Devil”*

*Platform: Chavez for UN Security Council to support Iran’s Nuclear program*

*March 28, 2007*

*Iranian Television Showing 15 British Sailors Taken Hostage on March 24<sup>th</sup> by the Iranian Revolutionary Guard*



# *Presidential State of the Union Speech January 23, 2007*

- ✦ For too long our nation has been dependent on foreign oil. And this dependence leaves us more vulnerable to hostile regimes, and to terrorists -- who could cause huge disruptions of oil shipments, and raise the price of oil, and do great harm to our economy.
- ✦ It's in our vital interest to diversify America's energy supply -- the way forward is through technology. We need to press on with battery research for plug-in and hybrid vehicles, and expand the use of clean diesel vehicles and **biodiesel fuel**. We must continue investing in new methods of producing ethanol using everything from wood chips to grasses, to agricultural wastes.
- ✦ we must increase the supply of alternative fuels, by setting a mandatory fuels standard to require 35 billion gallons of renewable and alternative fuels in 2017 -- and that is nearly five times the current target

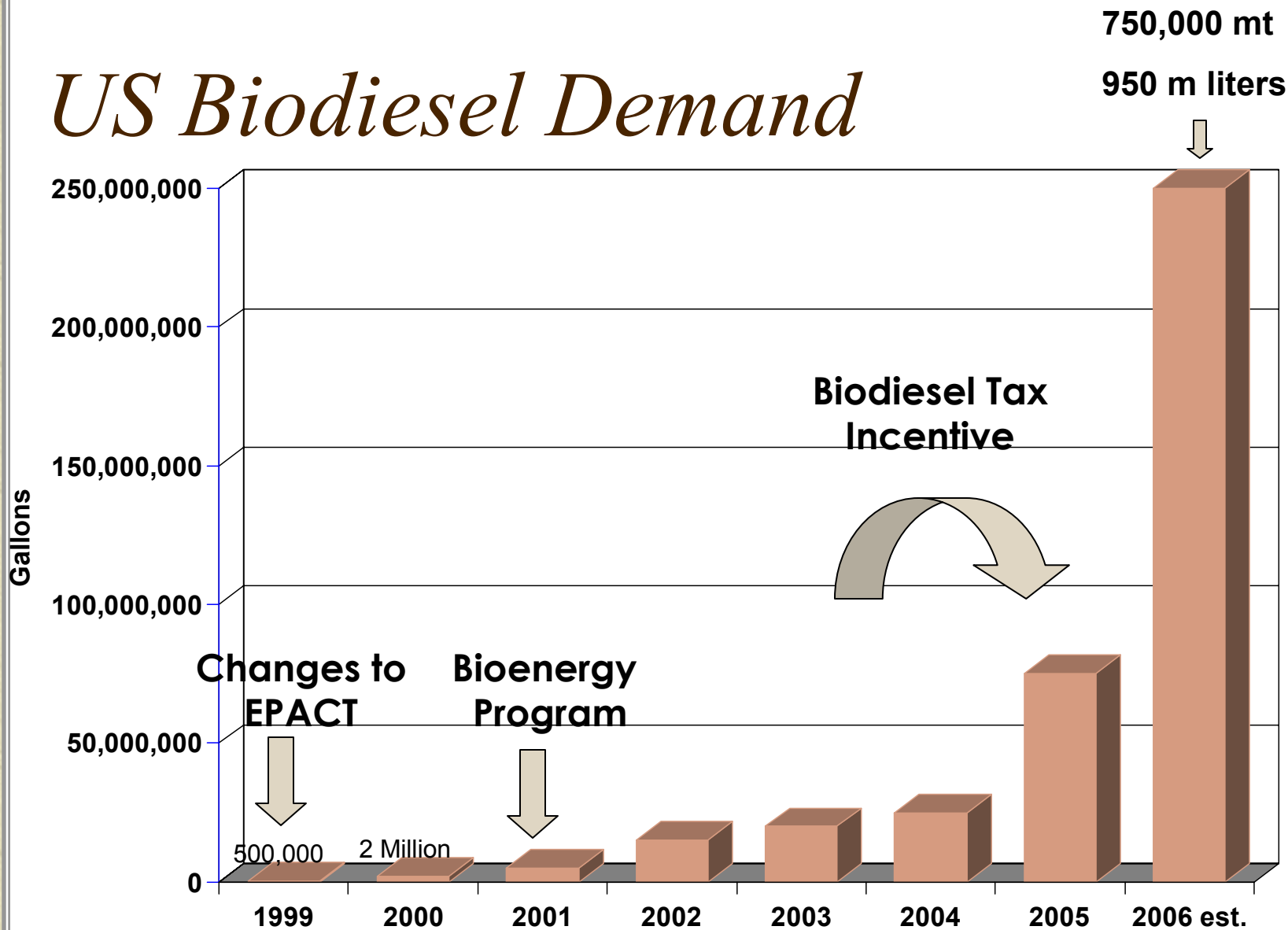
# *Today's Topics*

- ✓ ✦ Sales and Production
- ✓ ✦ Demand drivers, Policy & Energy Markets
- ✓ ✦ Fuel Quality
- ✓ ✦ OEM acceptance
- ✓ ✦ Feedstock Supply
- ✓ ✦ Who is AC & S, Inc. ?

# *Sales and Production*

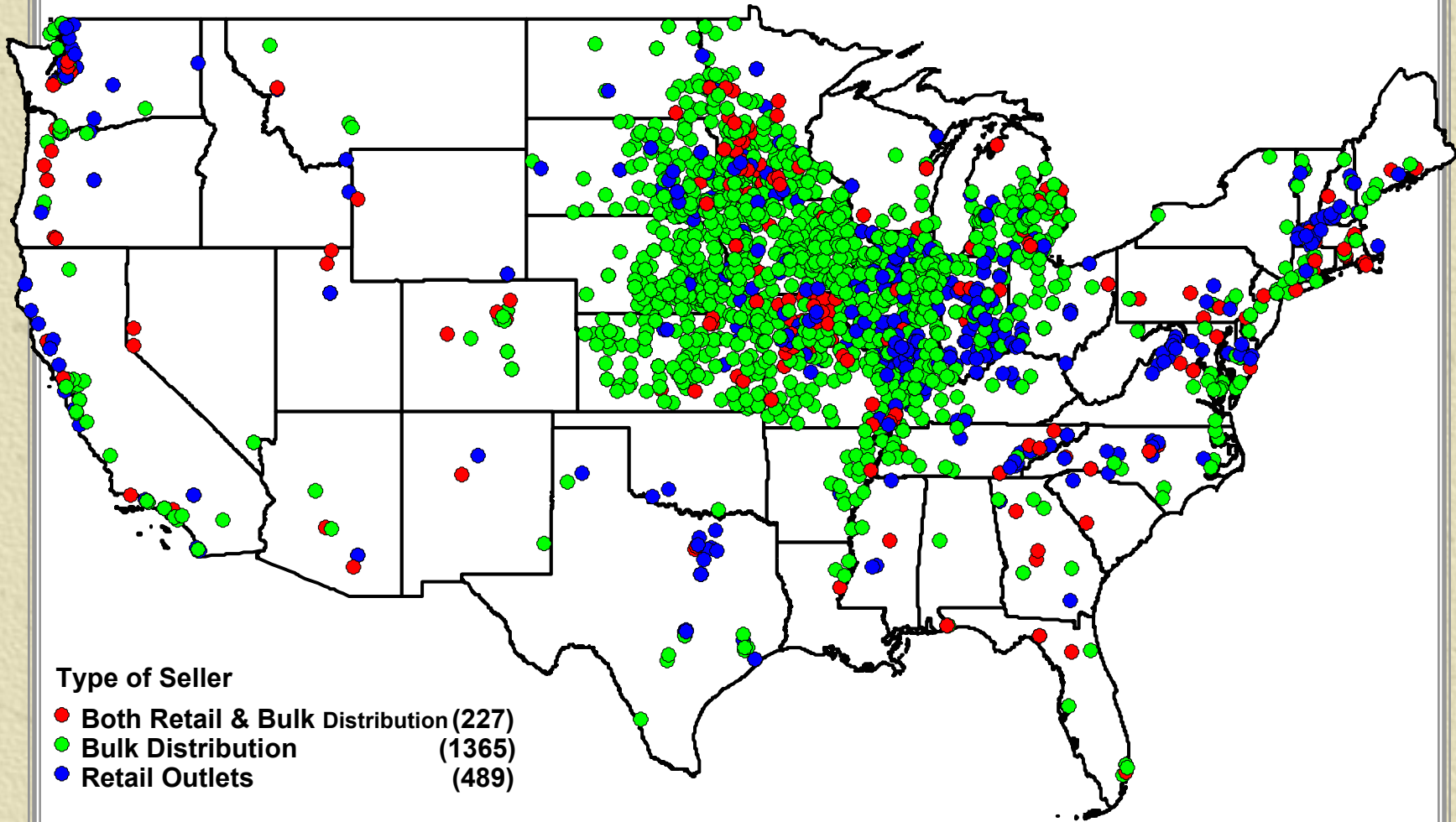


# *US Biodiesel Demand*

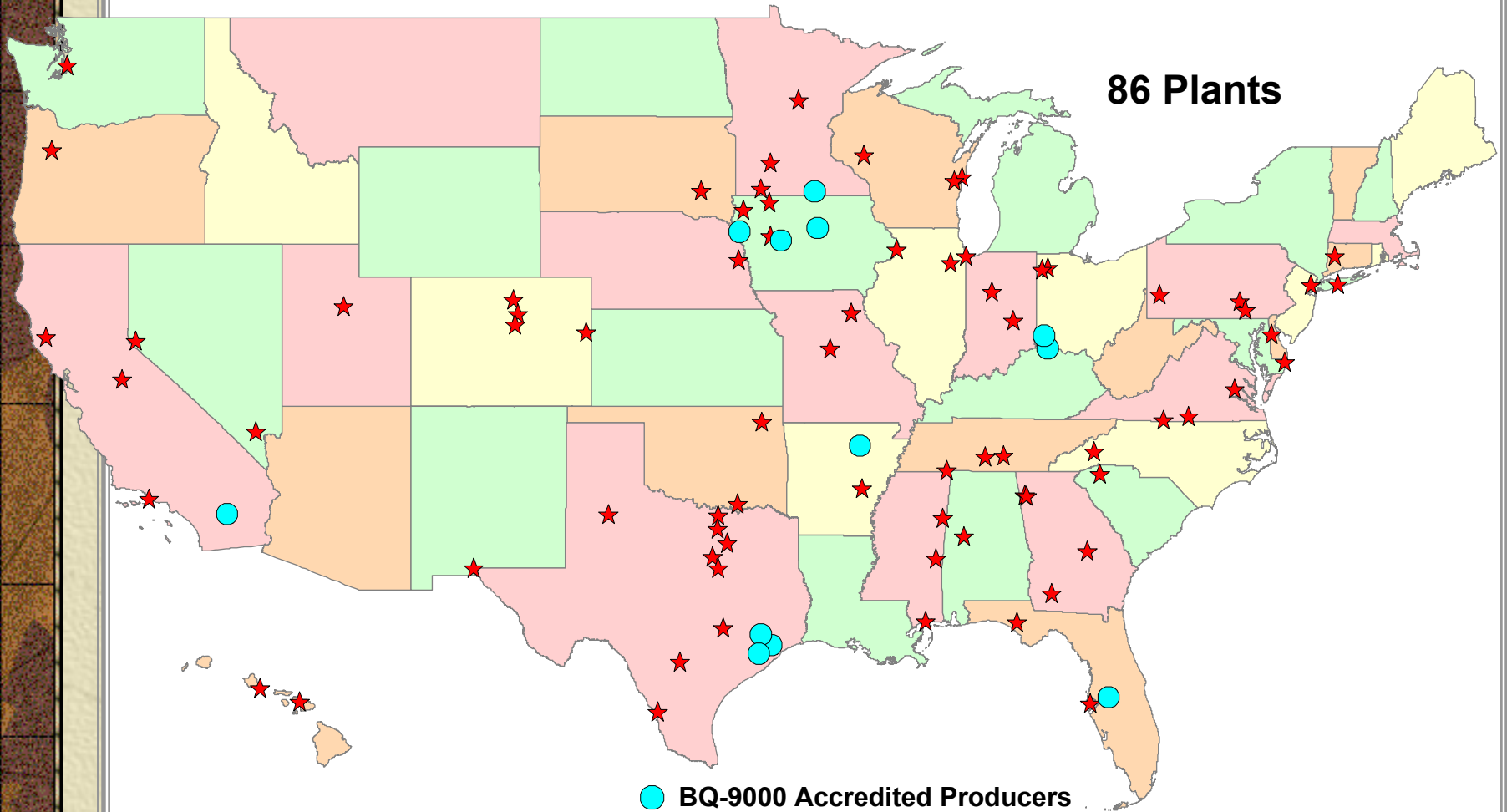


Conversions: 1 mmt ~ 300 m gallons ; 1 gallon = 3.8 liters

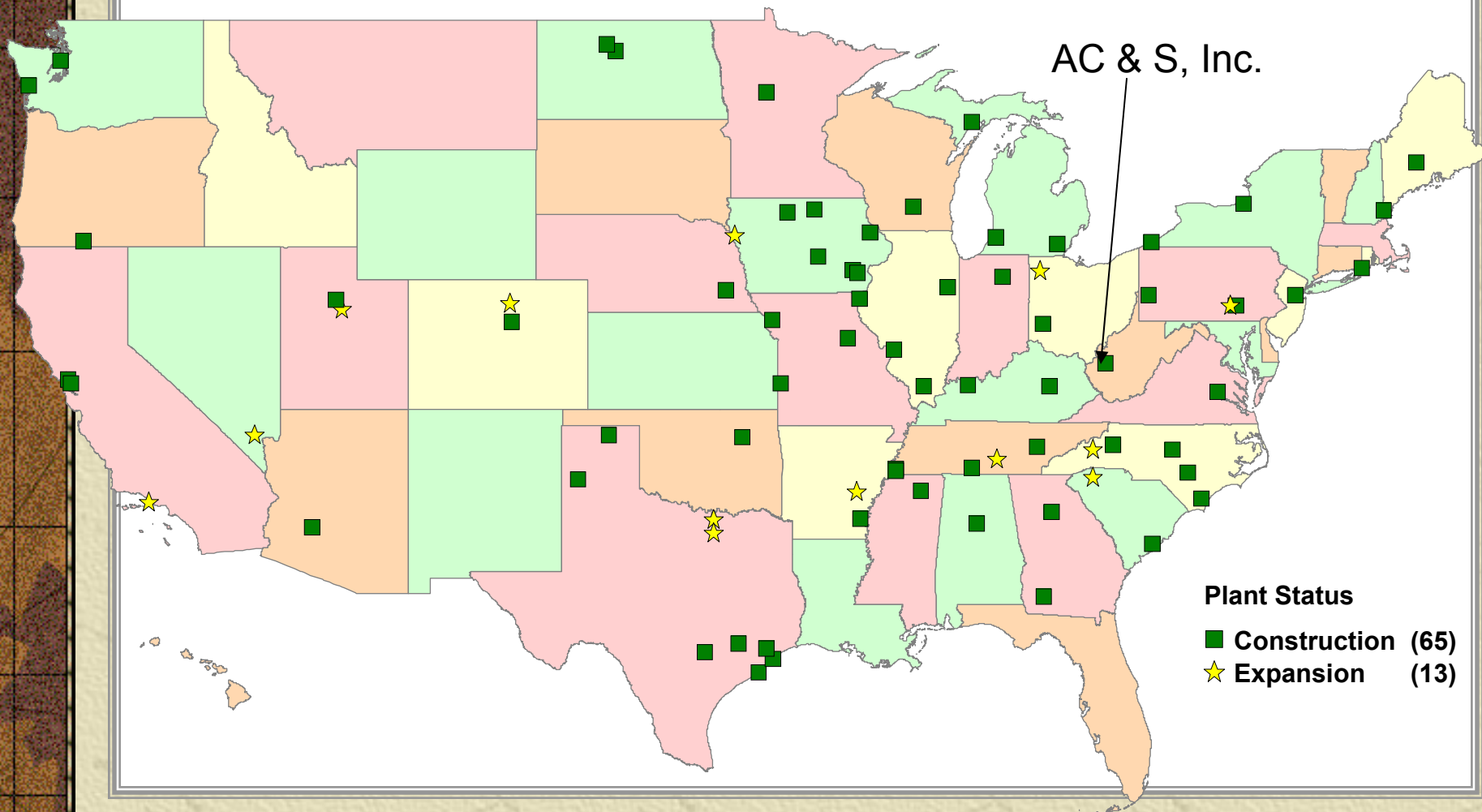
# *Distribution Locations (May 06)*



# *Production Locations* (9/13/06)



# *Biodiesel Plants Under Construction & Expansion (9/13/06)*



# *Industry Plant Size*



<b>Plant Size</b> (gallons per year)	<b># of Companies</b> <b>(86 total)</b>
< 1,000,001 (3,333 mt)	21
1,000,001 – 5,000,000	34
5,000,001 – 10,000,000	15
10,000,001 – 15,000,000	6
15,000,001 – 20,000,000	2
>20,000,000 (67,000mt)	8

Industry Capacity 580 million gallons per year (1.9MMT)

Avg Plant Size 6.7 million gallons per year (22,330MT)

Conversions: 1 mt ~ 300 gallons; 1m gallons ~ 3,333 mt; 10m gal ~ 33,000 mt

# *Size of Plants Under Construction & Expansion*



<b>Plant Size</b> (gallons per year)	<b># of Companies</b> <b>(78 total)</b>
< 1,000,001 (3,333 mt)	11
1,000,001 – 5,000,000	18
5,000,001 – 10,000,000	15
10,000,001 – 15,000,000	5
15,000,001 – 20,000,000	3
>20,000,000 (67,000mt)	26

Construction Capacity 1.4 billion gallons per year (4.6mmt)

Avg Plant Size 17.9 million gallons per year (56,660mt)

Conversions: 1 mt ~ 300 gallons; 1m gallons ~ 3,333 mt; 10m gal ~ 33,000 mt

# *US Industry Objectives*

- ✦ 2005 stated goal: 1 billion gal by 2015
- ✦ Time for a new goal? “**5x15**”
- ✦ 5% on-road displacement by 2015  $\approx$  1.85bgy
  - (met in various blend levels)
- ✦ 5%  $\approx$  amt of US diesel refined from Iraqi crude
- ✦ 5%  $\approx$   $\frac{1}{4}$  of diesel equivalent refined from Persian Gulf Crude.
- ✦ 5%  $\approx$  blend which addresses lubricity, pipeline movement, universal OEM acceptance (B20 blends will remain important market)
- ✦ 5%  $\approx$  a volume relevant to greenhouse gas reduction, energy security, and feedstock supply

# *2005 Distillate Fuel Oil Use*

- ✦ Distillate Fuel Oil includes – On-highway, Off-highway, space heating and electrical power generation
- ✦ United States used over 63 billion gallons
- ✦ WV, VA, MD, PA, OH and KY combined used over 10 billion gallons.
- ✦ WV used over 600 million gallons

Source: Energy Information Administration

# *Market Potential for Distillate Blended to a B5*

- ✦ US would require 3.1 billion gallons of B100
- ✦ West Virginia and Contiguous States would need over 500 million gallons of B100
- ✦ West Virginia alone would need over 30 million gallons

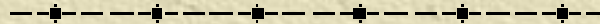
Source: Energy Information Administration

# *West Virginia 2005 Distillate Use & Market Potential for B100*

<b>Sales of Distillate by End Use Category</b>	<b>Total Gallons of Distillate Used in 2005</b>	<b>Gallons of B100 needed to Convert to B5 Blend</b>
On Highway	303,225,000	15,161,250
Industrial (Mfg & Mining)	145,938,000	7,296,900
Vessel Bunkering	66,507,000	3,325,350
Electric Power	23,890,000	1,194,500
Off Highway (Const.)	22,379,000	1,118,950
Residential	16,015,000	800,750
Railroad	15,224,000	761,200
Commercial (Fed. & State Govt., non-mfg.)	9,673,000	483,650
Oil Company (drilling & other oil related)	9,099,000	454,950
Farming	1,671,000	83,550
Military	243,000	12,150
<b>Total WV Distillate</b>	<b>613,864,000</b>	<b>30,693,200</b>



*Demand Drivers  
Policy and Energy Markets*



# *Reasons for Industry Growth*

- ✦ Federal Energy Policy
- ✦ Strong Diesel Prices
- ✦ State Energy Policy



# *Federal Energy Policy*

- ✦ Ultra Low Sulfur Diesel (USLD) 15ppm
  - Lubricity
- ✦ Biodiesel Blender's Tax Credit
- ✦ Renewable Fuels Standard
- ✦ 14 other critical federal legislative priorities

## Top 15 Legislative priorities:

Farm Bill

- o Education Program
- o Bioenergy
- o Other

VTEEC reauthorization

Small Producer Tax Credit  
reauthorization

Infrastructure extension and fix

Renewable Diesel Standard

NOx neutral legislation

Appropriations

- o Freedom Car
- o Petro Infrastructure
- o Biobased Transportation
- o Biodiesel Education
- o Engine Testing 5 mil
- o EPACT Definition

Quality Enforcement EPA /IRS

## Top 10 Regulatory Priorities:

RFS Implementation

- o Definition fix
- o Credit ruling

Renewable diesel definition

ULSD Implementation

Mechanical Dye Issues

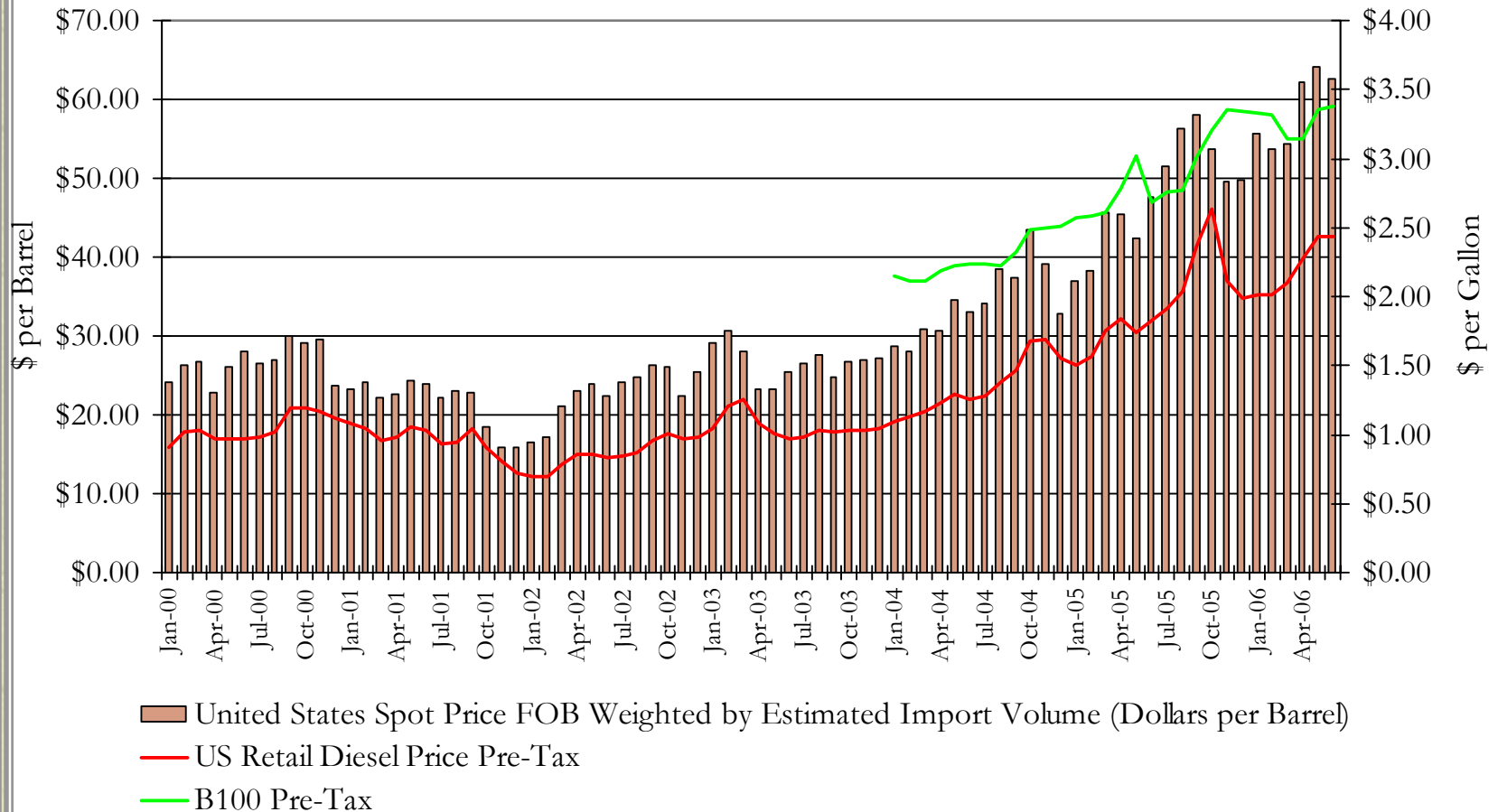
Infrastructure Tax Credit implement.

Small producer credit implement.

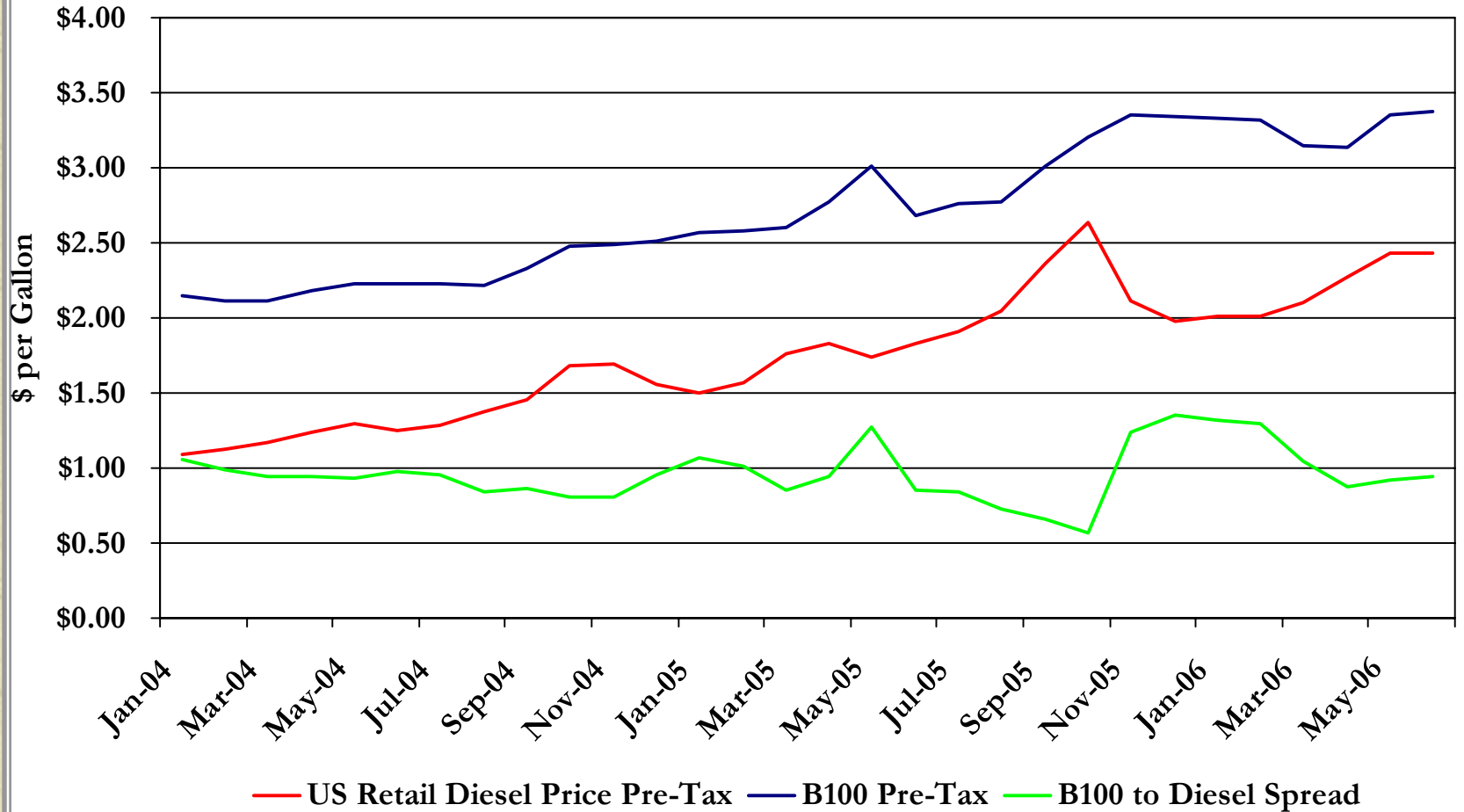
USDA authority FY07 Bioenergy

LUSTs

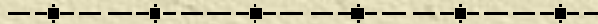
# US Crude Oil, Diesel Fuel and Biodiesel Spot Prices



# *Biodiesel and Diesel Prices*



# *Fuel Quality*



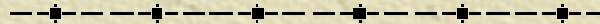
# *Fuel Quality - Enforcement*



- ✦ Encourage Government adoption and enforcement of ASTM D 6751
  - State Divisions of Weights and Measures
  - Internal Revenue Service (IRS), others....



# *OEM Acceptance*

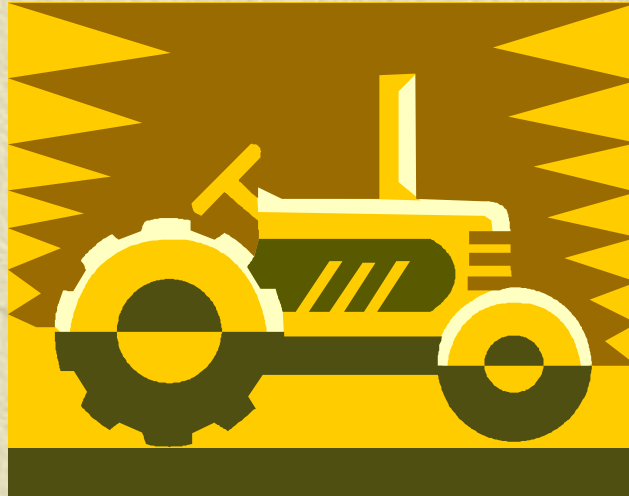


# *Increasing OEM Support*

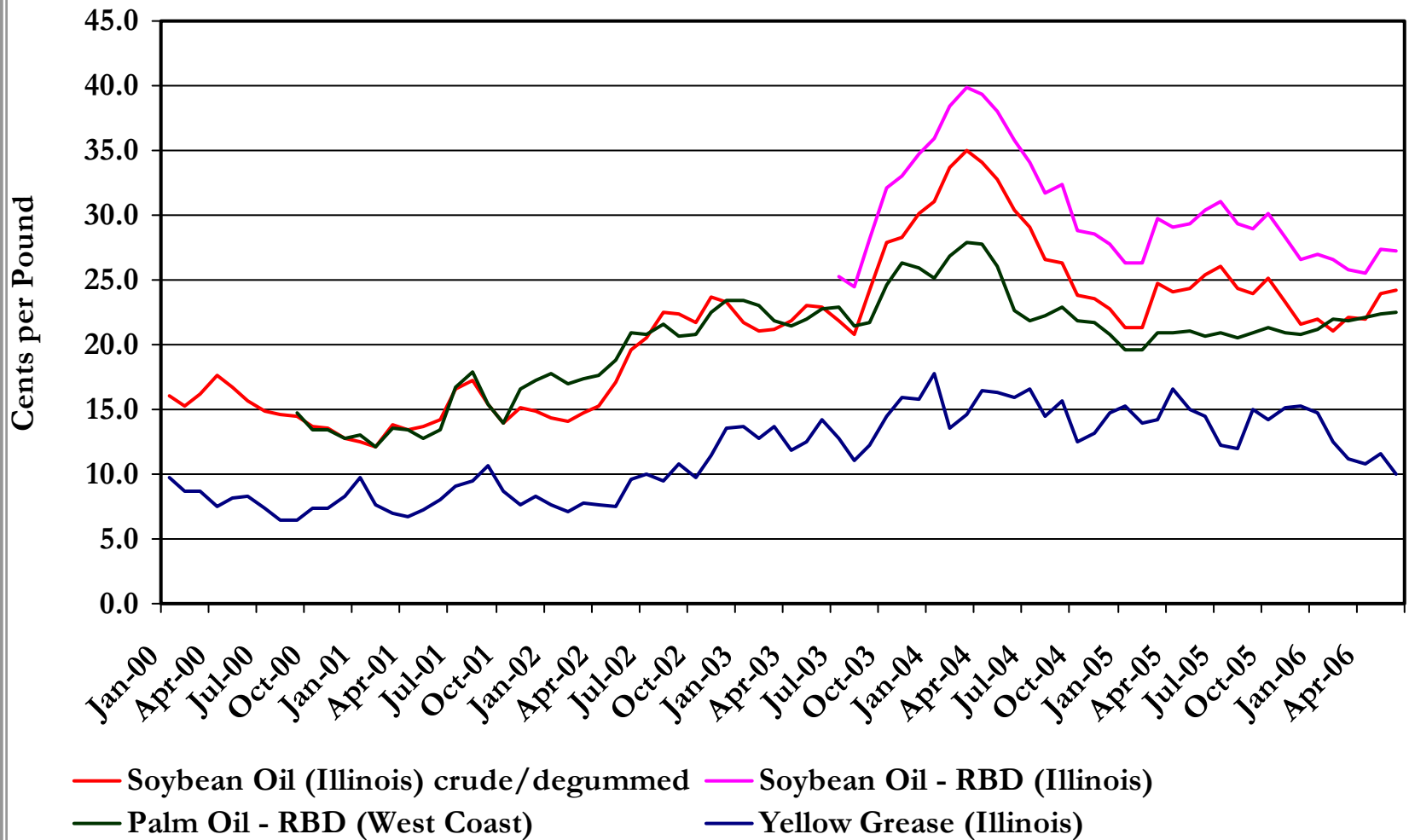
- ✦ Diesel powered Jeep Grand Cherokee CRD to have B5 factory fill
- ✦ New Holland approves B20 in all of its diesel engines
- ✦ DaimlerChrysler approves B20 in 2007 Dodge Ram pickup's used in fleets
- ✦ GM working towards B20
- ✦ EMA approves a B20 specification
- ✦ Cummins approves B20



# *Feedstock Supply*



# *Soybean oil, Palm Oil and Yellow Grease Prices*



# *Impact of Biodiesel on Farming*

- ✦ Biodiesel production can benefit our food supply
- ✦ Biodiesel uses agricultural commodities, such as soybean oil
- ✦ Studies conclude that greater use of fats and oils for biodiesel increases the value that farmers received for their crops
- ✦ Livestock feed becomes less expensive, more competitive in international meal markets
- ✦ A sustained biodiesel market may raise the cost of soybean oil. But it will lower the cost of animal feed, meaning meat products may be less expensive
- ✦ This allows farmers to more profitably supply global food markets, and it may increase ag processing in the United States
- ✦ On average, biodiesel's use of soybean oil adds 10 cents per bushel to the farmer's price for soybeans for every 100 million gallons of biodiesel produced

## *Who is AC & S, Inc. ?*

- ✦ We are a private corporation started over 20 years ago by a native West Virginian
- ✦ We are a chemical manufacturing facility
- ✦ We provide railcar cleaning services
- ✦ We operate a State of West Virginia Certified Environmental Laboratory
- ✦ We are full voting members of the National Biodiesel Board

# *What are our plans?*

- ✦ We are building a 3 to 5 million gallon capacity biodiesel production facility
- ✦ We will operate a full service commercial biodiesel and fuels testing analytical laboratory
- ✦ We will provide high quality biodiesel to the market
- ✦ We will become BQ-9000 certified

# *America's Farmers Feed the World*



*America's Farmers Fuel America*

