Ethanol Industry Update

Kristy Moore
Technical Director
September 15, 2011
Renewable Fuels Association

- National Trade Association for the U.S. ethanol industry promoting policy, regulations, research and development for the industry.

- History of the Association
  - Organized in 1981
  - Ethanol Producers constitute the Board of Directors
  - Representing domestic production
  - Leader in legislative and technical efforts of industry
A Changing Climate for Motor Fuels

Motoring Public ➔ Government Policy

Vehicles ➔ Energy
Energy Independence and Security Act

- The Renewable Fuels Standard requires 36 BGY of renewable fuels to be used.
- Ties a carbon intensity to motor fuels
- Most of the renewable fuel will be ethanol (~33-34 billion gallons)
- What will be the fuel mix?
  - ~34 billion gallons = 27% of 2022 projected gasoline use
Why Biofuels?

The Bigger Picture

Biofuels Policy Objectives:

- Reduce dependence on imported oil
- Provide new markets for surplus commodities
- Stimulate rural economies and create jobs
- Reduce GHG emissions and provide other environmental services

Ethanol accomplishes each of these objectives
U.S. Ethanol Industry Today

- Total production capacity of 14.74 bgy
- 209 plants operating in 29 states
- Dozens of next generation facilities in various stages of development
  - Cellulose must become a reality
US Transportation Fuels
Today

• 147 billion gallons a year gasoline
  – ~14 billion gallons a year ethanol

• Industry considerations:
  – E10 saturation,
    • Currently >90% E10 in the US
  – Declining fuel use in 2008
  – Continued decline in 2009 (-0.1%)
  – Regaining some footing, 2010 demand +0.5%
Ethanol: Current and Future Fuels

• Current Fuels
  – E10 (10% ethanol by volume)
    • Approved for use in all vehicles and engines
    • >90% of U.S. gasoline blended with ethanol
  – E85 (70 to 85% ethanol by volume)
    • For use in flex-fuel vehicles (FFVs) only
    • 8+ million FFVs; ~2,800 retail outlets
    • <2% of ethanol consumed as E85

• Future Fuels
  – Recent E15 Approval
    • Complicated Federal and State Regulatory matrix
  – “EXX” fuels in the future?
New Story: U.S. Ethanol Exports

U.S. ETHANOL EXPORTS BY REGIONAL DESTINATION
(DENATURED AND UNDENATURED, NON-BEVERAGE)

Exports likely to reach 600-800 m. gals. in 2011

Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics
Ethanol Plant Needs:
100 Million Gal./Year Plant

Example

• Logistics needs per year
  – 3448 railcars of Fuel Ethanol
  10 tank cars per day
  – 9867 railcars of Corn
  60% by Rail, 17 railcars per day
  – 3048 railcars of DDGs
  9 hopper cars per day
Hazmat Ranking # of Ethanol Shipments

- 2004: 5 – 65,372 Loads
- 2005: 5 – 72,677 Loads
- 2006: 2 – 116,224 Loads
- 2007: 1 – 158,460 Loads
- 2008: 1 – 219,033 Loads
- 2009: 1 – 257,635 Loads
- 2010: 1 – 315,718 Loads

Ethanol Industry Projection
- 2011: 1 – 349,879 Loads
  (14.7449 BGY est. 70% Rail with 29,500 gal/ car)
Moving Ethanol to the Market

Source: Renewable Fuels Association (RFA) August 2011
Ethanol Rail Fleet

- On average, 85% of Ethanol rail fleet is less than 7 years old
- DOT 111A type of railcar
  - 286k #/ 30k gallon capacity, ½” thick steel, unjacketed/ unlined, non pressure
- Each car expected to be used 30- 40 year length of service
- AAR Tank Car Committee continuously looking for improvements to tank car design
Future Ethanol Considerations

• Transportation: 3rd Highest Cost for Plant
  – Fleet Management Considerations: Must maintain efficiency

• Increasing Volume to Market
  – Rail expected to lead with greater efficiency: Unit Trains, Per Car Volume
  – Cost will be a determining factor
    • Pipeline research continues