Today’s U.S Ethanol Industry

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Renewable Fuels Association

April 8, 2008
Today’s Transportation Fuels

- Gasoline - 140 billion gallons
- Diesel - 45 billion gallons
- E85 - 150 million gallons (2008 est.)

- Ethanol as an additive (E-10)
  ~9 billion gallons in 2008
  Extends Gasoline - blended in nearly 60% of gasoline
  Adds 510,000 barrels of supply daily (January 2008, EIA data)
# U.S. Gasoline Demand

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>4,996</td>
<td>4,746</td>
</tr>
<tr>
<td>Conventional w/ Ethanol</td>
<td>1,409</td>
<td>1,702</td>
</tr>
<tr>
<td>RFG w/ Ethanol</td>
<td>3,096</td>
<td>3,123</td>
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<tr>
<td>RFG no Ethanol</td>
<td>74</td>
<td>53</td>
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<tr>
<td>Totals</td>
<td>9,585</td>
<td>9,624</td>
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</table>

• JJ&A EIA Oxygenates- Gasoline Data for July 2007
U.S. Ethanol Industry Today

- Annual production capacity of 8.5 bgy
  Actual 2007 production of 6.5 bgy

- 145 plants in 24 states (April 2008)

- 62 plants under construction and planned expansions, will increase industry capacity by an additional 5 bgy (April 2008)

Source: RFA
U.S. Ethanol Production
1980 - 2007
U.S. Ethanol Biorefinery Locations

Source: Renewable Fuels Association
4.02.08
New Ethanol Biorefinery Construction Capacity

MGY

New Ethanol Production Capacity

Total 1Q 2007
Total 2Q 2007
Total 3Q 2007
Total 4Q 2007
Total 1Q 2008
Total 2Q 2008
Total 3Q 2008
Total 4Q 2008
Total 1Q 2009
Nationwide Economic Benefits of Ethanol Demand in 2007

- Added $47.6 billion to gross output
- Created 238,000 jobs in all sectors of the economy - 46,000 in the manufacturing sector alone.
- Increased economic activity and new jobs from ethanol increased household income by $12.3 billion, money that flows directly into American consumers’ pockets
- Contributed $4.6 billion of tax revenue for the Federal government and $3.6 billion for State and Local governments
- Reduced imports by 228 million barrels of oil, valued at $16.5 billion or $45 million a day


- Requires the use of 36 billion gallons of renewable fuels annually by 2022
- Requires that 16 billion of the 36 billion gallons goal must come from ethanol produced from cellulosic feedstocks
- Creates greenhouse gas emission reduction requirements for alternative fuels
- Amends the Petroleum Marketers Act to prohibit discrimination against E85 infrastructure
- Calls for the federal study of an ethanol pipeline
## NEW RENEWABLE FUels STANDARD SCHEDULE

<table>
<thead>
<tr>
<th>Year</th>
<th>Renewable Biofuel</th>
<th>Advanced Biofuel</th>
<th>Cellulosic Biofuel</th>
<th>Biomass-based Diesel</th>
<th>Undifferentiated Advanced Biofuel</th>
<th>Total RFS</th>
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<tr>
<td>2008</td>
<td>9.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.0</td>
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<tr>
<td>2009</td>
<td>10.5</td>
<td>.6</td>
<td></td>
<td></td>
<td>0.1</td>
<td>11.1</td>
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<tr>
<td>2010</td>
<td>12</td>
<td>.95</td>
<td>.1</td>
<td>.65</td>
<td>0.2</td>
<td>12.95</td>
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<tr>
<td>2011</td>
<td>12.6</td>
<td>1.35</td>
<td>.25</td>
<td>.8</td>
<td>0.3</td>
<td>13.95</td>
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<tr>
<td>2012</td>
<td>13.2</td>
<td>2</td>
<td>.5</td>
<td>1</td>
<td>0.5</td>
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<td>2013</td>
<td>13.8</td>
<td>2.75</td>
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<td>1.75</td>
<td>16.55</td>
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<td>2014</td>
<td>14.4</td>
<td>3.75</td>
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<td></td>
<td>2</td>
<td>18.15</td>
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<td>5.5</td>
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<td>2016</td>
<td>15</td>
<td>7.25</td>
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<td>3.0</td>
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<tr>
<td>2017</td>
<td>15</td>
<td>9</td>
<td>5.5</td>
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<td>3.5</td>
<td>24</td>
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<td>2018</td>
<td>15</td>
<td>11</td>
<td>7</td>
<td></td>
<td>4.0</td>
<td>26</td>
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<tr>
<td>2019</td>
<td>15</td>
<td>13</td>
<td>8.5</td>
<td></td>
<td>4.5</td>
<td>28</td>
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<tr>
<td>2020</td>
<td>15</td>
<td>15</td>
<td>10.5</td>
<td></td>
<td>4.5</td>
<td>30</td>
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<tr>
<td>2021</td>
<td>15</td>
<td>18</td>
<td>13.5</td>
<td></td>
<td>4.5</td>
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<tr>
<td>2022</td>
<td>15</td>
<td>21</td>
<td>16</td>
<td></td>
<td>5</td>
<td>36</td>
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</table>
Economic Impacts of 36 Billion Gallon RFS (2007 dollars)

- Add more than $1.7 trillion to the Gross Domestic Product between 2008 and 2022;

- Generate an additional $436 billion of household income for all Americans between 2008 and 2022;

- Support the creation of as many as 1.1 million new jobs in all sectors of the economy by 2022;

- Generate $209 billion in new Federal tax receipts; and,

- Improve America’s energy security by displacing 11.3 billion barrels of crude oil between 2008 and 2022 and reduce the outflow of dollars to foreign oil producers by $817 billion between 2008 and 2022.
Infrastructure Needs for Expanding Ethanol Supplies

- **Transportation**
  - Expanded Truck access
  - Expanded Rail access
  - Expanded Barge access

- **Terminals**
  - 1352 terminals in US Petroleum and Chemicals

- **Ethanol** is clean, non-toxic product, easy storage commodity
Sewaren, New Jersey Ethanol Terminal
Sewaren, New Jersey Ethanol Terminal
Sewaren, New Jersey Ethanol Terminal
Major Ethanol Storage Terminals

Source: Renewable Fuels Association
4.02.08
Ethanol Terminal Development

- Motiva
- Kinder Morgan
- US Development
- Magellan
- Exxon-Mobil
- Marathon
- Sunoco
- Numerous Smaller Terminals
What it takes to keep product moving..

Transportation is 3rd Highest Cost at a Plant

Typical Ethanol Plant capacity:
100 Million Gal./Year

- 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
The Virtual Pipeline

- Ethanol in Unit Trains
  “Ethanol Express”
  Based on coal unit train success
- Shipment volumes ~3 million gallons
  Similar to traditional pipeline movements
- Single trains consisting of 65, 75, 95 ethanol cars
  Unit Train building sites expanding
- Origination in Midwest - Destination all coasts
Unit Train Locations

- Biorefineries in Production
- Biorefineries under Construction
- Existing Unit Train Facilities
- Proposed Unit Train Facilities

Source: Renewable Fuels Association 4.02.08
Real Market Impacts of
Increased Ethanol Use
Spot Market Ethanol, Gasoline, and Crude Oil Prices

Source: OPIS; EIA. November 2007 to date
Reducing Oil Dependence

“The slowing economy combined with high petroleum prices is expected to constrain growth in U.S. consumption of liquid fuels and other petroleum products to just 40,000 barrels per day (bbl/d) in 2008. \textit{After accounting for increased ethanol use, U.S. petroleum consumption falls by 90,000 bbl/d.}”

- Source: EIA
Displacing Gasoline Demand, Imports

Bill Day, a spokesman for Valero Energy Corp, the largest U.S. oil refiner, said his company foresees ethanol growth "offsetting gasoline imports to the U.S."

Source: “Ethanol boom may stifle U.S. gasoline demand,” Reuters, 2.14.08.
Saving Consumers Money at the Pump

- “Today, ethanol is substantially less expensive than gasoline. That is why it is being blended for economic reasons...And today, our national average base, it is just a nickel a gallon if you do the math of 10 percent times the 40- or 50-cent difference.”

- “Today, ethanol is substantially less expensive than gasoline. That is why it is being blended for economic reasons. If you are a distributor and you are looking at 40 or 50 cents less, you are going to blend it.”

Source: Press conference by Dr. Mark Cooper, Research Director at the Consumer Federation of America, National Press Club, March 26, 2008.
Keeping Oil and Gas Prices Lower

“Merrill Lynch commodity strategist Francisco Blanch says that oil and gasoline prices would be about 15% higher if biofuel producers weren't increasing their output. That would put oil at more than $115 a barrel, instead of the current price of around $102. U.S. gasoline prices would have surged to more than $3.70 a gallon, compared with an average of a little more than $3.25 today.”