Let’s Talk About Ethanol

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In-Service Program
Ames, Iowa
Ethanol Explosion

Source: Renewable Fuels Association
Renewable Fuels Standard

Source: Renewable Fuels Association
# Ethanol Industry Snapshots

<table>
<thead>
<tr>
<th></th>
<th>Ethanol Plants</th>
<th>Capacity (mgy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 2000</td>
<td>54</td>
<td>1,749</td>
</tr>
<tr>
<td>Jan. 2001</td>
<td>56</td>
<td>1,921</td>
</tr>
<tr>
<td>Jan. 2002</td>
<td>61</td>
<td>2,347</td>
</tr>
<tr>
<td>Jan. 2003</td>
<td>68</td>
<td>2,707</td>
</tr>
<tr>
<td>Jan. 2004</td>
<td>72</td>
<td>3,101</td>
</tr>
<tr>
<td>Jan. 2005</td>
<td>81</td>
<td>3,644</td>
</tr>
<tr>
<td>Jan. 2006</td>
<td>95</td>
<td>4,336</td>
</tr>
<tr>
<td>Jan. 2007</td>
<td>110</td>
<td>5,493</td>
</tr>
</tbody>
</table>

Source: Renewable Fuels Association
## Ethanol – State by State

<table>
<thead>
<tr>
<th>State</th>
<th>Current Capacity (million gallons)</th>
<th>State</th>
<th>Current Capacity (million gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>1,977</td>
<td>MO</td>
<td>197</td>
</tr>
<tr>
<td>IL</td>
<td>896</td>
<td>ND</td>
<td>134</td>
</tr>
<tr>
<td>NE</td>
<td>875</td>
<td>CO</td>
<td>96</td>
</tr>
<tr>
<td>MN</td>
<td>617</td>
<td>CA</td>
<td>74</td>
</tr>
<tr>
<td>SD</td>
<td>615</td>
<td>TN</td>
<td>67</td>
</tr>
<tr>
<td>IN</td>
<td>487</td>
<td>AZ</td>
<td>55</td>
</tr>
<tr>
<td>WI</td>
<td>282</td>
<td>OR</td>
<td>40</td>
</tr>
<tr>
<td>KS</td>
<td>232</td>
<td>KY</td>
<td>35</td>
</tr>
<tr>
<td>MI</td>
<td>214</td>
<td>NM</td>
<td>30</td>
</tr>
</tbody>
</table>
Where Are We Headed?

• Based on construction announcements for ethanol plants, by the end of 2010, ethanol production capacity could exceed 14.5 billion gallons

• Announced biodiesel capacity exceeds 2.5 billion gallons
# Ethanol – State by State

<table>
<thead>
<tr>
<th>State</th>
<th>Current Capacity (million gallons)</th>
<th>Being Built</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>1,977</td>
<td>1,869</td>
<td>3,846</td>
</tr>
<tr>
<td>NE</td>
<td>875</td>
<td>1,141</td>
<td>2,016</td>
</tr>
<tr>
<td>IL</td>
<td>896</td>
<td>461</td>
<td>1,357</td>
</tr>
<tr>
<td>IN</td>
<td>487</td>
<td>730</td>
<td>1,217</td>
</tr>
<tr>
<td>MN</td>
<td>617</td>
<td>513</td>
<td>1,130</td>
</tr>
<tr>
<td>SD</td>
<td>615</td>
<td>450</td>
<td>1,065</td>
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<tr>
<td>OH</td>
<td>4</td>
<td>544</td>
<td>548</td>
</tr>
<tr>
<td>KS</td>
<td>232</td>
<td>295</td>
<td>527</td>
</tr>
<tr>
<td>WI</td>
<td>282</td>
<td>230</td>
<td>512</td>
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<tr>
<td>TX</td>
<td>0</td>
<td>385</td>
<td>385</td>
</tr>
</tbody>
</table>
Oil Futures As Of 10/1/2007

$ per barrel

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>66</td>
<td>68</td>
<td>70</td>
<td>72</td>
<td>74</td>
<td>76</td>
<td>78</td>
</tr>
</tbody>
</table>
Historical Ethanol Margins

$ per gallon

Ethanol Gross Margin
Net Cost of Corn
Net Cost of Nat. Gas
Projected Ethanol Margins

$ per gallon

Ethanol Gross Margin
Net Cost of Corn
Net Cost of Nat. Gas

Nov-07 Feb-08 May-08 Aug-08 Nov-08 Feb-09 May-09 Aug-09 Nov-09

-0.20 0.00 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

CARD
IOWA STATE UNIVERSITY
Comparing Futures Prices

$ per gallon

Ethanol

Gasoline
10 Observations about Ethanol

1. Ethanol production growth has exceeded expectations
   - Growth has exceeded forecasts and has put the U.S. on pace to far exceed the RFS
   - But the industry is approaching another barrier point (10% of gasoline usage)

2. Gasoline prices are likely to remain high enough to support ethanol
10 Observations about Ethanol

3. Ethanol margins can remain positive over a wide corn price range

4. Corn prices are likely to remain higher than usual

5. Given positive margins, ethanol plants will be competitive for corn at higher prices
10 Observations about Ethanol

6. To maintain all corn usage demands, the U.S. will need to dramatically expand corn acreage

7. Other countries will respond to higher corn prices as well

8. With heightened demand and thin stocks, the corn market will be more volatile
10 Observations about Ethanol

9. Cellulosic ethanol has tremendous promise, but it will be several years before cellulosic ethanol truly impacts the energy markets.

10. The merging of the energy and agricultural sectors will force substantial changes in both sectors.
Basis in 2005

SEP 28 CORN BASIS

Basis Calculated from CBOT DEC Futures Prices 203 cents per bushels

NOTE: To expand the map to its real size, click the orange color button at the right bottom of the page
Basis in 2006

SEP 28, 2006 CORN BASIS
Basis Calculated from CBOT DEC futures Prices 264.3 cents per bushel

Legend
- Major Markets
- VALUE
  - 15.1 - 20
  - 10.1 - 15
  - 5.01 - 10
  - 0.001 - 5
  - -4.99 - 0
  - -9.9 - -5
  - -14.9 - -10
  - -19.9 - -15
  - -24.9 - -20
  - -29.9 - -25
  - -34.9 - -30
  - -39.9 - -35
  - -44.9 - -40
  - -49.9 - -45
  - -54.9 - -50
  - -60 - -55
Basis in 2007

SEP 28, 2007 CORN BASIS
Basis Calculated from CBOT DEC futures price 373 cents per bushel

Legend:
- County -73.93032837 - -68.49396768
- 68.49396768 - -63.05760701
- 63.05760701 - -57.62124634
- 57.62124634 - -52.18488566
- 52.18488566 - -46.74852498
- 46.74852498 - -41.31216431
- 41.31216431 - -35.87580362
- 35.87580362 - -30.43944295
- 30.43944295 - -25.00308228