U.S. Ethanol Market and Policy Update

June 15, 2017

Renewable Fuels Association
About the Renewable Fuels Association (RFA)

- Trade association representing U.S. ethanol producers
- Mission: “Drive expanded production and use of American-made renewable fuels and co-products worldwide”
- Founded in 1981
- Offices in Washington D.C., St. Louis, Kansas City, and Detroit
- Member producers include large bioenergy companies and agribusinesses as well as small farmer-owned co-ops and LLCs
- Associate members include vendors, suppliers, supporters, etc.
Today’s Ethanol Industry

• 212 installed production facilities
  – 199 in operation
  – 13 idle
• Installed facilities have “nameplate” capacity to produce 16.1 BG annually
  – Actual production capacity is likely ≈ 16.4 BG
• Actual production in 2016 was 15.33 BG
  – 96% capacity utilization
• Feedstock breakdown for installed facilities:

<table>
<thead>
<tr>
<th>Feedstock Type</th>
<th>Plants</th>
<th>Capacity (MG)</th>
<th>% of Cap.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>182</td>
<td>15,102</td>
<td>93.8%</td>
</tr>
<tr>
<td>Corn/sorghum/wheat/barley</td>
<td>14</td>
<td>869</td>
<td>5.4%</td>
</tr>
<tr>
<td>Food/beverage waste</td>
<td>10</td>
<td>30</td>
<td>0.2%</td>
</tr>
<tr>
<td>Cellulosic biomass</td>
<td>6</td>
<td>92</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
## “Capacity Creep”

<table>
<thead>
<tr>
<th>Company/Plant</th>
<th>City</th>
<th>State</th>
<th>New Capacity (MGY)</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marquis Energy</td>
<td>Hennepin</td>
<td>IL</td>
<td>145</td>
<td>2Q16</td>
</tr>
<tr>
<td>Western NY Energy</td>
<td>Medina</td>
<td>NY</td>
<td>13</td>
<td>4Q16</td>
</tr>
<tr>
<td>Siouxland Ethanol</td>
<td>Jackson</td>
<td>NE</td>
<td>20</td>
<td>1Q17</td>
</tr>
<tr>
<td>The Andersons</td>
<td>Albion</td>
<td>MI</td>
<td>65</td>
<td>2Q17</td>
</tr>
<tr>
<td>Badger State</td>
<td>Monroe</td>
<td>WI</td>
<td>28</td>
<td>2Q17</td>
</tr>
<tr>
<td>Tharaldson Ethanol</td>
<td>Casselton</td>
<td>ND</td>
<td>12</td>
<td>2Q17</td>
</tr>
<tr>
<td>Commonwealth Agri Energy</td>
<td>Hopkinsville</td>
<td>KY</td>
<td>10</td>
<td>2Q17</td>
</tr>
<tr>
<td>KAAPA Ravenna</td>
<td>Ravenna</td>
<td>NE</td>
<td>30</td>
<td>3Q17</td>
</tr>
<tr>
<td>POET</td>
<td>Groton</td>
<td>SD</td>
<td>13</td>
<td>3Q17</td>
</tr>
<tr>
<td>Pine Lake Corn Processors</td>
<td>Steamboat Rock</td>
<td>IA</td>
<td>10</td>
<td>3Q17</td>
</tr>
<tr>
<td>Al-Corn Clean Fuel</td>
<td>Claremont</td>
<td>MN</td>
<td>70</td>
<td>2Q18</td>
</tr>
<tr>
<td>Bushmills Ethanol</td>
<td>Atwater</td>
<td>MN</td>
<td>35</td>
<td>2Q18</td>
</tr>
<tr>
<td>ICM</td>
<td>Colwich</td>
<td>KS</td>
<td>50</td>
<td>2Q18</td>
</tr>
<tr>
<td>Ringneck Energy*</td>
<td>Onida</td>
<td>SD</td>
<td>80</td>
<td>2Q18</td>
</tr>
<tr>
<td>Little Sioux Corn Processors</td>
<td>Marcus</td>
<td>IA</td>
<td>30</td>
<td>2Q18</td>
</tr>
<tr>
<td>Elite Octane*</td>
<td>Atlantic</td>
<td>IA</td>
<td>120</td>
<td>3Q18</td>
</tr>
<tr>
<td>POET</td>
<td>Marion</td>
<td>OH</td>
<td>68</td>
<td>3Q18</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>799</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Greenfield construction

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### How is our ethanol used?

#### Ethanol Supply/Demand 101

<table>
<thead>
<tr>
<th>2016 Ethanol S/D</th>
<th>Million gals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Stocks</td>
<td>907</td>
</tr>
<tr>
<td>Imports</td>
<td>36</td>
</tr>
<tr>
<td>Production</td>
<td>15,330</td>
</tr>
<tr>
<td><strong>TOTAL SUPPLY</strong></td>
<td><strong>16,273</strong></td>
</tr>
<tr>
<td>E10 Blending</td>
<td>14,059</td>
</tr>
<tr>
<td>E15/E85/EFF Blending</td>
<td>349</td>
</tr>
<tr>
<td>Exports</td>
<td>1,045</td>
</tr>
<tr>
<td><strong>TOTAL DEMAND</strong></td>
<td><strong>15,453</strong></td>
</tr>
<tr>
<td>Ending Stocks</td>
<td>820</td>
</tr>
</tbody>
</table>

[Pie chart showing E10, 2% for E15/E85/EFF, and 7% for Exports]
U.S. ethanol blending is up 1.7% versus year-ago; blend rate above 10.0% in 8 of last 10 months

Does not include EIA “adjustment” for certain blending below the rack and other blending outside of EIA survey.

Source: EIA

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Sales of E15 and E85 are expanding as infrastructure buildout continues

- E15 and E85 retail infrastructure expansion is accelerating due to:
  - USDA Biofuels Infrastructure Partnership (BIP) grant program
  - Ethanol industry grant programs
  - RFS RIN values
  - LCFS credit values (California)
- Major retail chains are adopting E15 and E85. Many stations are high-volume sites
- 900-1,000 stations expected to be selling E15 by the end of 2017
- E15 legally approved for 90% of current fleet
  - All major automakers approve E15 in new vehicles (except Nissan, Mazda & Mercedes)
- EPA RVP regulations remain a key barrier
- 25 million FFVs on the road (≈10% of fleet)

Source: RFA, E85prices.com, DOE

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2017 Renewable Fuel Standard

• EPA put the RFS “back on track” with final rule for 2017 RFS requirements

- Published prior to statutory deadline of Nov. 30, 2016
- Restored conventional renewable fuel requirement to statutory level of 15 billion gallons
- YTD Cellulosic and Advanced Biofuel RIN generation well behind the pace needed to meet RVOs (but excess Biodiesel RINs can cover Advanced shortfall)
- YTD Biodiesel and Conventional Renewable Fuel RIN generation generally on necessary pace to meet RVOs
- RIN stocks at 1.6-1.8 billion entering 2017 compliance year
2018 Renewable Fuel Standard

• EPA’s proposed rule for 2018 RFS requirements will be released very soon
  – Still time to meet statutory deadline of Nov. 30, 2017 for final rule if proposal is released for public comment by mid-June
  – Expect conventional renewable fuel requirement to remain at statutory level of 15 billion gallons
  – Expect very modest (100-200 MG, 2-4%) increase to total advanced biofuel standard

• We do not expect the 2018 proposed rule to address petitions related to moving the RFS point of obligation
  – EPA proposed to deny the PoO petitions in Nov. 2016
  – Agency accepted public comments on the proposed denial
  – Final decision is pending
RFS Politics

• Oil companies continue to push for repeal or reform of RFS
• Reform focus is increasingly shifting to post-2022
• House Energy & Commerce holding roundtable discussions to solicit input on reform concepts, gauge appetite for modifications
• Several “messaging bills” introduced in House to reform or repeal—none expected to leave committee
  – H.R. 1315/1314 (Goodlatte)
  – H.R. 776/777 (Sensenbrenner)
  – H.R. 119 (Burgess)
• Support for RFS is bipartisan and falls along geographical lines
• 41 Senators on record last summer supporting RFS and opposing legislative repeal or reform
• No meaningful legislative action on RFS is expected in near term
• President Trump continues to voice support for RFS and ethanol
• Administrator Pruitt committed to abide by the statute and Congressional intent in implementing RFS
• Agriculture Secretary Perdue strong supporter of RFS

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Securing RVP Parity for E15

- EPA regulations limit RVP of gasoline to 9.0 psi in the summertime in conventional gasoline areas (2/3 of the country)
  - E10 has RVP of 9.9-10.0 psi when made with 9.0 psi CBOB
  - E15 has RVP of 9.8-9.9 psi when made with 9.0 psi CBOB
- In 1989, EPA gave E10 a 1 psi “waiver,” creating an effective RVP limit of 10.0 psi for E10 only (Congress codified in 1990)
- EPA does not apply the same 1 psi waiver to E15
- Retailers cite the RVP disparity as the top reason for not selling E15
- S. 517 (Fischer) would extend 1 psi waiver to E15 and other blends above E10
  - EPW hearing June 14; bill mark-up in late July
- Administrator Pruitt has also stated that EPA is evaluating how and whether it can administratively apply the 1 psi waiver to E15
Demand growing for U.S. ethanol exports

U.S. Ethanol Exports by Region

- All Others: 1,045.4
- EU-28: 823.1
- South America: 839.1
- Middle East: 474.8
- North Africa: 731.5
- Southeast Asia: 616.6
- South Asia: 19
- East Asia: 0

Monthly U.S. Ethanol Exports and Imports

- Exports
- Imports
- Net Exports

Source: DOC

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Biofuel mandates, smog concerns, octane value driving demand for U.S. ethanol exports

Top markets for U.S. ethanol exports in 2016
- Canada (25%)
- Brazil (26%)
- Mexico (3%)
- Peru (4%)
- Rest of World (5%)
- Nigeria (2%)
- UAE (2%)
- India (8%)
- S. Korea (4%)
- Philippines (5%)

Top markets for U.S. ethanol exports in Jan-Apr 2017
- Canada (20%)
- Brazil (40%)
- Mexico (2%)
- Peru (3%)
- Rest of World (4%)
- Nigeria (2%)
- UAE (5%)
- India (15%)
- S. Korea (2%)
- Philippines (7%)

- High sugar prices relative to corn in 4Q16 and 1Q17 resulted in significant increase in U.S. ethanol exports to Brazil
- Exports to China have ceased in 2017 in response to increased tariff rates
- YTD exports to India, Philippines, UAE up in 2017 vs. 2016
- Nearly 50 countries have renewable fuel mandates, targets, or goals.
- Octane value and oxygen content (smog reduction) also driving export demand.
- Still 2+ BG of MTBE blended worldwide.
- 2017 exports expected between 1.1-1.3 BG

Source: DOC
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