What does RFS mean to Rendering Industry

Michael Rath
Darling Ingredients

February 1 2018
Outline

• 2018 and beyond - Issues facing industry
• RFS background
• RFS effects on rendering industry
• Key statistics
• Conclusion
Issues facing Industry

- Growing meat by-product supplies and loss of export markets in fats & proteins
- Added compliance cost – Air, water, transportation, documentation, safety/OSHA
- Greater trade barriers on fats & proteins
- Asia palm oil growth
- Large EU, South America RFS, and Asian palm programs
Energy Independence and Security Act of 2007 signed by the President on December 19, 2007

- Increases RFS to 9 billion gallons of renewable fuels in 2008 and to 36 billion gallons by 2022
  - Within the RFS, creates a *minimum use requirement* for “biomass-based diesel” which is a technology-neutral classification, and includes biodiesel
    - Minimum usage requirements of 1 billion gallons in 2012
    - 2013 volumes determined by EPA Administrator
  - **To qualify, the fuel must meet a 50 percent lifecycle greenhouse gas emission requirement**
# Volumes for RFS (in gallons)

<table>
<thead>
<tr>
<th>Type</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018*</th>
<th>2019*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cellulosic Biofuel</strong></td>
<td>123M</td>
<td>230M</td>
<td>311M</td>
<td>288M</td>
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<tr>
<td><strong>Biomass-based Diesel</strong></td>
<td>1.73B</td>
<td>1.9B</td>
<td>2.0B</td>
<td>2.1B</td>
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<td><strong>Advanced Biofuel</strong></td>
<td>2.88B</td>
<td>3.61B</td>
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<tr>
<td><strong>Conventional Ethanol</strong></td>
<td>14.05B</td>
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<td>18.11B</td>
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Yellow cells highlight recently-finalized volumes.
## RFS volumes & relationship to raw materials

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- **2.1 Billion gallons = 16.8 lbs. of fats & oil consumption**
- **Almost 400 MM lbs. animal/waste consumption**
US consumption is growing for Renewable when certainty of market is known.
Renewable Diesel consumption continues to grow

U.S. Biodiesel & Renewable Diesel Market
(millions of gallons)
Source: EPA EMTS*
2016 Feedstock usage
What does RFS provide Rendering industry

- Value add to our supplier network; Efficient meat production = Greater protein consumption
- Feed cost/conversion competitiveness vs. other regions of the globe
- Trade-friendly program for meat exports
- Provides domestic fat consumption with shrinking export market
RFS spurred yield improvement & row crop efficiency

US Soybean Yield (bushel/acre)
Source: USDA

US Corn Yield (bushel/acre)
Source: USDA

Soy 25%
Corn 17%
Meat exports grew while RFS 2007-2017
(Beef 98%, Pork 80%, Poultry 12%) = total 42%
Loss of fat export markets

Export fat market disappearing for US Renders
- Trade barriers
- Palm oil replacement

Result:
RFS must utilize low carbon feedstock for Domestic Secure energy program
RFS results

• Efficient soybean meal values
  o Globally US meat production is most efficient in world
  o Meat production, domestic consumption grow with meat exports leading US meat expansion

• Value add to meat production

• Drove technology/investment to provide greater row crop production & efficiency

• Creates demand for soybean oil (by-product of soymeal) and US animal fats with decreasing export markets

• Trade-friendly program to meat production

• MADE IN USA – CONSUMED IN USA

• Revitalization in Rural America economies and job creation

• Domestic secure energy independence while providing carbon reduction