Ready, Willing and Able: Advanced Biofuels

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Presentation Overview

Foundation For Discussions: Issues, Challenges and Solutions

Reflection on the RFS: Important Program History

How to Proceed

Areas of Opportunity

Questions

Current Situation
KNOWLEDGE:
- No one knows this program better than the staff in EPA’s Office of Transportation and Air Quality. However…….

CHALLENGE:
- This Program has been, without question, the most challenging program to be a regulator of in my experience.
- It’s not just about setting standards, it’s about every other issue surrounding what’s in the law, what the divergence of interests are and the constantly evolving changes necessary to support implementation.

ISSUES:
- The issues with the program have caused the Agency to take a careful look at how to proceed on all fronts – causing gridlock / significant delays

SOLUTION:
- While it is prudent to be cautious, it is also important to make decisions that are critical to continued success of the program and to achieve the intended goals.
- Today’s discussions are focused on a few relatively simple things that can be done without new regulations. We will also highlight what could potentially be done with new regulations.
“The” RFS

RFS 1 – Complex – Only at that time.

RFS 2 – Upped the Ante and Complexity

- National Standard -- 4 categories
- Significantly increased volumes
- Extended Timeline – No Sunset
- Expanded coverage -- gasoline and diesel, on/non-road
- Explicit definitions for qualification
  - Land (Renewable Biomass)
  - Types of Feedstocks
  - Some specifics on process technologies
- Full Lifecycle – GHGs (First Ever)
- Grandfathering
- Waivers and Exemptions!
- Other specific qualification requirements
- Reset AND MORE!!!!!
The RFS: Congress Established a Law. How hard can it be?

Multiple Inputs -- Parties -- Perspectives -- Varying Interests

Making Sense of All the Input

Environment

- Infrastructure
- Economics
- Federal / State Incentives
- Energy Security, Diversity and Sustainability
- Environmental Protection: Multi-Media Issues

Public Policy

- Global Influences
- Sustainable Feedstocks
- Metrics: Lifecycle, Energy, Hybrid
- Vehicles/Engines
- Fleet Efficiency
- Fuel Types and Usage Scenarios

Economics

- Fuel Blends / Market Absorption

Energy

- Regulations
Things Considered in Establishing Past Regulations

AND

Still Necessary to Consider to Progressively Implement the Policy
Where Do Things Stand? Success on Foundational Level

Congressional Volume Target for Renewable Fuel

36 Billion Gallons of Renewable Fuel by 2022

Key
- Cellulosic (D-3)
- Advanced (D-5)
- Biodiesel (D-4)
- Renewable (D-6)

Billion gallons

2008  2012  2017  2022

Done
Nested Fuel Categories: What Remains

**Total Renewable Fuel – 36 Billion Gallons** (Grandfathered or Minimum 20% GHG Reduction)

- **21 Billion Gallons** of Total Advanced Biofuels By 2022
- **15 Billion Gallons** of Non Advanced by 2015

**Total Advanced Renewable Fuels – 21 Billion Gallons** (Any Non Cellulosic Advanced Requires a Minimum 50% Reduction)

- **Cellulosic - 16 Billion Gallons** (Minimum 60% Reduction)
  - 1 Billion Gallons Minimum Biomass Based Diesel by 2012
  - 16 Billion Gallons of Cellulosic Biofuels by 2022
  - 4 Billion Gallons of Non Cellulosic Advanced by 2022

- **Other Advanced - 4 Billion Gallons**
  - Biomass Based Diesel - Minimum of 1 Billion Gallons

**Other Advanced**

- **Cellulosic Feedstock**
- **Cellulosic Drop In Fuels**
- **Growth in Lowest GHG Fuels**
# Past and Current Year Volume Standards

## - What Will Shape Future Standards? -

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<tbody>
<tr>
<td>Cellulosic biofuel (million gallons)</td>
<td>33</td>
<td>123</td>
<td>230</td>
<td>311</td>
<td>288</td>
<td>381</td>
</tr>
<tr>
<td>Biomass-based diesel (bgs)</td>
<td>1.63</td>
<td>1.73</td>
<td>1.9</td>
<td>2.0</td>
<td>2.1*</td>
<td>2.1 Final</td>
</tr>
<tr>
<td>Total Advanced biofuel (bgs)</td>
<td>2.67</td>
<td>2.88</td>
<td>3.61</td>
<td>4.28</td>
<td>4.21</td>
<td>4.88</td>
</tr>
<tr>
<td>Total Renewable fuel (bgs)</td>
<td>16.28</td>
<td>16.93</td>
<td>18.11</td>
<td>19.28</td>
<td>19.29</td>
<td>19.88</td>
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Conventional Fuels =15BGS

*BBD Standard for 2020 is already set at 2.43 bg
Moving Forward: Paths of Least Resistance and Highest Value

What to Consider?

What can be done!
- Immediately
- Soon
## Tiering Actions In Terms of Level of Effort

<table>
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<tr>
<th>Tier</th>
<th>Description</th>
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<td>Tier 3</td>
<td><strong>Heavy Lift</strong>: Requires Legislation – But may be necessary to support true change / growth in the Future</td>
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<td>Tier 2</td>
<td><strong>Moderate</strong>: Existing Authority but Expected to Require Regulatory Action</td>
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<td>Tier 1</td>
<td><strong>Relatively Easy</strong>: Allowed Under Current Regulations – Administrative in Nature – Still requires Agency to make supporting decisions</td>
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Program Repeal – Highly Unlikely at This Time

Program Reform – Most Likely if Any Legislative Efforts are Made

Type of Reform
- Complete Reform
- Partial Reform – Not Sure this is Feasible
Examples of Potential Tier 2 Opportunities - More Comprehensive List Can Be Developed

- **Feedstock Pathways**
  - Multiple Opportunities for Consideration
  - Example: Complete existing Tree pathways proposed in REGS Rule

- **Revisit Renewable Biomass Applications**
  - Example: Qualifications of currently approved feedstocks from naturally regenerative managed forests

- **Retail Comingling of Compliant Products**
  - Potentially being addressing under EPA Streamlining Efforts

NOTE: We will Discuss Potential Mechanisms under Reset and Set Discussions and other Regulatory Processes
Focus on Tier 1 – Administrative Decisions

Legal and Regulatory Authority
- Act Allows and calls for it
- Existing Regulations Can Support it
- Agency can address one key issue by Finalizing Proposed REGS OR
- Allow for registration and oversight under current regulations

Pathway to Produce a Qualified Fuel
- Use of Existing Approved Pathways (Feedstock to Fuel)
- Example: Wood Residues
- Contributes to Advanced and Cellulosic Fuels
- Drop-In Fuels
- Use of existing infrastructure / transparency to supply, distribution, storage and use

Supports Program Goals
- Domestic Energy Production and Security
- Rural Development
- Reduce Greenhouse Gas Emissions (Best Performing)
- Increased Volumes – Conventional is Already Achieved
- Next volumes must be cellulosic and other advanced
Key Impacts of Positive Tier 1 Decisions

- Low Impact for Agency
  + High benefit for the program goals

- Supports New Industries and Technologies And Reboots Existing

- Provides Bridge to Bring Drop In - Advanced and Cellulosic Fuels To the Market Right Now
Key Tier 1 Opportunities

Bio-intermediates – Not explicitly prohibited under existing Regs
- EPA preferred approach – New Regulatory Requirements for Market Oversight (REGS Rule)
- HOWEVER, Can be accomplished through specific registration requirements
- Consideration of Limited Interim Program / Test Program
  - Selective Policy that alleviates compliance concerns

Feedstock Co-Mingling – Two Potential Opportunities
- Compliant / Non Compliant Policy
- 2 Types of Compliant Comingled Feedstock Policy – Example: Advanced and Cellulosic
- Mass Balance / Proportionality Approach – Not explicitly restricted under existing regulations
  - Could potentially be addressed via policy / guidance
  - Allowed for Agricultural Feedstocks under Aggregated Compliance Approach
  - For Cellulosic - Adapt approach at facilities, not at land
  - Multiple Compliant Feedstock Allowances (i.e. Advanced / Cellulosic)

Alternative Testing Procedures – Currently allowed for under existing regs – Just few if any approvals of alternative methods

Final Determinations on Wastes – Waste determinations are difficult for many reasons however a more rational approach to application could free up waste feedstock for use in this program
Upcoming Reset or Set – These are Potential Vehicles for Addressing Tier 2 Issues

What is Reset – Addresses 2021 and 2022

- 211(o)(F) of the Clean Air Act Requires the Agency Reset the Congressional Volumes when the standards have been reduced by 20% or more in 2 consecutive years or 50% or more in one year.
- If the final 2019 standards remain as proposed, all categories will have effectively been triggered to initiate a reset process.
- Timing: Should establish standards within one year – So they would apply to the 2020 Standards through 2022
  - Expect a Proposal early next year, likely included in 2020 RVO
- Criteria – 6 Main Factors – ~20 Plus Overall Factors (paragraph (2)(B)(ii))
  - Little guidance on how to weigh factors (See next Slide) in determining decisions
- While the Agency sets volume standards each year anyway, this would actually change the congressional volumes from those stipulated in the Act
- Agency should account for all volume potential under Tier 1 and Tier 2 in establishing any new volumes.

What is Set – Addresses 2023 and Beyond

- The RFS Program doesn’t end. The Act requires the Agency take a similar approach to above. However, with no volumes stipulated in the Act post 2022, the program could potentially change in other material ways
- Some Guidance but pretty much a blank slate
- Agency should prioritize Cellulosic / Advanced Fuels
Reset and Set ---- Required Analyses

- New volumes must be based on a review of implementation of program to date and evaluation of ~20 factors
- Agency must also "coordinate" with DOE and USDA – Go Through Public Process

Economic impacts
- Food prices
- Cost to consumers of transportation fuel
- Cost to transport goods
- Job creation
- Rural economic development
- Price of agricultural commodities

- Other
  - Expected annual rate of future commercial production
  - Energy security
  - Supply of agricultural commodities
  - Infrastructure, including:
    - Deliverability of materials, goods, and products other than renewable fuel
    - Sufficiency of infrastructure to deliver and use renewable fuel
  - Water supply

Environmental impacts
- Air quality
- Water quality
- Climate change
- Conversion of wetlands
- Ecosystems
- Wildlife habitat
Conclusions

- Congress Prioritized Cellulosic / Advanced Biofuels in the Act beginning in 2016 and beyond.
  - All incremental volumes are to be advanced and cellulosic.
  - These can include on and off-road fuels as well as Jet and Heating Oil.
- The Agency has also indicated cellulosic and better performing advanced biofuels are their priorities going forward.
- There are real opportunities in today's market to utilize cellulosic feedstocks, that have existing pathways, that have demonstrated technologies deployed to produce these very low GHG fuels, including drop-in fuels that are transparent to today's vehicles, engines and infrastructure.
- These can deploy quickly and under existing regulatory structures if the Agency would opt to apply administrative allowances that still support appropriate oversight of the necessary supply chains.
- Tier 1 Decisions Can Be Implemented Almost Immediately!
- Reset is a potential vehicle to collectively address Tier 2 issues and should strongly consider it as an opportunity to further Congressional Goals.
Thank You!