HOW DO RINs WORK?

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Weaver and Tidwell, L.L.P.
Assurance · Tax · Advisory
Overview

- Brief history of the RFS program
- RIN Basics
- Feedstocks
- Status of the RFS program
Weaver at a Glance

Headquartered in
Fort Worth
since 1950

10 U.S. locations

Largest independent
accounting firm in the
Southwest

We are a growing firm with more than 550 employees from 16 countries, including China, France, Serbia, Zimbabwe and many more.
EPA REGULATIONS:
- Part 79 – Fuel and Fuel Additives registrations
- Part 80 – Fuel regulations
  - Gasoline – sulfur, toxics, benzene, etc.
  - Distillate Fuels
  - Renewable Fuels
  - Attestation Services for Gasoline and Renewable Fuels
  - In-line Blending Audits – gasoline
  - Quality Assurance Plans – EPA-approved Auditor
- Part 98 – Greenhouse Gas Reporting

OTHER FUELS REGULATIONS:
- California Low Carbon Fuel Standard (LCFS)
- Environment Canada – Renewable Fuels Regulations
- State of Arizona – compliance audits
- Marine Preservation Association – dues procedure attestations
- Laboratory audits – independent labs and petroleum refinery labs
Abbreviations used today

- **RF** = Renewable Fuel
- **RIN** = Renewable Identification Number
- **OP** = Obligated Party
- **EMTS** = EPA Moderated Transaction System
- **BBD** = Biomass-based Diesel
- **AB** = Advanced Biofuel
- **CB** = Cellulosic Biofuel
- **NOV** = Notice of Violation

- **EV** = Equivalence Value
- **RVO** = Renewable Volume Obligation
- **ERVO** = Export RVO
- **GHG** = Greenhouse Gas
- **LCA** = Lifecycle Analysis
- **QAP** = Quality Assurance Plan
- **Q-RIN** = QAP-verified RIN
- **DFE** = Denatured Fuel Ethanol
Origins of the RFS Program

- The Energy Policy Act (2005) required EPA to implement a renewable fuels standard program
- First program was called “RFS1” - effective date Sept. 1, 2007
  - Renewable Fuels volumetric goals:
    - 9 Billion gallons by 2008; 22 billion gallons by 2022
  - Imposed obligations on gasoline refiners and importers (RVOs)
  - Created “Renewable Identification Numbers” or “RINs”:
    - The “currency of compliance”
    - Generated by producers of renewable fuels
    - Used by gasoline refiners and importers to prove compliance
    - Represented by a 38-digit code
      - Prone to transfer errors, duplication
Evolution to “RFS2”

- RFS1 was barely underway when Congress enacted a major overhaul under the Energy Independence and Security Act (Dec 2007)
- Objectives:
  1. Reduce dependence on foreign oil
  2. Reduce greenhouse gas (GHG) emissions
  3. Promote job growth in U.S. “green” sector
- Vast expansion of the overall volumes and scope of the RFS program
- Four interrelated annual renewable fuel mandates
- Obligations imposed on diesel as well as gasoline refiners and importers
- RINs are still the currency of compliance, but there are more strings attached to qualifying renewable fuel:
  - “Renewable Biomass” feedstock
  - Life-cycle emissions reductions
  - RIN creation/management centralized in EPA Moderated Transaction System (EMTS)
RFS2 Renewable Fuel Volumes

- **Advanced Biofuel: Unspecified**
- **Advanced Biofuel: Biomass-Based Diesel**
- **Advanced Biofuel: Cellulosic Biofuel**
- **Conventional Biofuel (corn ethanol)**

**GHG Reduction**
- 50%
- 60%
- 20%

**CORN ETHANOL CAPPED AT 15 BG/YR**

**Year**
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022

**Billion Gallons**
SO – WHAT ARE RINS AND HOW ARE THEY:

1. GENERATED?
2. TRANSFERRED?
3. USED?

Put simply: RINs are saleable regulatory credits that represent a quantity of qualifying renewable fuel

BUT: The devil is in the details!
*RINs are fungible; can be transferred with any type of renewable fuel  
e.g. Today, a 2012 renewable diesel RIN can be transferred with a 2014 ethanol gallon
Where are RINs “born”?

Information from NREL interactive website:  http://maps.nrel.gov/biomass
RIN Generation

- RINs are generated by renewable fuel producers and U.S. importers who import from registered foreign producers
  - Producers and Importers generate RINs based on (denatured) production volume (temp-corrected) and the Btu content of the fuel
  - RINs can ONLY be generated if:
    - Fuel is used for transportation fuel, heating oil or jet fuel
    - Feedstock meets the definition of “Renewable Biomass”
    - Produced under an EPA-approved pathway (or grandfathered)
• Renewable fuels qualify only if produced from “Renewable Biomass”:
  ➢ Products from planted crops and crop residue / trees and tree residue
  ➢ Animal waste material and byproducts
  ➢ Algae
  ➢ Biomass cleared from the vicinity of buildings and other areas to reduce wildfire risk
  ➢ Separated yard or food waste

• Products from crops, trees, and their respective residues are subject to an “existing agricultural use” requirement as of 12/19/2007:
  ➢ Feedstock source must have been cleared or cultivated before this date; and,
  ➢ Feedstock source must have been actively managed or fallow on this date.

• **However** – U.S. and Canadian crop- and tree-based feedstocks are covered under an “aggregate compliance option”
  ➢ Does not require individual farm/plantation tracking to show existing agricultural use, unless future USDA data shows an overall growth in farm land use above 2007 baseline
• Each of the four Renewable Fuel Mandates has its own lifecycle GHG reduction criteria (established under EISA)

  ➢ **Cellulosic Biofuel: [Represented by D codes 3, 7]**
    • Must achieve 60% reduction vs. gasoline or diesel baseline
    • Cellulosic RIN production increasing due to new plants and biogas/CNG reclassification

  ➢ **Biomass-Based Diesel: [D codes 4, 7]**
    • Must achieve 50% reduction vs. diesel baseline
    • Includes Biodiesel and Renewable Diesel

  ➢ **Advanced Biofuel: [D code 5]**
    • Must achieve 50% reduction vs. gasoline or diesel baseline
    • Includes cellulosic, BBD, sugarcane ethanol and any other qualifying renewable fuel other than corn starch ethanol

  ➢ **Total Renewable Fuel: [D code 6]**
    • Must achieve 20% reduction vs. gasoline or diesel baseline; except:
      Existing (2007) facilities are “grandfathered”, i.e., exempt to its 2007 baseline
    • Includes corn ethanol primarily

• Lifecycle emissions are evaluated by EPA as part of a “well to wheels” analysis, which supports various fuel pathways
Cellulosic Feedstocks

Renewable Fuels produced from these feedstocks using an approved technology can generate “Cellulosic Biofuel” D3 or D7 RINs

- Agricultural Residues
- Switchgrass
- Miscanthus
- Separated Yard Waste
- Separated Food Waste
- Biogenic separated MSW
- Annual Covercrops
- Forest Product Residues
- Forest Thinnings
- Slash
- Arundo Donax
- Pennisetum purpureum
- Biogas from municipal wastewater treatment facility digesters
- Biogas from agricultural digesters
- Biogas from separated MSW digesters
- Biogas from the cellulosic components of biomass processed in other waste digesters
- Arundo Donax
- Energy Cane
- Bagasse
- Bagasse Straw

Cellulosic feedstocks are evaluated based on their cellulosic content
Oils approved by EPA as feedstock for Renewable Fuels

- Pathway Table Feedstock Oils (Can generate D-4 RINs):
  - Soybean
  - Canola/Rapeseed*
  - Algal Oil**
  - Covercrop***
  - Biogenic Waste Oils
    - Tallow, Chicken Fat, Used Cooking Oil, Waste Veg Oil
  - Non-food grade corn oil
  - Camelina sativa
  - Fish

  * Only if plant transesterifies using nat. gas or biomass for process energy
  ** EPA evaluating different production processes
  *** Not precisely defined by EPA

- Grandfathered Facilities’ Oils (Can generate only D-6 RINs):
  - Palm
  - PFAD
  - PSO/SBE
  - Sunflower
  - Safflower
  - Cottonseed*
  - Brassica carinata*
  - Pennycress*
  - Jatropha
  - Etc.

* Public comment received; expected to be added to left column

- ALL FACILITIES MUST USE FEEDSTOCKS THAT MEET DEFINITION OF “RENEWABLE BIOMASS”
- CROP-BASED FEEDSTOCKS FROM ONLY U.S. AND CANADA QUALIFY UNDER “AGGREGATE COMPLIANCE” APPROACH
All other feedstocks

The following feedstocks qualify for D4, D5 or D6 RINs, as applicable:

• Corn Starch (D6)
• Sugarcane (D5)
• Non-cellulosic components of annual cover crops (D6)
• Starch - Agricultural Residues (D6)
• Starch - Annual Covercrops (D6)
• Non-Cellulosic Portions of Separated Food Wastes (D4, D5)
• Free Fatty Acids (D4, D6)
• Cyanobacteria (D4)
## RIN Generation – Examples of Lifecycle Analysis Pathways

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Feedstock</th>
<th>Production Process Reqmts</th>
<th>D Code</th>
</tr>
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<tbody>
<tr>
<td>Ethanol</td>
<td>Corn Starch</td>
<td>Drymill process</td>
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<tr>
<td>Ethanol</td>
<td>Sugarcane</td>
<td>Fermentation</td>
<td>5</td>
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<tr>
<td>Ethanol</td>
<td>Cellulosic feedstock</td>
<td>Any cellulosic production process</td>
<td>3</td>
</tr>
<tr>
<td>Biodiesel</td>
<td>Soybean oil, used cooking oil, tallow, NFG corn oil</td>
<td>Transesterification</td>
<td>4</td>
</tr>
<tr>
<td>Renewable Diesel</td>
<td>Soybean oil, used cooking oil, tallow, NFG corn oil</td>
<td>Hydrotreating (no coprocessing/coprocessing)</td>
<td>4 / 5</td>
</tr>
<tr>
<td>Cellulosic Diesel, Jet, Heating Oil</td>
<td>Cellulosic biomass</td>
<td>Any cellulosic production process</td>
<td>7</td>
</tr>
<tr>
<td>Renew. CNG/LNG</td>
<td>Biogas from Landfills</td>
<td>Any</td>
<td>3</td>
</tr>
<tr>
<td>Renewable Jet, Heating Oil, Ethanol</td>
<td>Separated food wastes</td>
<td>Any separated food wastes process</td>
<td>5</td>
</tr>
</tbody>
</table>
RIN Generation –
Additional Key Concepts

• RINs generators and foreign producers must register their company and facility(ies) with EPA
  ➢ Facility registration requires review by 3rd party engineer
• RINs are viable for two years: year of generation + next year
• RIN yields vary by the type of fuel -- dependent on fuel Btu content (in relation to ethanol)
  ▪ Ethanol – 1.0 RINs per gallon
  ▪ Biodiesel – 1.5 RINs per gallon
  ▪ Renewable Diesel – 1.6 to 1.7 RINs per gallon
  ▪ Biogas – 11.727 RINs/MMBtu (LHV basis)
  ▪ Electricity – 1 RIN/22.6 KW-hr
• Renewable fuel producers can participate in the Quality Assurance Plan program – independent, on-going audit of fuel, RINs
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Blenders generally purchase Renewable Fuel and blend it into gasoline or diesel
  – **Ethanol to E-10, E-15 or E-85 blend levels; Biodiesel to B2, B5, B20**

Upon blending the blender can sell the two commodities – the blended physical fuel and the separated RIN

Many blenders are also Obligated Parties

The largest independent blenders of biodiesel are truckstops
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Who Needs to Use RINs?

• Obligated Parties
  - Companies who produce or import petroleum gasoline or diesel fuel in a given calendar year
  - Do not have to blend physical renewable fuel
  - Must satisfy their renewable volume obligations (RVO) using RINs and/or cellulosic waiver credits
    - Can use prior-year RINs for up to 20% of the applicable RVO
  - Acquire RINs through the purchase of physical fuel with RINs or through RIN-only transactions
The RFS is far from boring...

- Very controversial - Proposed Renewable Volume Obligations which are much lower than EISA due to blendwall concerns, lack of cellulosic production
- RIN Fraud Cases – have involved a handful of ‘biodiesel’ producers; investigations continue
- Constantly changing regulations – new fuels, new feedstocks, new processes, new requirements
Weaver Compliance Navigator*

The information you need, when you need it.

- A searchable directory of CFR Title 40, Part 80
- Selected Key Regulations from:
  - EPA
  - Environment Canada
  - State Agencies
- Timely updates from Weaver’s energy compliance professionals
- Regulation Fact Sheets with detailed explanations of regulations
- Ability to contact Weaver team via phone or email with the push of a button
- Now available for all mobile phones!
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* It’s FREE!!
Thank you for the opportunity to speak with you today!

If you have any questions, please feel free to contact me:

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