
OVERVIEW: U.S. RENEWABLE FUELS PROGRAM

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OVERVIEW

- × A Brief History of the RFS
- × General Program Structure
- × The Basics of Compliance - EMTS
- × Overview of Existing Fuel Pathways Process for Evaluating New Ones
- × Conclusion

EISA 2007

- × National Standard but with 4 categories of renewable fuels
- × Significantly increased volumes of renewable fuel – to 36 billion gallons
- × 2022 Full Implementation
- × Expanded to on and off-road gasoline and diesel
- × Explicit definitions for renewable fuels to qualify
- × Inclusion of specific types of waivers
- × Legislation allows renewable fuels used in Home Heating Oil and Jet Fuel to count towards RFS2 program

2007 EISA RFS2 PROGRAM - KEY ASPECTS



- × **Established Specific Volume Standards for Renewable Fuel Use in the Transportation Sector – Gasoline and Diesel; On and Off-Road**

- × **Establishes four categories of renewable fuels each individual volume standards:**
 - + cellulosic biofuel
 - + biomass-based diesel
 - + advanced biofuel
 - + total renewable fuel

- × **Set specific qualification requirements for renewable fuels and feedstocks**
 - + Definitions for qualifying fuels / feedstocks for the categories
 - × Specifically defines cellulosic, biomass-based diesel, etc.
 - + Set minimum lifecycle GHG reduction thresholds for each category of renewable fuel
 - + Applies restrictions on types of feedstocks that can be used to make renewable fuel, and types of land that can be used to grow and harvest feedstocks
 - + Established grandfathering allowances for renewable volumes from certain facilities

- × **The RFS2 Regulations went into effect July 1, 2010.**

DETAILS OF EISA CATEGORIES AND STANDARDS

× Four Separate Standards

+ Biomass-Based Diesel: Minimum of 1 Bgal by 2012 and beyond

- × E.g., Biodiesel, “renewable diesel” if fats and oils not co-processed with petroleum
- × Must meet a 50% lifecycle GHG **reduction** threshold

+ Cellulosic Biofuel: Minimum of 16 Bgal by 2022

- × Renewable fuel produced from cellulose, hemicellulose, or lignin
- × E.g., cellulosic ethanol, BTL diesel, green gasoline, etc.
- × Must meet a 60% lifecycle GHG **reduction** threshold

+ Advanced Biofuel: Minimum of 21 Bgal by 2022 (Minimum of 4 billion additional)

- × Essentially anything but corn starch ethanol
- × Includes cellulosic biofuels and biomass-based diesel
- × Must meet a 50% lifecycle GHG **reduction** threshold

+ Total Renewable Biofuel: 36 Bgal by 2022 (Minimum of 15 Bgal additional)

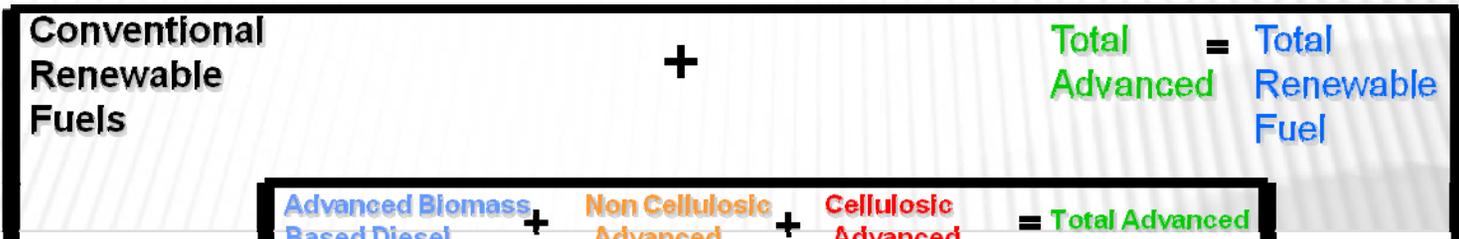
- × Ethanol derived from corn starch – or any other qualifying renewable fuel
- × Must meet 20% lifecycle GHG **reduction** threshold - Only applies to fuel produced in new facilities

Lifecycle GHG reduction comparisons are based on a 2005 petroleum baseline as mandated by EISA.

NOTE: Existing biofuel facilities (domestic and foreign) are not required to meet GHG threshold for conventional biofuel category – facilities are “Grandfathered.”

VOLUME STANDARDS AS SET FORTH IN EISA

(REMINDER: EPA SETS STANDARDS EACH NOVEMBER - THESE ARE THE STANDARDS PUBLISHED IN THE ACT)



Year	Conventional Renewable Fuels (Grandfathered Or 20% Reduction)	Advanced Biofuel NESTED STANDARDS			Total Advanced Biofuel	Total Renewable Fuel
		Biomass-Based Diesel (50% Reduction)	Non Cellulosic Advanced (50% Reduction)	Cellulosic Biofuel (60% Reduction)		
2008	9.00					9.0
2009	10.50	0.5	0.1		0.6	11.1
2010	12.00	0.65	0.2	0.1	0.95	12.95
2011	12.60	0.80	0.3	0.25	1.35	13.95
2012	13.20	1.0	0.5	0.5	2.0	15.2
2013	13.80	1.0	0.75	1.0	2.75	16.55
2014	14.50	1.0	1.00	1.75	3.75	18.15
2015	15.00	1.0	1.50	3.0	5.5	20.5
2016	15.00	1.0	2.00	4.25	7.25	22.25
2017	15.00	1.0	2.50	5.5	9.0	24.0
2018	15.00	1.0	3.00	7.0	11.0	26.0
2019	15.00	1.0	3.50	8.5	13.0	28.0
2020	15.00	1.0	3.50	10.5	15.0	30.0
2021	15.00	1.0	3.50	13.5	18.0	33.0
2022	15.00	1.0	4.00	16.0	21.0	36.0

COMPLIANCE BASICS OF RFS2

- ▶ RINs are the currency of the RFS2 program – used for compliance
- ▶ RINs are generated by renewable fuel producer
- ▶ Types of Fuels are assigned a D Code – determined by EISA definition, restrictions, GHG evaluation, energy calculation
- ▶ RINs follow product volume
- ▶ RIN separation from volume may only be performed by an obligated party
- ▶ RIN credits have a two year life – year generated, plus one year
- ▶ Program continues to be supplemented by recordkeeping and attest requirements

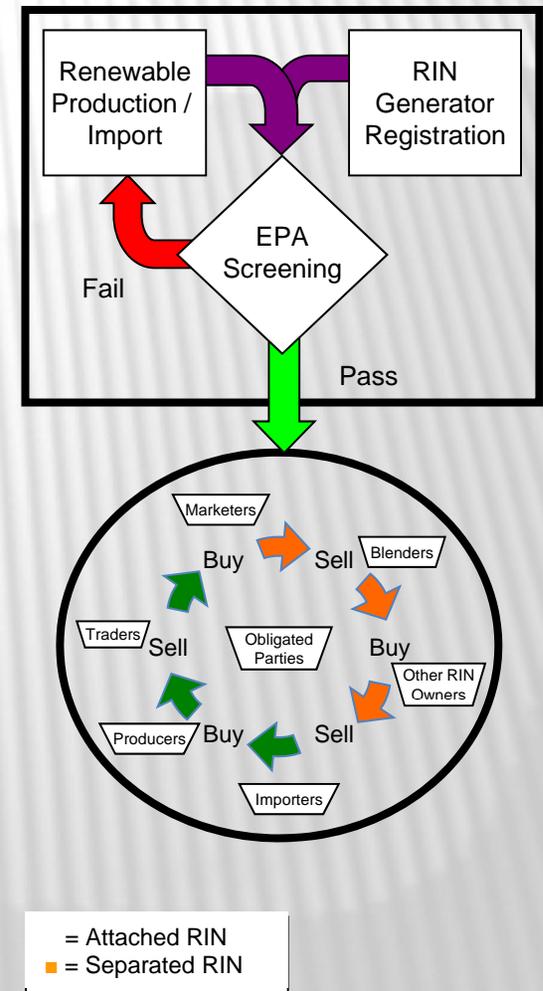
RINs That Can Be Used To Meet Each Standard In RFS2

Standard	Obligation	Allowable D codes
Cellulosic biofuel	RVO_{CB}	3 and 7*
Biomass-based diesel	RVO_{BBD}	4 and 7*
Advanced biofuel	RVO_{AB}	3, 4, 5, and 7
Renewable fuel	RVO_{RF}	3, 4, 5, 6, and 7*

* Plus certain RFS1 RINs for 2010

COMPLIANCE SYSTEM

- × EPA Moderated Transaction System (EMTS):
 - + A closed, EPA-managed system that provides:
 - 1) a mechanism for screening and
 - 2) a means for tracking RIN credits
 - + Screening process checks that the information provided by the RIN generator is consistent with an existing registration
 - + RIN tracking process is similar to a banking system.
 - × Accounts are assigned to registered users.
 - × Transactions are conducted through EMTS which enforces business rules – e.g. a seller must have a sufficient account balance for a buyer to receive their credits.



OTHER RENEWABLE FUEL / PROCESS PATHWAYS



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Guidance on New Fuel Pathway Approval Process

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Gasoline
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State (Boutique)
Emergency Fuel Waivers

Renewable Fuel Standard (RFS) Home Regulations & Standards Compliance Help Notices Moderated Transaction System

Compliance Information

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Fuels Programs Reporting

Overview

For the final Renewable Fuel Standard (RFS2) rule, EPA assessed the lifecycle greenhouse gas (GHG) emissions of multiple renewable fuel pathways. Assessment of lifecycle GHG emissions is necessary to determine which fuel pathways meet the GHG reduction thresholds under RFS2 for the four required renewable fuel categories. Classifications of approved fuel pathways are specified in Table 1 to 80.1426(f) of the RFS2 regulations.

Compliance Reporting

- On the RFS reporting page there are forms and instructions for reporting.

Within the table, three critical components of a fuel pathway are listed: (1) fuel type, (2) feedstock, and (3) production process. Each specific combination of the three components, or fuel pathway, is assigned a RIN D code designating the renewable fuel category (renewable fuel, biomass-based diesel, advanced biofuel, cellulosic biofuel) for which it qualifies. For example, biodiesel is assigned a RIN D Code of 1, which qualifies the fuel for compliance with the biomass-based diesel category.



You will need Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

General Information

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In addition, EPA recognized during the rulemaking that there would be new pathways requiring assessment in the future. Therefore, we provided 80.1416 in the RFS2 regulations, "Petition process for evaluation of new renewable fuels pathways." This mechanism allows parties to request that EPA conduct a lifecycle GHG assessment for a new fuel pathway and provide a determination of the D code for which the new pathway may be eligible.

What/How to Submit

See these [general instructions](#) on how to request EPA evaluation and determination of any new fuel pathway.

Note on Confidential Business Information (CBI): Each company's petition contains data that has been covered by a claim of business confidentiality (i.e., they are treated as CBI). EPA is required to treat this data in accordance with established Agency procedures for the handling of CBI, including the procedures described in 40 CFR Part 2, Subpart B.

Process/Timing

Prior to petitioning EPA for a new pathway, renewable fuel producers and importers must first ensure they meet the other requirements of the RFS2 program. Upon receipt of a new fuel pathway evaluation request, EPA will evaluate the following preliminary requirements prior to proceeding with a lifecycle GHG analysis:

- Do the feedstock and fuel meet the RFS2 definitional requirements in 80.1401 for renewable biomass and renewable fuel?

KEY FUEL PATHWAYS *

Renewable Fuel Category	Example of Qualifying Renewable Fuel
Cellulosic (60% GHG)	Cellulosic ethanol and diesel fuel (Thermal / Biochemical from Corn Stover, Switchgrass, tree residues, other)
Biomass-based diesel (50% GHG)	Biodiesel and renewable diesel from soy, canola, wastes oils, and algae
Advanced biofuel (50% GHG)	Ethanol from sugarcane, others currently proposed / completed under petitions
Renewable fuel (20% GHG or Grandfathered)	Ethanol and Butanol from corn starch (coal-fired does not qualify)

* Other pathways are under evaluation

OTHER RENEWABLE FUEL / PROCESS PATHWAYS

EXAMPLE PAGES

Pending Pathway Assessments

The following pathway requests have been received and are under review:

Company	Fuel	Feedstock	Process
11 Good Energy, Inc.	<i>New (G2 Diesel)</i>	Soy bean oil, Oil from annual cover crops, Algal oil, Biogenic waste oils, fats, greases, and Canola oil	Esterification
Absolute Energy, LLC	Ethanol	Corn	<i>New (proprietary)</i>
BP Biofuels North America, LLC	Cellulosic biofuel	<i>New (energy cane)</i>	Any
	Cellulosic biofuel	<i>New (napiergrass)</i>	Any
Chemtex Group	Cellulosic biofuel	<i>New (arundo donax)</i>	
Conestoga Energy Partners, LLC, and Bonanza Bioenergy, LLC*	Ethanol	<i>New (grain sorghum)</i>	
Dakota Spirit AgEnergy, LLC	Ethanol	Corn	
Diamond Green Diesel, LLC	<i>New (renewable naphtha)</i>	Biogenic waste oils, fats, greases	
DriveGreen, LLC	<i>New (renewable electricity)</i>	Landfill biogas	
Emerald Biofuels LLC, Global Clean Energy Holdings, and UOP LLC	Renewable diesel, jet fuel, and naphtha	<i>New (trophaz)</i>	
	Biodiesel		
Gevo	Isobutanol	Corn	<i>New (proprietary)</i>
Green Vision Group	Ethanol	<i>New (energy beets)</i>	Fermentation
ICM	Ethanol	Corn	<i>New (proprietary)</i>
Kior, Inc.	<i>New (renewable gasoline blendstock)</i>	Cellulosic biomass	<i>New (proprietary)</i>
Mountain Bioenergy, LLC	Ethanol	<i>New (energy sorghum)</i>	Fermentation

Completed Pathway Assessments

The following pathway requests have been completed:

Company	Date Completed	Determination
High Plains Bioenergy, LLC	February 17, 2012	Approved (PDF) (14 pp, 4.16MB, February 2012)
Viesel Fuel, LLC	September 29, 2011	Approved (PDF) (2 pp, 473K, September 2011)
Changing World Technologies, Inc.	June 10, 2011	Approved (PDF) (13 pp, 408K, June 2011)
Endicott Biofuels, LLC	April 6, 2011	Approved (PDF) (18 pp, 5.1 MB, April 2011)
Global Energy Resources	April 6, 2011	Approved (PDF) (16 pp, 4.0MB, April 2011)
Triton Energy, LLC	December 10, 2010	Approved (PDF) (17 pp, 5.0MB, December 2010)

[↑top of page](#)

NEW PATHWAYS

- × Final Action Under Final Review
 - + Camelina
 - + Others - Energy Cane / Grasses; Napier Grass; Arundo Donax

- × Palm
 - + Comment Process Concluded
 - + Final Review and Analysis Underway

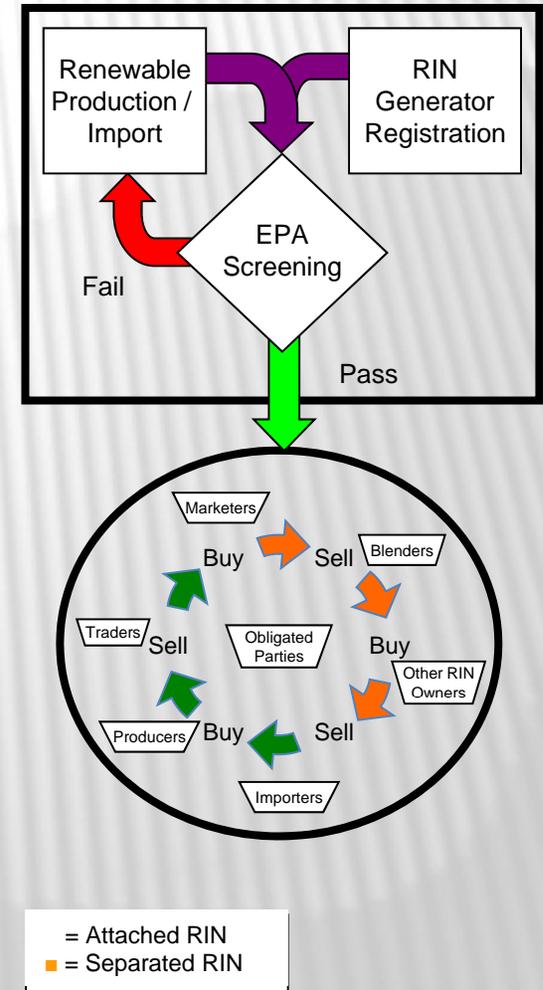
- × Woody Pulp –Purpose Grown
 - + Initial Analytical Process Underway
 - + Develop Future Rule

- × Others Petitioning for Pathways
 - + Feedstocks
 - + Process Technologies

- × Interpretive Actions Under Existing Rules
 - + Fuel Oil / Heating Oil Revision
 - + Other

OVERVIEW: COMPLIANCE SYSTEM

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SETTING THE EISA RFS2 STANDARDS EACH YEAR

- × **EPA Sets EISA Standards Every Year**
 - + Based on projected gasoline / diesel projections
- × **Formula used per regulations to determine the 4 obligations in terms of a percentage of production and EISA volume standards applied for each category**
- × **Proposal – Setting Following Year RFS2 Volume Standards**
 - + EISA Volumes converted into percent of gasoline and diesel production expected for following year
 - + Standards that apply to refiners, importers, gasoline blenders
 - + Cellulosic standard set based on EIA projections, our market assessment and info through notice and comment
- × **Biomass-Based Diesel Standard EPA must determine the applicable volume of biomass-based diesel at least 14 months prior to the year in which the volume will be required**
 - + Beginning in 2013
- × **Final Standards --- November 30th by Law**



2012 FINAL STANDARDS

**Table 1
Final Volumes for 2012**

	Actual Volume	Ethanol Equivalent Volume^a
Cellulosic biofuel	8.65 mill gal	10.45 mill gal
Biomass-based diesel	1.0 bill gal	1.5 bill gal
Advanced biofuel	2.0 bill gal	2.0 bill gal
Renewable fuel	15.2 bill gal	15.2 bill gal

^aBiodiesel and cellulosic diesel have equivalence values of 1.5 and 1.7 ethanol equivalent gallons respectively. As a result, ethanol-equivalent volumes are larger than actual volumes for cellulosic biofuel and biomass-based diesel.

**Table 2
Final Percentage Standards for 2012**

Cellulosic biofuel	0.006%
Biomass-based diesel	0.91%
Advanced biofuel	1.21%
Renewable fuel	9.23%



KEY COMPLIANCE ACTIONS UNDERWAY

- × Some concerns over compliance with the RFS Standards
 - + Fraudulent RINs

- × Agency and Industry worked together to address issues
 - + Coordination with obligated parties and producers, traders, brokers
 - + Proposed rule currently at OMB under interagency review
 - + Key elements include voluntary options for quality assurance plans
 - + Consideration of affirmative defense for obligated parties
 - + Bridge from proposal to final action / effect date of

TRACKING PROGRAM PROGRESS

- Fuel Programs
 - Renewable & Alternative Fuels
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 - Fuel Trends Report
 - RFG Survey Data
 - RFG Report Data
 - RFS2 Data
- 2012 EMTS Data
 - 2011 EMTS Data
 - 2010 EMTS Data
 - RFS2 Cellulosic Biofuel Waiver Credits Purchased

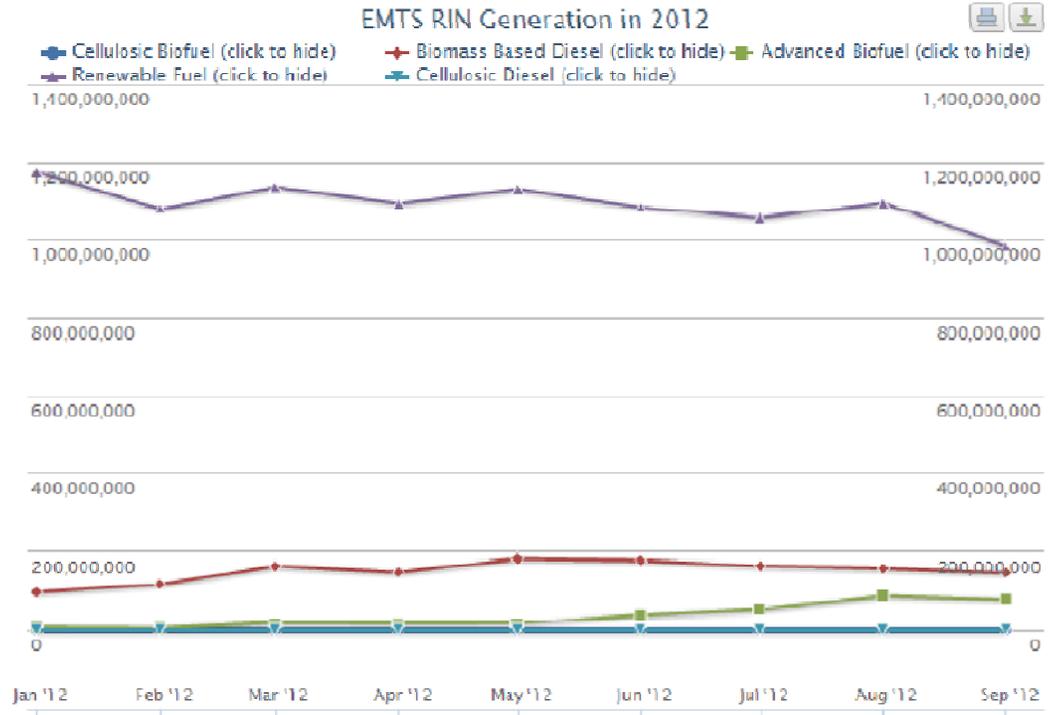
2012 RIN Generation and Renewable Fuel Volume Production

Click the icons to display the data in different formats.





RINS
Volume



QUESTIONS



Thank you

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For Additional information: <http://www.epa.gov/otaq/renewablefuels/index.htm>

Send new questions to: EPAFuelsPrograms@epa.gov