

# Renewable Fuel Standards Program Update

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# Agenda

- General Background on EISA and the RFS
- In Reflection of 2010 and 2011
  - 2010 and 2011 Standards
  - New Pathways for Biodiesel, renewable diesel, other
  - Palm Oil Notice of Data Availability
  - Canadian Biomass Petition Approval
- What's on Deck for 2012 and 2013
  - Final 2012 Standards
  - Status of 2013 Biomass Based Diesel Standard
- Other Items of Interest
- What's Next?
- Questions



# EPACT 2005 vs. EISA 2007

- EPACT 2005 RFS<sub>1</sub>

- National Standard
- 7.5 billion gallons
- 2012 Full Implementation
- Obligation based on gasoline – onroad only
- General definition for renewable fuels
- 250 million gallons of cellulosic biofuels
- Different qualification for cellulosic fuel - 2.5 Credits (RINs) per gallon of ethanol

- 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 RFS<sub>2</sub> program

# 2007 EISA RFS2 Program - Key Aspects

- **Establishes four categories of renewable fuel volume standards:**
  - cellulosic biofuel
  - biomass-based diesel
  - advanced biofuel
  - total renewable fuel
- **Changes to the program include 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 categories
    - Established grandfathering allowances for renewable volumes from certain facilities
    - 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
- **Final rule set full 2010 EISA renewable fuels volume = 12.95 Bg**
- **The RFS2 Regulations went into effect July 1, 2010.**
- **EPA developed a path for transitioning from RFS1 to RFS2**

# 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)

**Conventional  
Renewable  
Fuels**

+

**Total  
Advanced** = **Total  
Renewable  
Fuel**

**Advanced Biomass  
Based Diesel** + **Non Cellulosic  
Advanced** + **Cellulosic  
Advanced** = **Total Advanced**

Year	Conventional Renewable Fuels (Grandfathered Or 20% Reduction)	Advanced Biofuel NESTED STANDARDS				Total Renewable Fuel
		Biomass-Based Diesel (50% Reduction)	Non Cellulosic Advanced (50% Reduction)	Cellulosic Biofuel (60% Reduction)	Total Advanced Biofuel	
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 Structure of RFS2

- ▶ RINs are the currency of the RFS<sub>2</sub> 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

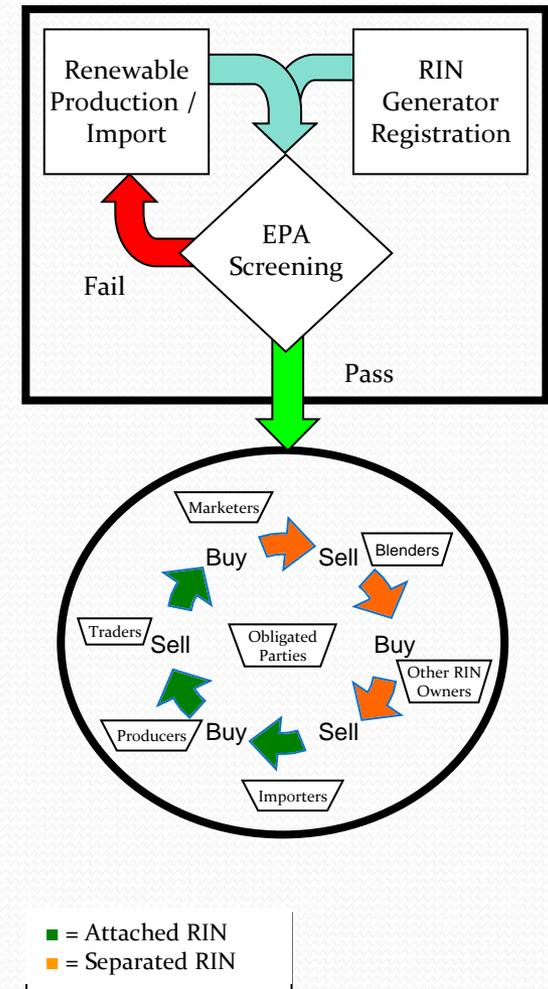
## RINs That Can Be Used To Meet Each Standard In RFS<sub>2</sub>

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 RFS<sub>1</sub> 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.



# 2010 and 2011 Standards in Reflection

- Standards for 2010
  - 12.95 bg total renewable fuel
  - 1.15 bg combined 09/10 biomass based diesel
  - .95 bg total advanced
  - 6.5 Million Gallons of a 100 Mg Standard
- Standards for 2011
  - 13.95 bg total renewable fuel
  - .8 bg biomass based diesel
  - 1.35 bg total advanced
  - 6.0 Million Gallons of a 250 Mg Standard
- Reminders
  - Maintained total and total advanced despite lowering of cellulosic
  - Counted primarily on biodiesel to satisfy total advanced volumes – 1.5 RIN value @ volumes

# 2011 - New Pathways

- Direct Final Rule Issued November 2011 - Had to Withdraw DFR
  - Camelina
  - Energy Cane / Grasses
  - Napier Grass
  - Arundo Donax
- Notice of Data Availability
  - Palm – Out for Comment
  - Sorghum – Expect NODA release soon
  - Woody Pulp – Still in process –NODA possible later this year
- Others Petitioning for Pathways
  - Feedstocks
  - Process Technologies

# 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
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>	Any
Emerald Biofuels LLC, Global Clean Energy Holdings, and UOP LLC	Renewable diesel, jet fuel, and naphtha	Jatropha	Hydrotreating
Emerald Biofuels LLC and Global Clean Energy Holdings	Biodiesel	Jatropha	Transesterification
Gevo	Isobutanol	Corn	<i>New (proprietary)</i>
High Plains Bioenergy	Biodiesel	<i>New (free fatty acids)</i>	<i>New (proprietary)</i>
ICM	Ethanol	Corn	<i>New (proprietary)</i>
Kior, Inc.	<i>New (renewable gasoline blendstock)</i>	Cellulosic biomass	<i>New (proprietary)</i>
Macawber Engineering, Inc.	Ethanol	Algae	<i>New (proprietary)</i>
Montana Advanced Biofuels, LLC	Ethanol	<i>New (barley, wheat starch residue)</i>	Fermentation
New Generation Biofuels Holdings Inc.	Renewable diesel, heating oil	Biogenic waste oils, fats, greases	<i>New (proprietary)</i>
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Osage Bio Energy, LLC	Ethanol	<i>New (barley)</i>	Fermentation
Sundrop Fuels, Inc.			
Terrabon, Inc.			
Viesel Fuel, LLC			

### Completed Pathway Assessments

The following pathway requests have been completed:

Company	Date Completed	Determination
Changing World Technologies	June 10, 2011	<a href="#">Approved (PDF)</a> (13 pp, 408K, June 2011)
Endicott	April 6, 2011	<a href="#">Approved (PDF)</a> (18 pp, 5.1MB, April 2011)
Global Energy Resources	April 6, 2011	<a href="#">Approved (PDF)</a> (16 pp, 4.0MB, April 2011)
Triton	December 10, 2010	<a href="#">Approved (PDF)</a> (17 pp, 5.0MB, December 2010)

# 2012 Final Standards



**Table 1  
Final Volumes for 2012**

	<b>Actual Volume</b>	<b>Ethanol Equivalent Volume<sup>a</sup></b>
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	<b>15.2 bill gal</b>

<sup>a</sup>Biodiesel 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	<b>9.23%</b>

# What Happened to the 2013 BBD Standard?

- In the NPRM we proposed 1.28 bill gallons for BBD for 2013
- We received comments during public comment period and through interagency that necessitated additional work
- We are continuing our evaluations and analysis
- Recognize the interest in completing this
- We intend to issue a final rule setting the applicable standard for 2013 as expeditiously as possible

# What's Next?

- 2013 Standards – AND BEYOND
- More Pathway Evaluations
- Ongoing Compliance Monitoring
- Response to Petitions
- Litigation

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- Legislative Changes?
- Regulatory Modifications?
- Waiver Requests

# Questions

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OTAQ website:<http://www.epa.gov/otaq/fuels/renewablefuels/>