U.S. RENEWABLE FUELS PROGRAM

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OVERVIEW

- Overview: EPA Actions on Biofuels
- Overview: The National Renewable Fuel Standards – The RFS Program
- The RFS Program – 101
- Challenges Ahead
- Questions / Other Issues

EPA ACTIVITIES ON BIOFUELS

- The Big Kahuna – The National Renewable Fuel Standard Program
- Related Activities / Responsbilities
  - The Energy Independence and Security Act Of 2007 (EISA)
    - Section 204 – Biofuels Report to Congress
    - Section 206 - RFS Antibacksliding
  - The Energy Policy Act of 2005 (EPACt)
    - EPACt Section 1506 – Updated Emissions Modeling / Fuel Property Effects
- Federal Coordination
  - DOE, USDA, Others on multiple fronts

EPACT 2005 VS. EISA 2007

- EPACT 2005 RFS1
  - 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 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.

- EPA developed a path for transitioning from RFS1 to RFS2

RENEWABLE BIOMASS PROVISIONS – APPROVING FEEDSTOCKS

- EISA restricted where feedstocks can grow and be harvested for use in producing renewable fuels for compliance with the RFS2 program
  - Planted crops/crop residue from ag land cleared/cultivated prior to Dec. 2007
  - Planted trees/tree residue from nonfederal lands and tree plantations cleared/cultivated prior to Dec. 2007
- Compliance Options for feedstocks from the Non Agricultural land / Forest land
  - All renewable fuel producers using feedstocks from this sector can either

    1: Individually verify and qualify their feedstocks following specific recordkeeping and reporting requirements OR

    2: Opt to form and participate in a consortium that employs a third party to conduct a verification program that acts to collectively verify and qualify these feedstocks for RFS2 renewable fuel production
- Compliance Approach for feedstocks from planted crops / agricultural land
  - For US produced feedstocks, producers can comply under an aggregate compliance approach
  - For Foreign produced ag feedstocks, rule now provides option for other (non-U.S.) sources of feedstocks to use aggregate compliance if source region can provide sufficient data to support aggregate analysis
    - Canada petitioned EPA for an aggregate determination – approval granted in 2011
  - Otherwise, producers must verify using one of the options applied in the non-ag / forest sector

BASICS OF LIFECYCLE ANALYSIS

- Act defines lifecycle
- Modeling applies specific definitional requirements in modeling, including indirect land use
- Modeling accounts for typical feedstock and fuel production pathway from which significant production and contribution to RFS2 volumes are expected (2022)
- Accounts for uncertainty
- Results extended to <u>same fuel type and feedstock</u> as a modeled pathway but with feedstock production sources that were not included in the analysis (e.g., corn ethanol and soybean biodiesel produced in another country)

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

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
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

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Guidance on New Fuel Pathway Approval Process

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

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.

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 4, which qualifies the fuel for compliance with the biomass-based diesel category.

Compliance Reporting

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

EnviroFlash Sign up for Fuels Programs alerts

Sign up for alerts

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

In addition, EPA recognized during the rulemaking that there would 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:

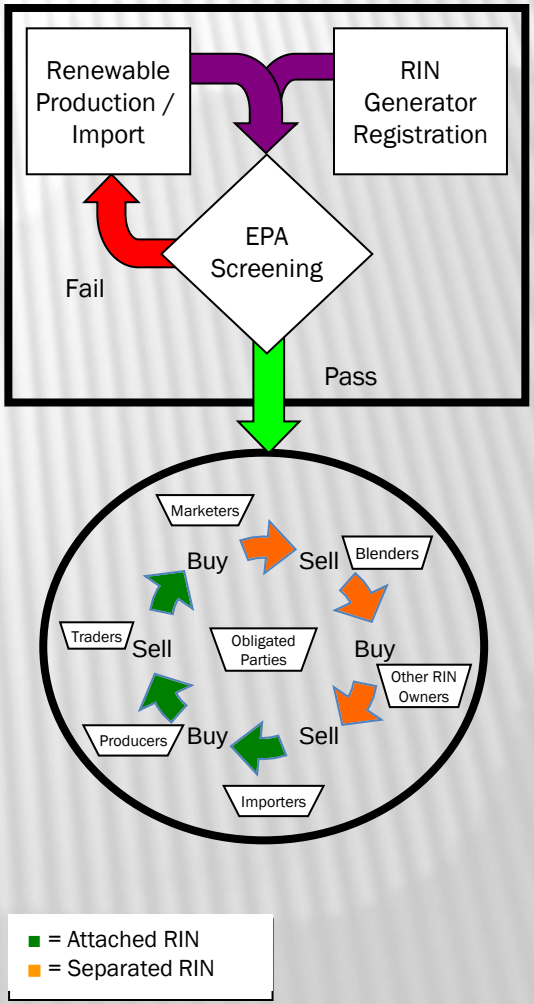
- Do the feedstock and fuel meet the RFS2 definitional requirements in 80.1401 for renewable biomass and renewable fuel?

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

- 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.



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 Standared 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

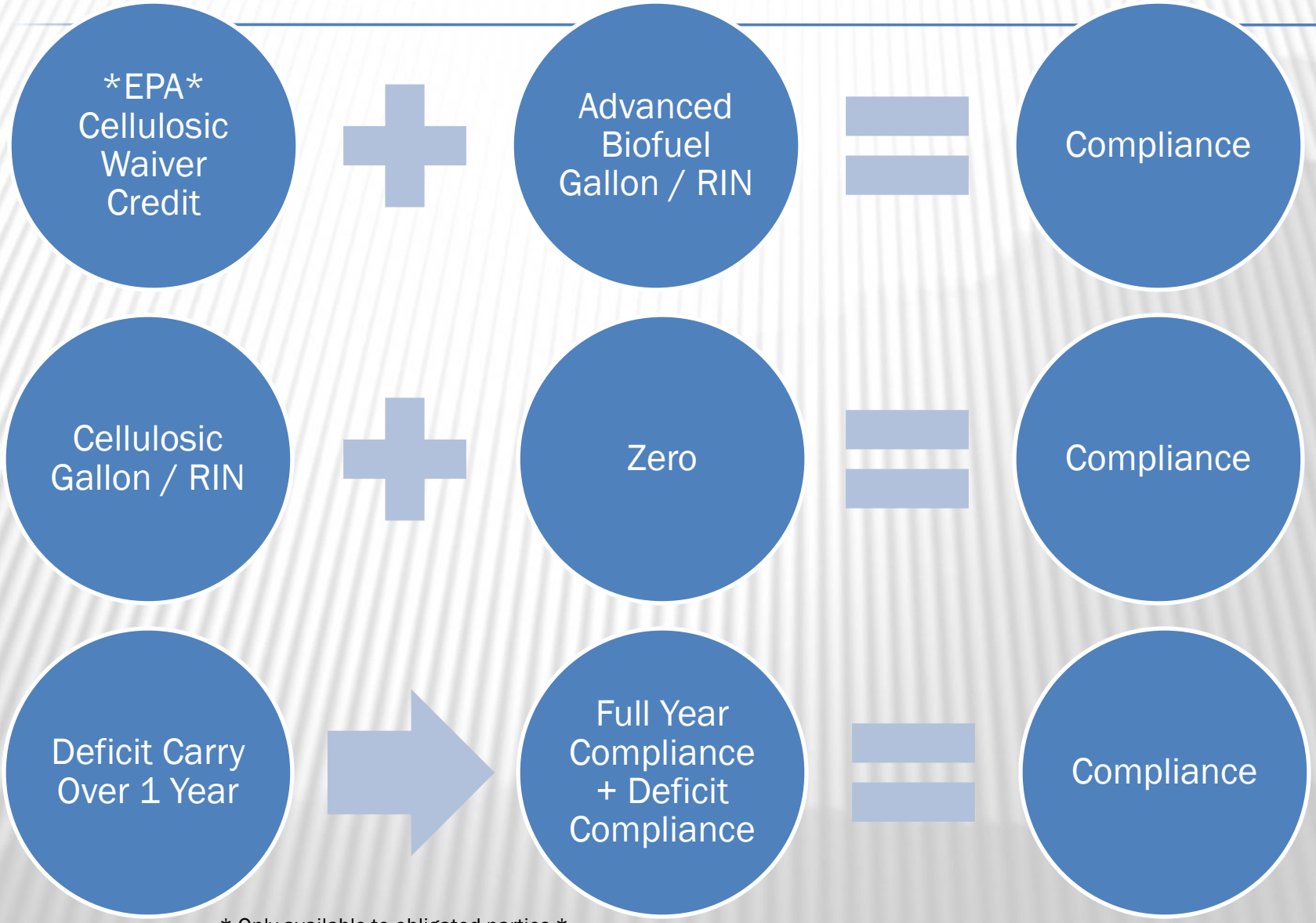
CELLULOSIC BIOFUEL CREDIT PROVISIONS

- Cellulosic Biofuel Standard: Irrespective of the volumes required in the Act
  - Administrator must set the cellulosic standard each November for the following year
  - Evaluation based on an updated market analysis considering
    - Detailed information from pilot and demonstration scale plants
    - Energy Information Administration analysis
    - Other publically and privately available market information, we

- If standard is set less than volume required in Act - EPA must make EPA-credits available for sale to obligated parties at the greater of:
  - 25 cent/gallon – or value greater than 25 c/gal based on EISA Formula:
  - $3.00 per gallon less the wholesale price of gasoline (adjusted for inflation)
    - Value was set at $.78 for 2012

- If the cellulosic standard is lowered, EPA can lower the volume standards for advanced biofuel and total renewable fuel accordingly

CELLULOSIC COMPLIANCE OPTIONS



* Only available to obligated parties *
* Only good for year of purchase *

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

[a]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	9.23%

OTHER 2013 RFS VOLUME STANDARDS

- Standards for 2013
  - ??.?? bg total renewable fuel
  - 1.28 bg biomass based diesel
  - ??.?? bg total advanced
  - ??.?? Cellulosic

What Ifs: EISA Waiver Authorities

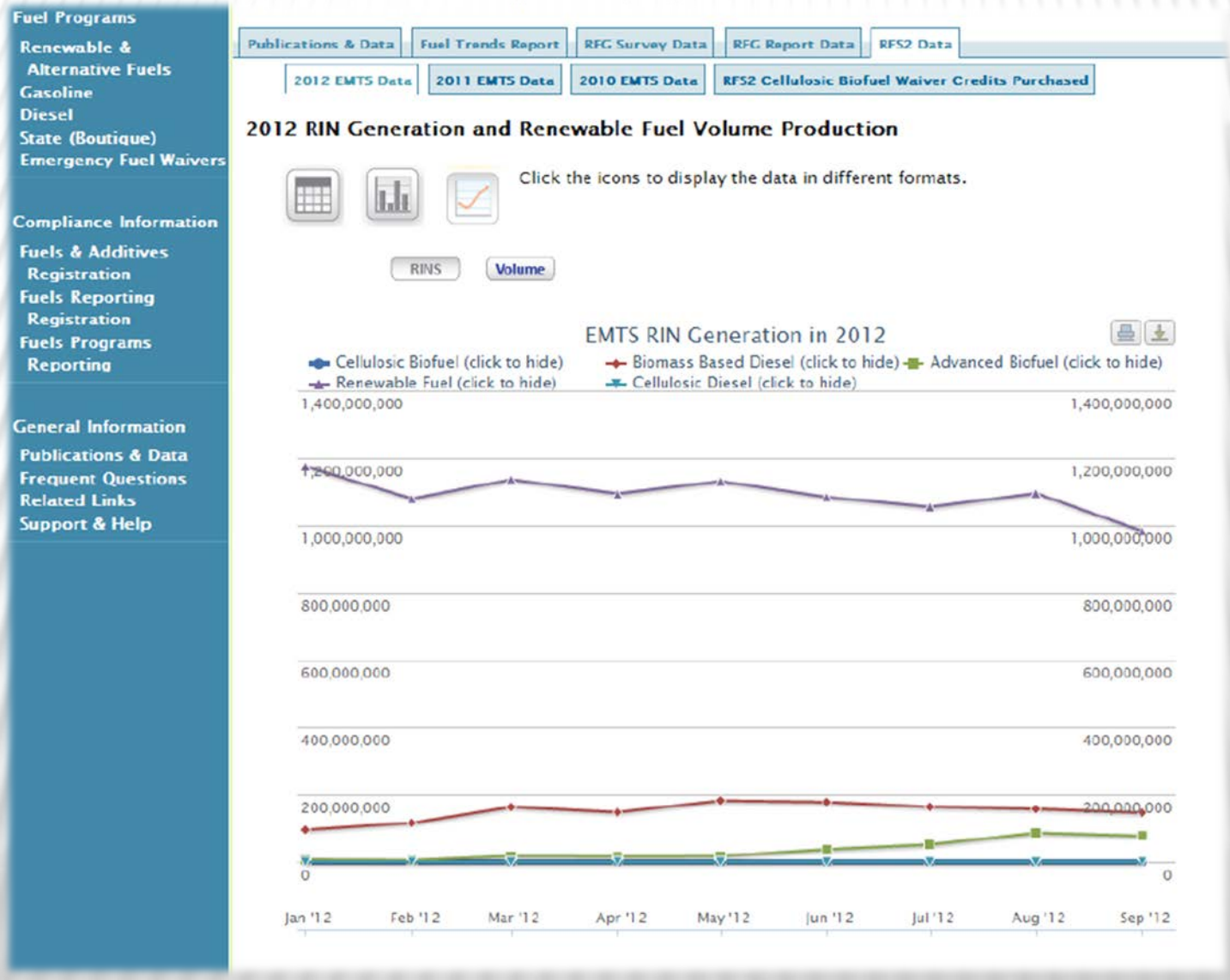
- General: **Anyone subject to requirements can petition waiver or relaxation of the four standards**
  - Severe harm to the economy; Inadequate supply
  - EPA must approve or disapprove within 90 days but requires opportunity for notice and comment
  - Limited to one year, but can be renewed

- Biomass Based Diesel: **EPA can lower the standard in the Act**
  - If significant supply or other market circumstances lead to high prices
  - Up to 15% or 30% if renewed
  - Can reduce advanced biofuel and total renewable fuel standards accordingly

KEY COMPLIANCE ACTIONS UNDERWAY

- Some concerns over compliance with the RFS Standards
  - Fraudulent RINs
- Agency and Industry working together to address issues
  - Coordination with obligated parties and producers, traders, brokers
  - Planning to propose a rule before years end
  - Key elements include options for quality assurance plans
  - Consideration of affirmative defense for obligated parties
  - Bridge from proposal to final action / effect date of rule

TRACKING PROGRAM PROGRESS



UPCOMING ACTIONS

- RIN Quality Assurance Rule
- 2013 Standards
- New Pathways
- Regulatory Amendments
- Processing Petitions
- More.....2016 and Beyond

CHALLENGES AHEAD

- Increasing Volumes – Meeting the Mandate
  - Cellulosic and Advanced
- Market Implications
  - Use of Volumes in the Market dependant on acceptability, access, compatibility, etc.
- Feedstock Qualifications
  - New
  - Existing
  - Application of Interpretation of Existing Regs
  - Waivers?

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