

FARMLAND MARKETS: PROFITABILITY AND FUTURE PERSPECTIVES



*Title: The RFS and Grain and Oilseed
Markets: All Eyes on the EPA
Presenter: Scott Irwin
Affiliation: University of Illinois*

Wednesday, November 13, 2013
9:00 – 3:30 p.m.
Hilton Garden Inn, Champaign, IL

TIAA-CREF

Center for
Farmland Research



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Full Disclosure

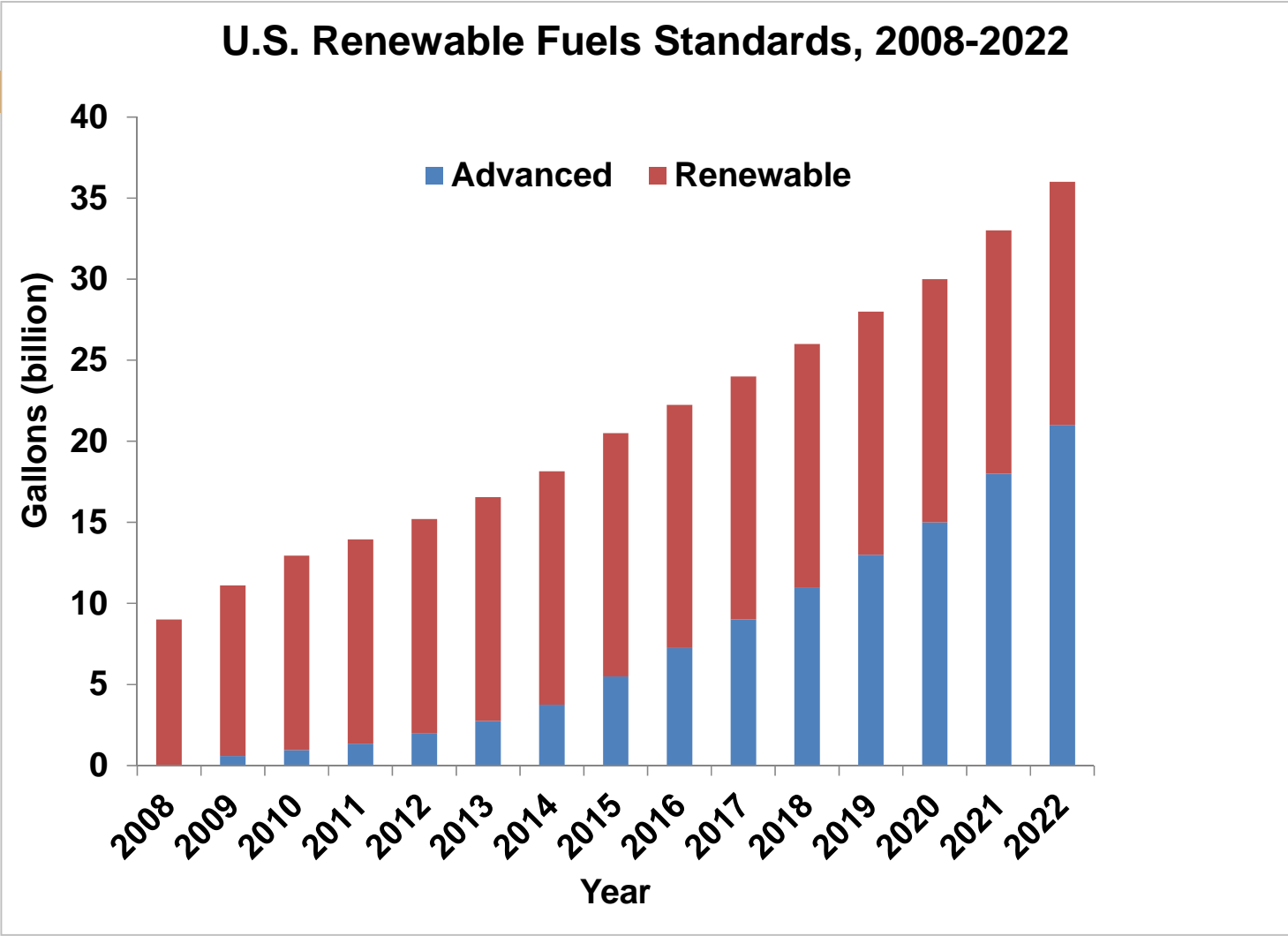
- Funding
 - Recent grants from USDA/ERS, USDA/OCE, and OECD
 - No grants related to biofuels policy
 - Regular support from a university endowment
 - Occasional consulting projects
- Sometimes trade in commodity futures markets
- Principal in a private company that provides U.S. corn and yield forecasts
- Co-manage family grain farm in Iowa



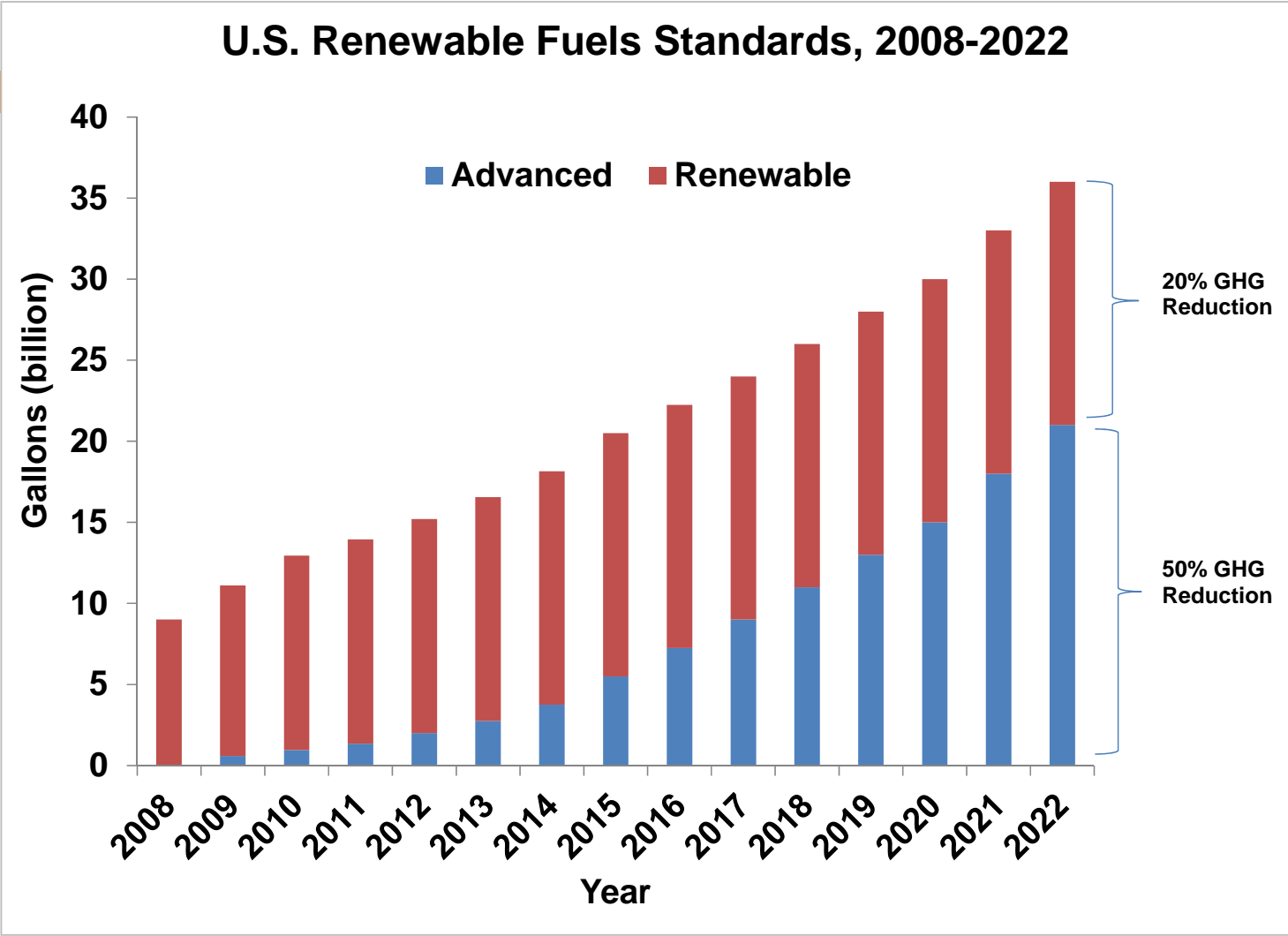


What is the RFS?

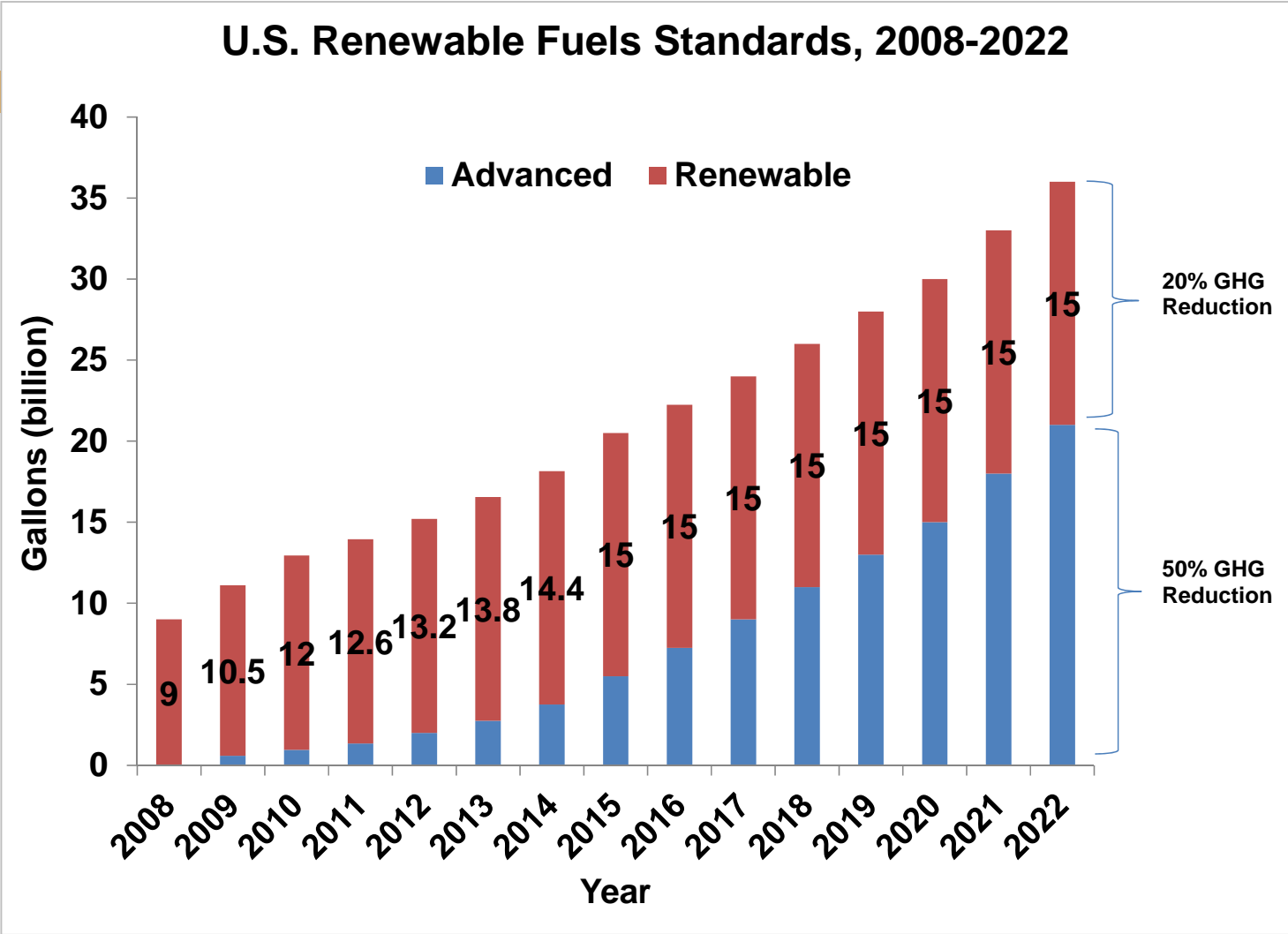
U.S. Renewable Fuels Standards, 2008-2022



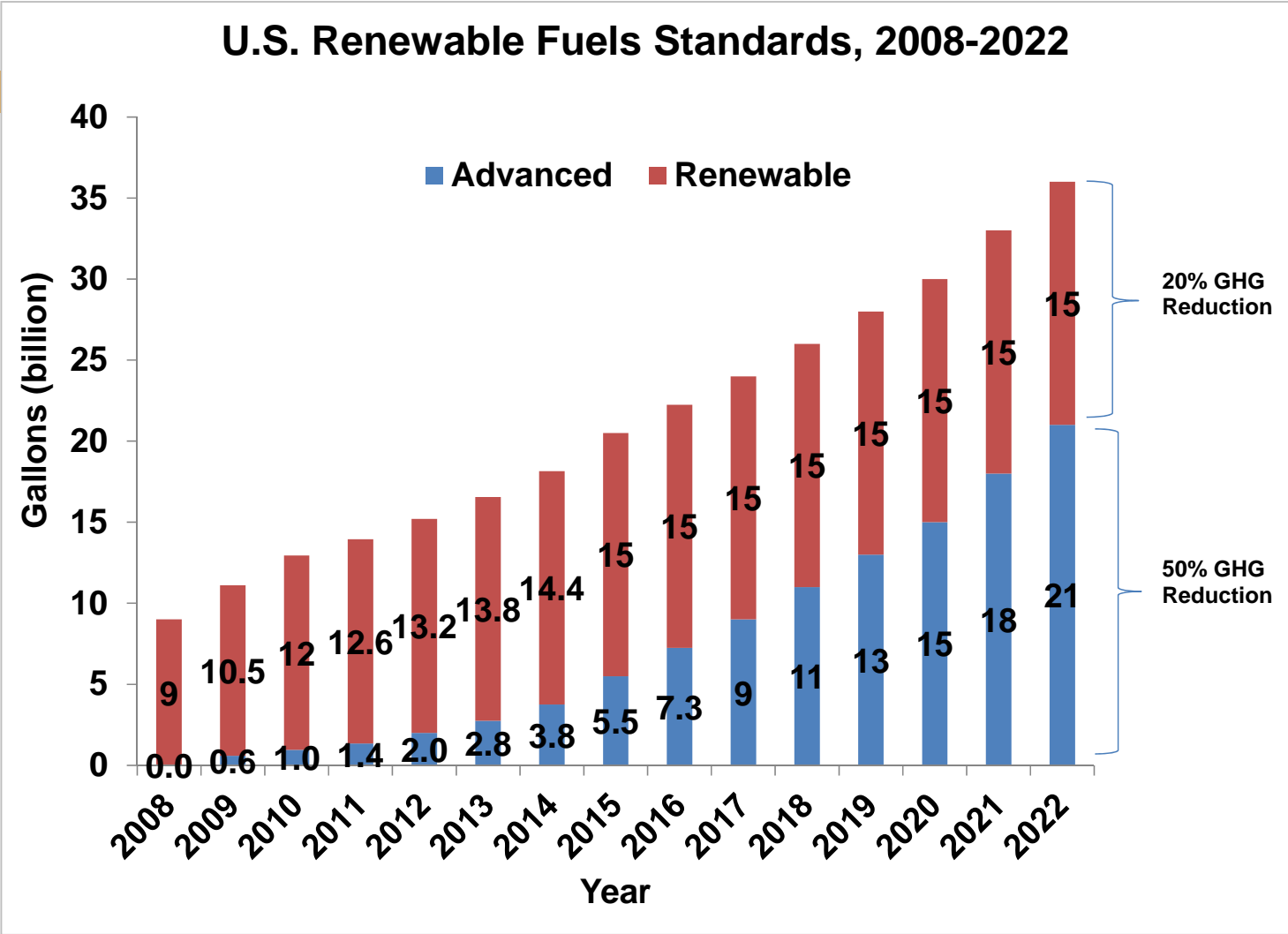
U.S. Renewable Fuels Standards, 2008-2022



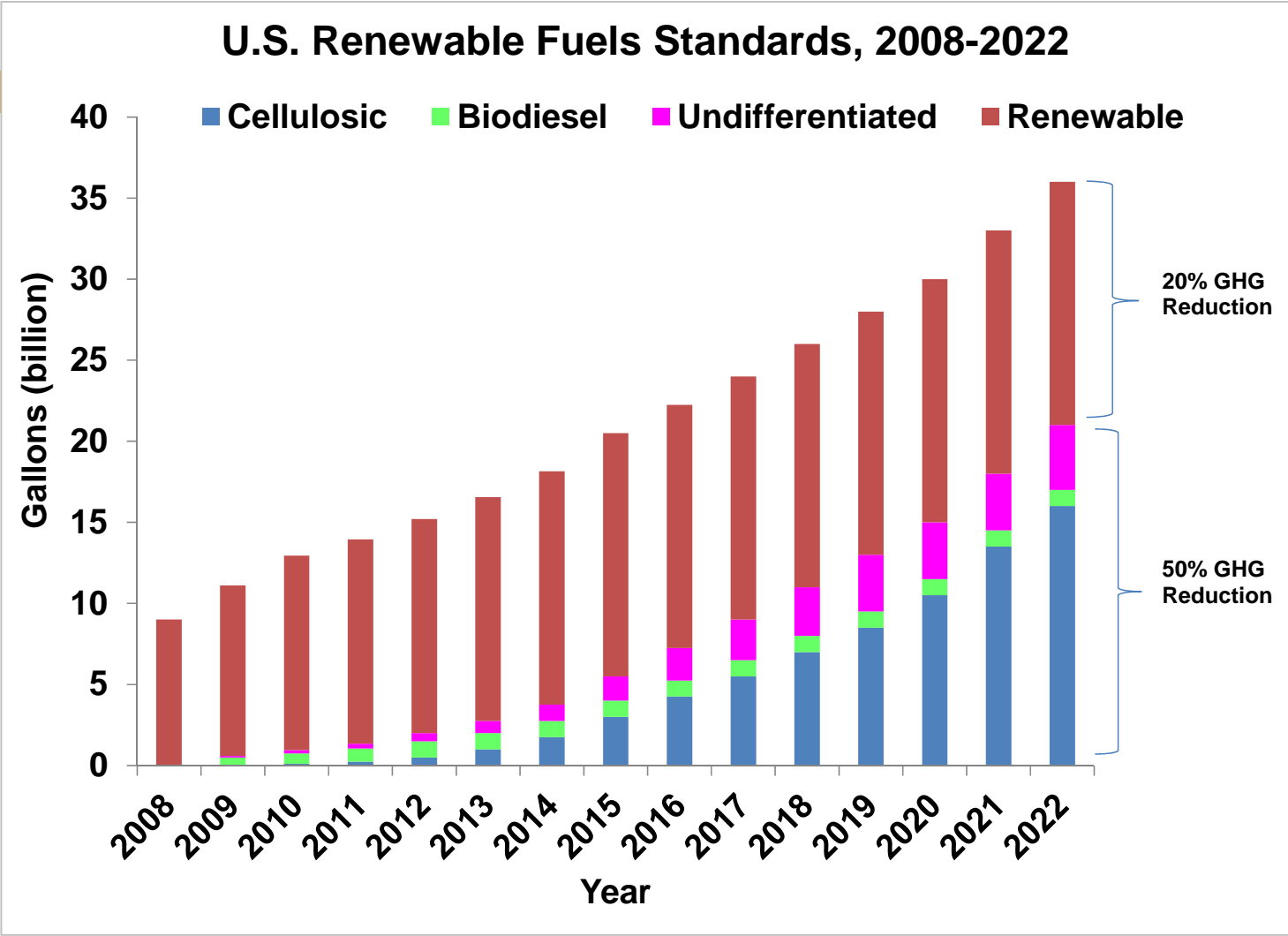
U.S. Renewable Fuels Standards, 2008-2022



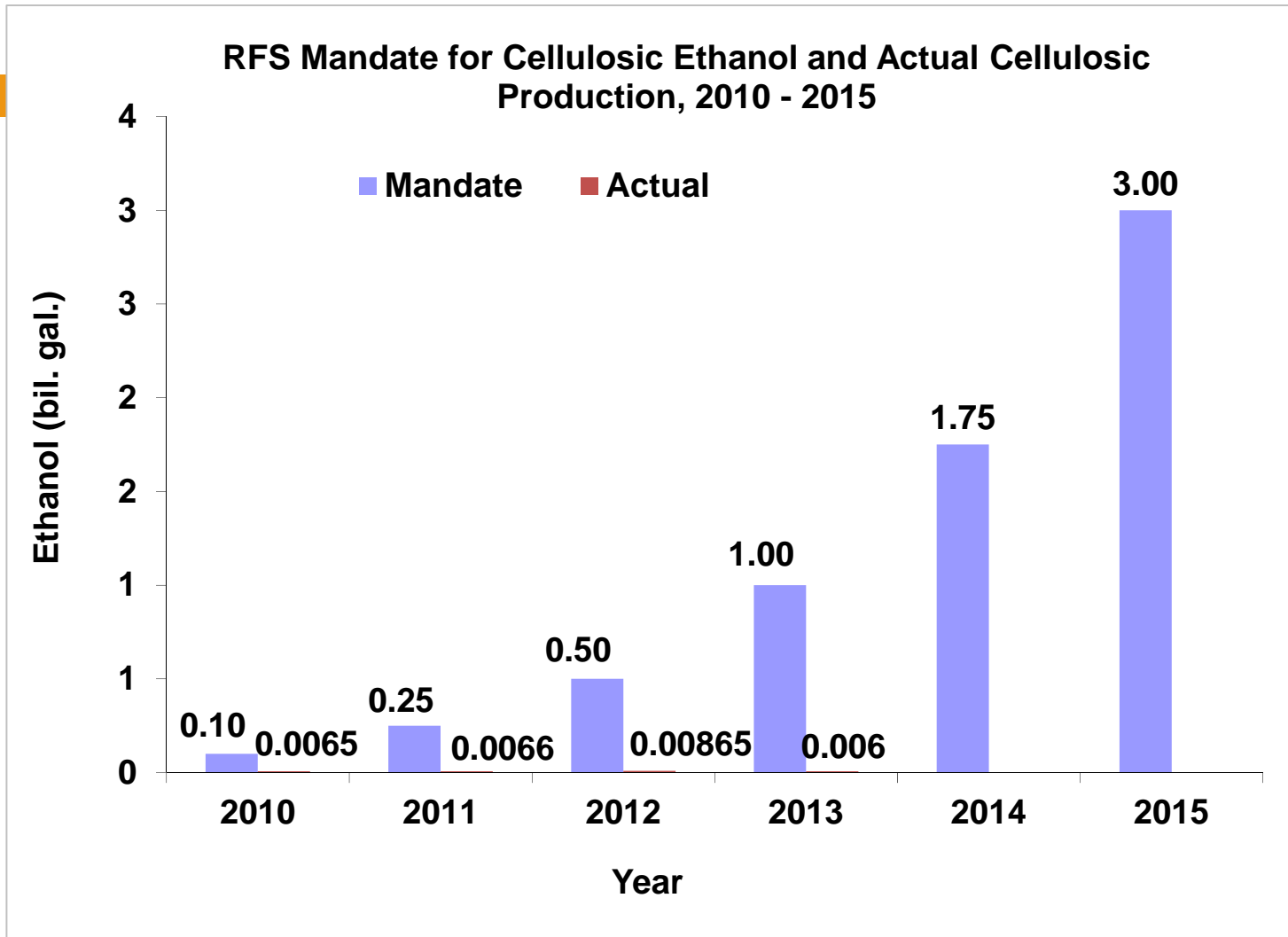
U.S. Renewable Fuels Standards, 2008-2022



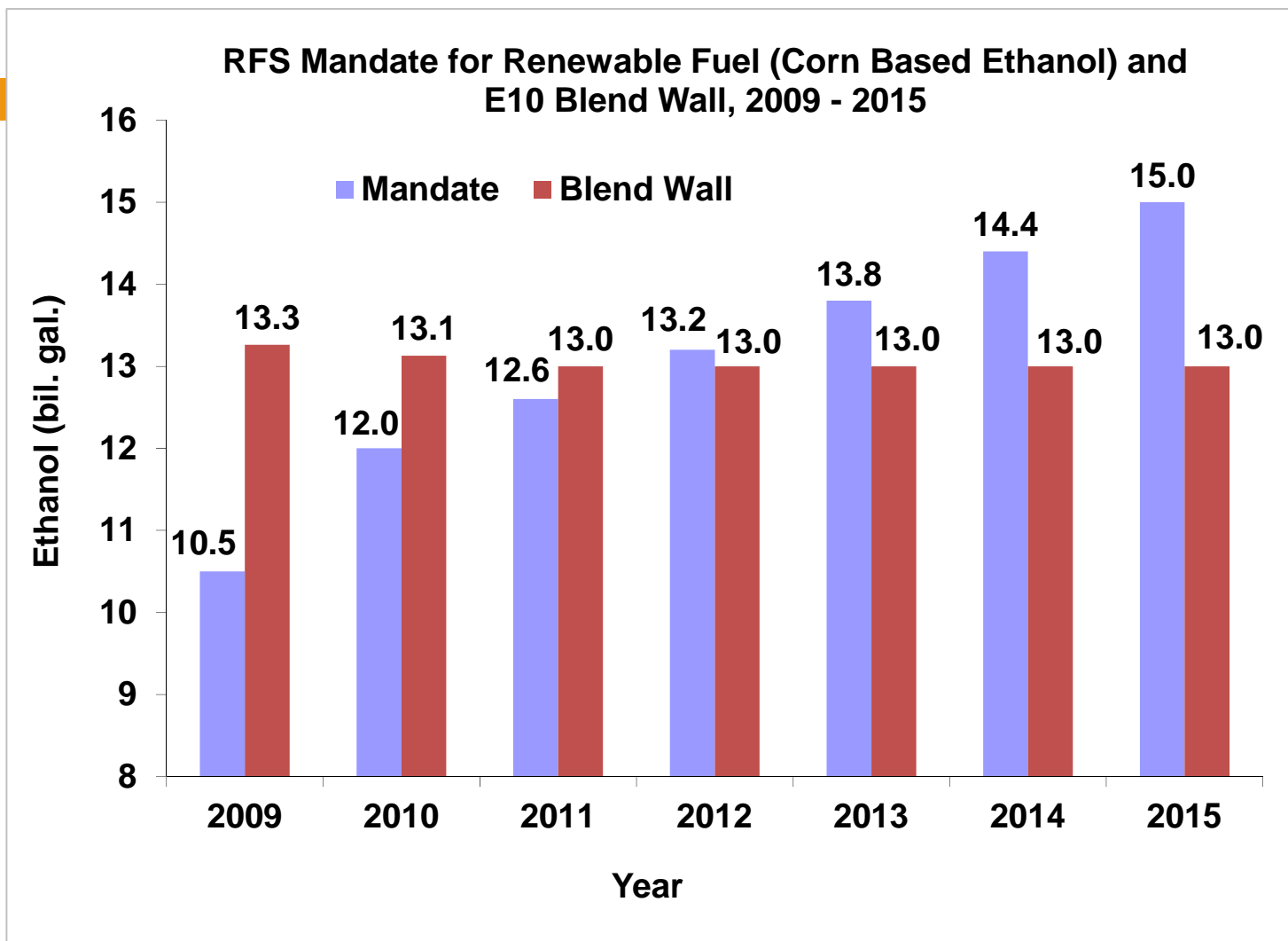
U.S. Renewable Fuels Standards, 2008-2022



RFS Mandate for Cellulosic Ethanol and Actual Cellulosic Production, 2010 - 2015



RFS Mandate for Renewable Fuel (Corn Based Ethanol) and E10 Blend Wall, 2009 - 2015





How is the RFS Enforced?

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Fuels and Fuel Additives

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Renewable Fuel Standard (RFS)

RFS Home Regulations & Standards Compliance Help Notices Moderated Transaction System Quality Assurance Plan

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- Basic Information
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 - Diesel
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 - Emergency Fuel Waivers
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EPA has finalized [additional renewable fuel production pathways and pathway components](#) that could be used in producing qualifying renewable fuel under the RFS program. This final rule describes EPA's evaluation of biofuels produced from camelina oil and energy cane, as well as renewable gasoline and renewable gasoline blendstock made from certain qualifying feedstocks.

EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. The Renewable Fuel Standard (RFS) program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act (EPA) of 2005, and established the first renewable fuel volume mandate in the United States. As required under EPA, the original RFS program (RFS1) required 7.5 billion gallons of renewable- fuel to be blended into gasoline by 2012.

Under the Energy Independence and Security Act (EISA) of 2007, the RFS program was expanded in several key ways:

- EISA expanded the RFS program to include diesel, in addition to gasoline:



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<http://www.epa.gov/otaq/fuels/renewablefuels/index.htm>

2013 Renewable Volume Obligations (RVOs)

RFS Category	Percentage Ratio (%)	Volume of Renewable Fuel (billion gallons)
Cellulosic biofuels	0.004%	0.006
Biomass-based diesel	1.13%	1.28
Advanced biofuels	1.62%	2.75
Total renewable fuel	9.74%	16.55

Source: "Regulation of Fuels and Fuel Additives: 2013 Renewable Fuel Standards."
Federal Register, Vol. 78, No. 158, August 15, 2013, pp.49794-49830

Renewable Identification Numbers (RINs)

- The U.S. EPA enforces RVOs using RINs, a tradable credit system
- A RIN is a 38-digit number assigned to each gallon or batch of renewable fuel produced or imported into the U.S.
- Each RIN travels with the biofuel as it moves through the supply chain
- RINs are actively traded in a secondary market
- RINs allow obligated parties to meet their individual mandates by applying RINs representing biofuels which they have physically purchased and blended, or those which were purchased from another party through RIN trading

RIN = KYYYYCCCCFFFFFFBBBBBRRDSSSSSSSSEEEEEEEE

Where

- K = code distinguishing RINs still assigned to a gallon from RINs already detached
- YYYY = the calendar year of production or import
- CCCC = the company ID
- FFFFF = the company plant or facility ID
- BBBBB = the batch number
- RR = the biofuel equivalence value (described below)
- D = the renewable fuel category
- SSSSSSSS = the start number for this batch of biofuel
- EEEEEEEE = the end number for this batch of biofuel

Source: Schnepf, R., and B.D. Yacobucci. "Renewable Fuel Standard (RFS): Overview and Issues." Congressional Research Service, March 2013.

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Source: Schnepf, R., and B.D. Yacobucci. "Renewable Fuel Standard (RFS): Overview and Issues." Congressional Research Service, March 2013.

Table 5. RFS D Code Definitions

D value	RFS1	RFS2
1	Cellulosic biomass ethanol	na
2	Any other renewable fuel	na
3	na	Cellulosic biofuel
4	na	Biomass-based diesel
5	na	Advanced biofuel
6	na	Renewable fuel
7	na	Cellulosic diesel

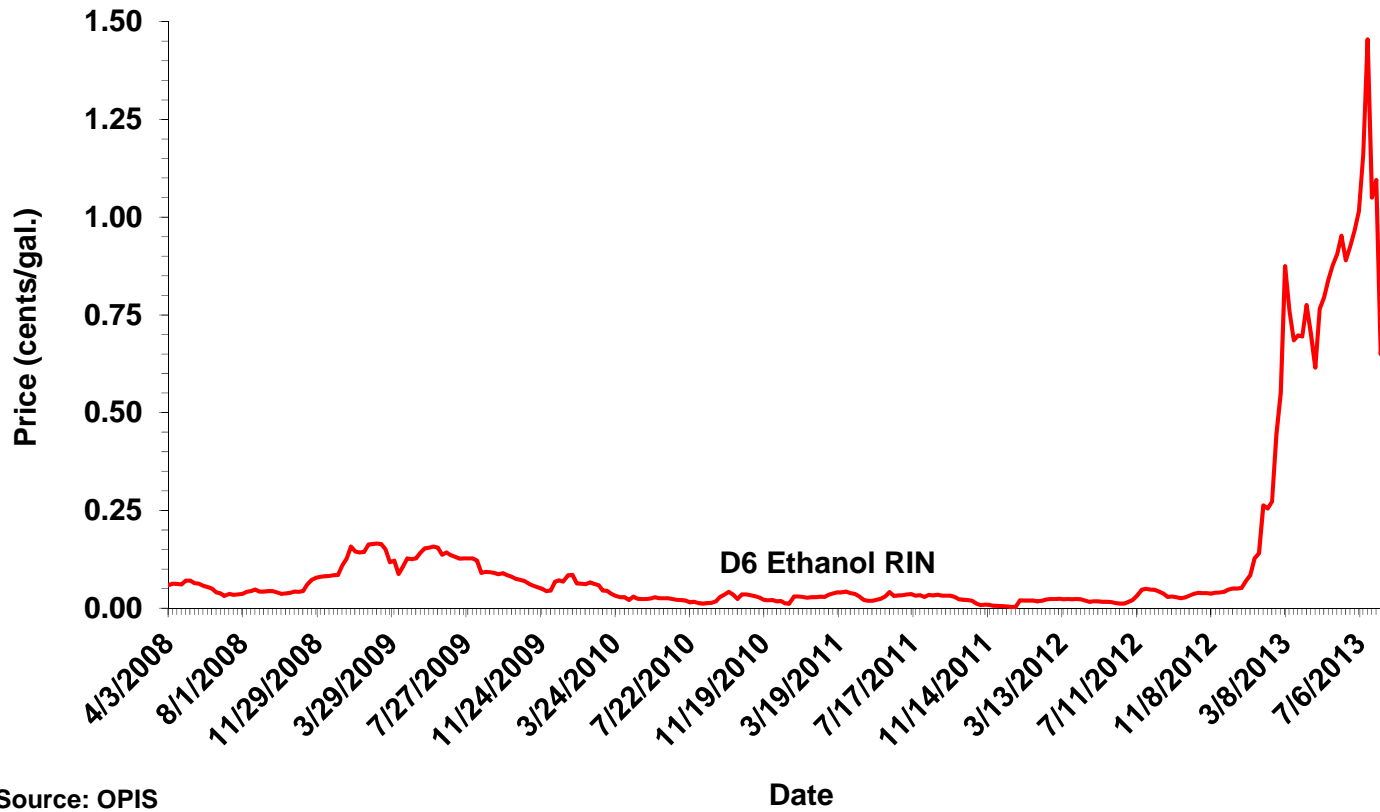


Source: EPA, 40 C.F.R. Part 80, “Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program, Final Rule,” Feb. 3, 2010.

Notes: na = not applicable.

Source: Schnepf, R., and B.D. Yacobucci. “Renewable Fuel Standard (RFS): Overview and Issues.” Congressional Research Service, March 2013.

Weekly (Thursday) Price of D6 Ethanol RINs in the Secondary Market, 04/03/08 - 08/15/2013

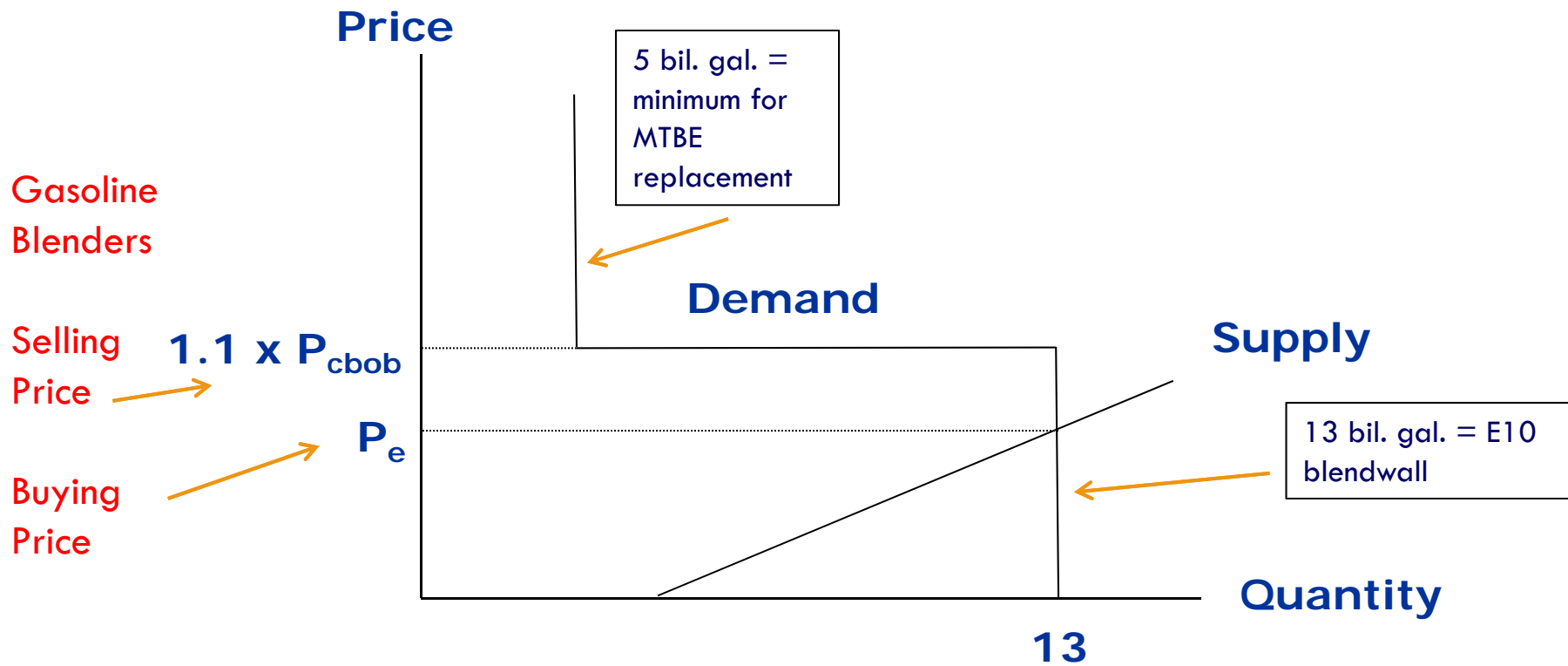


Source: OPIS

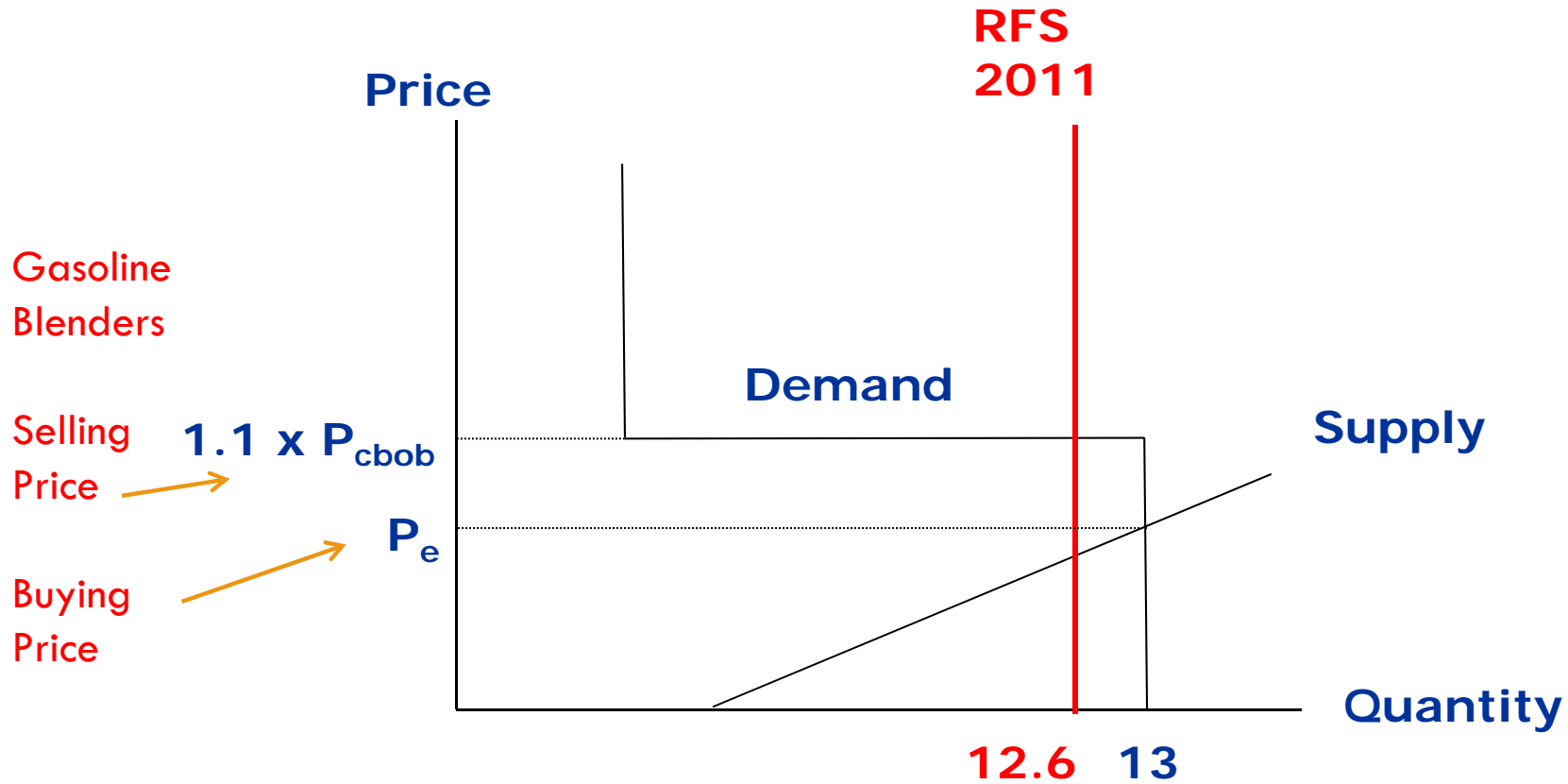


***What are the Implications of
the Ethanol Blend Wall for the
RFS?***

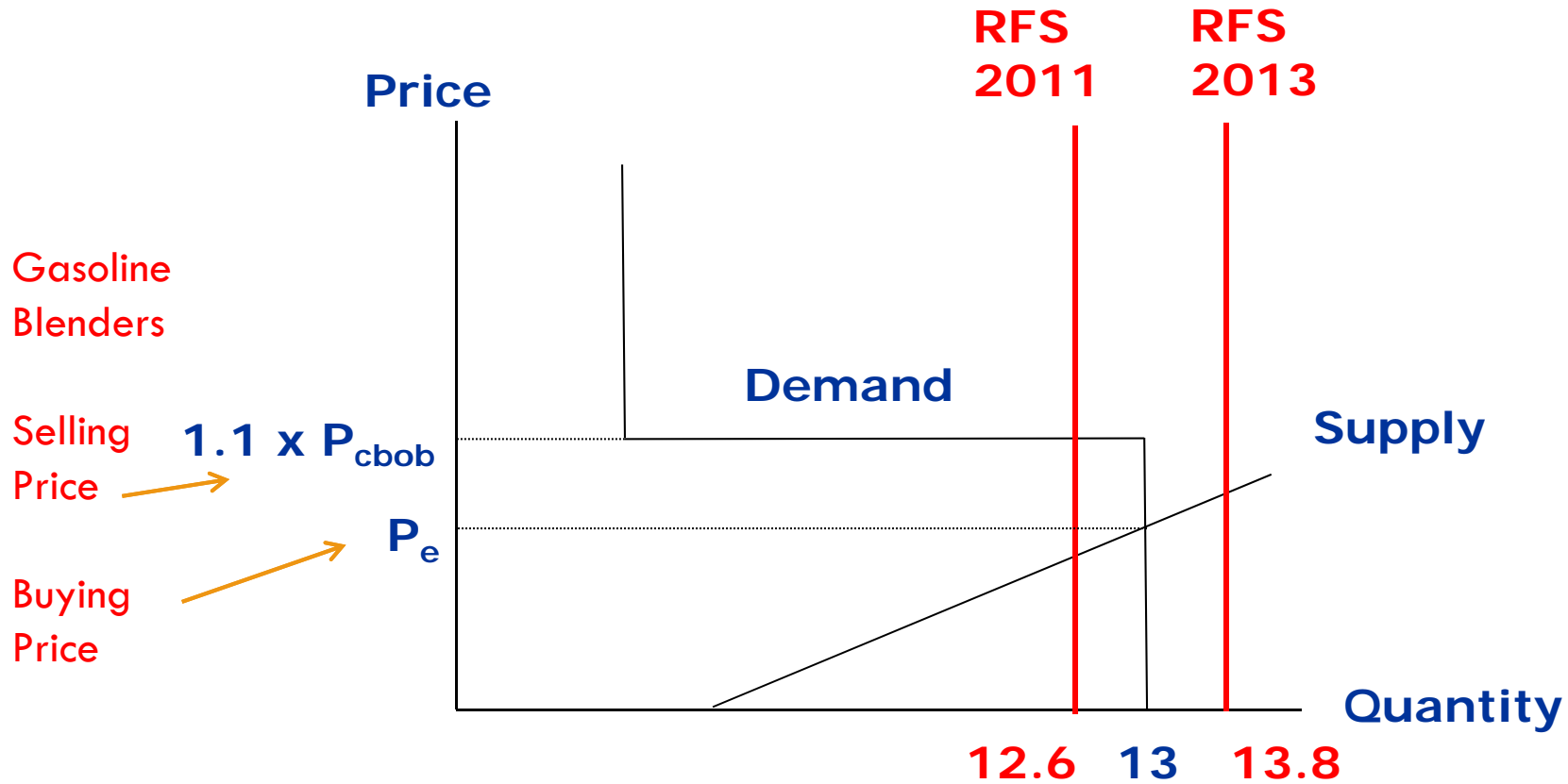
The Ethanol Market: No Mandate



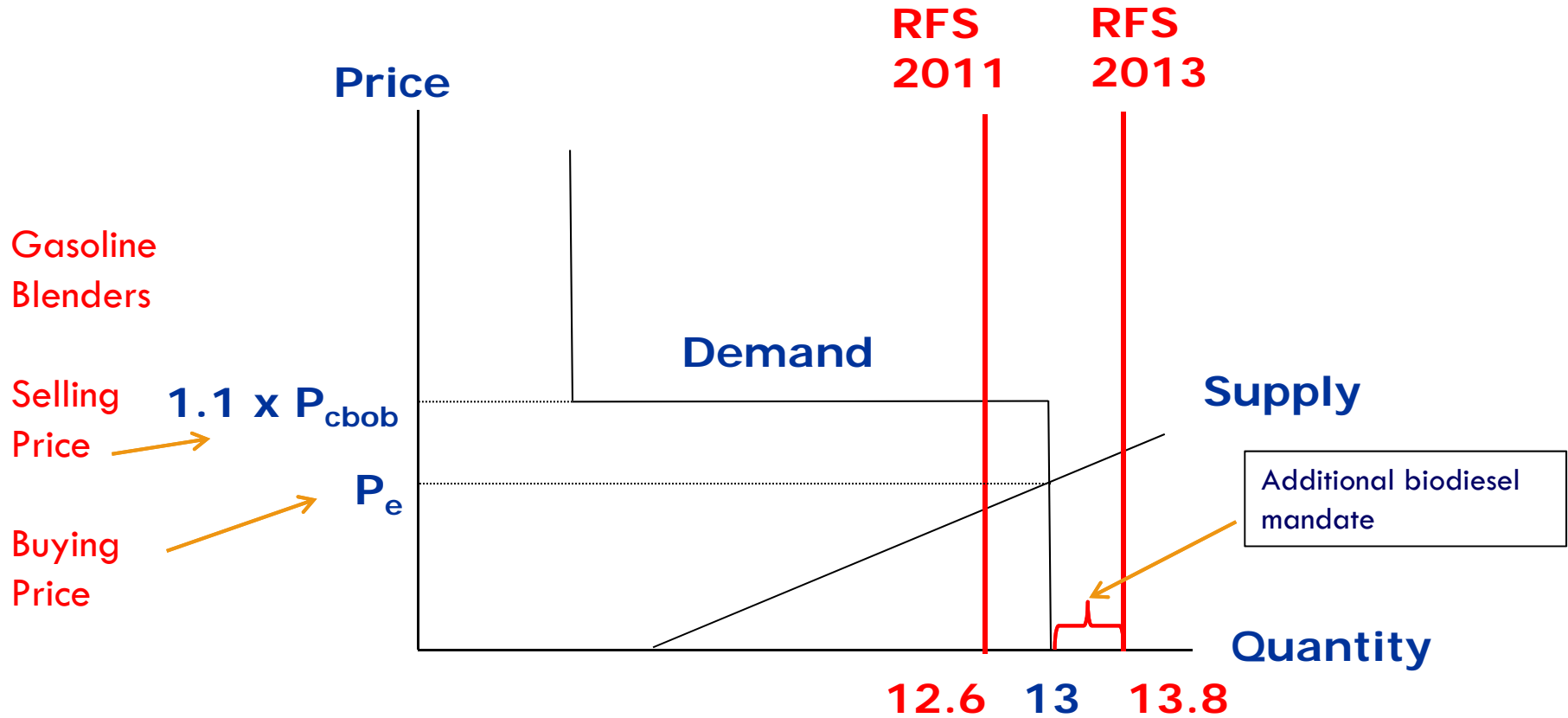
The Ethanol Market: RFS Mandate



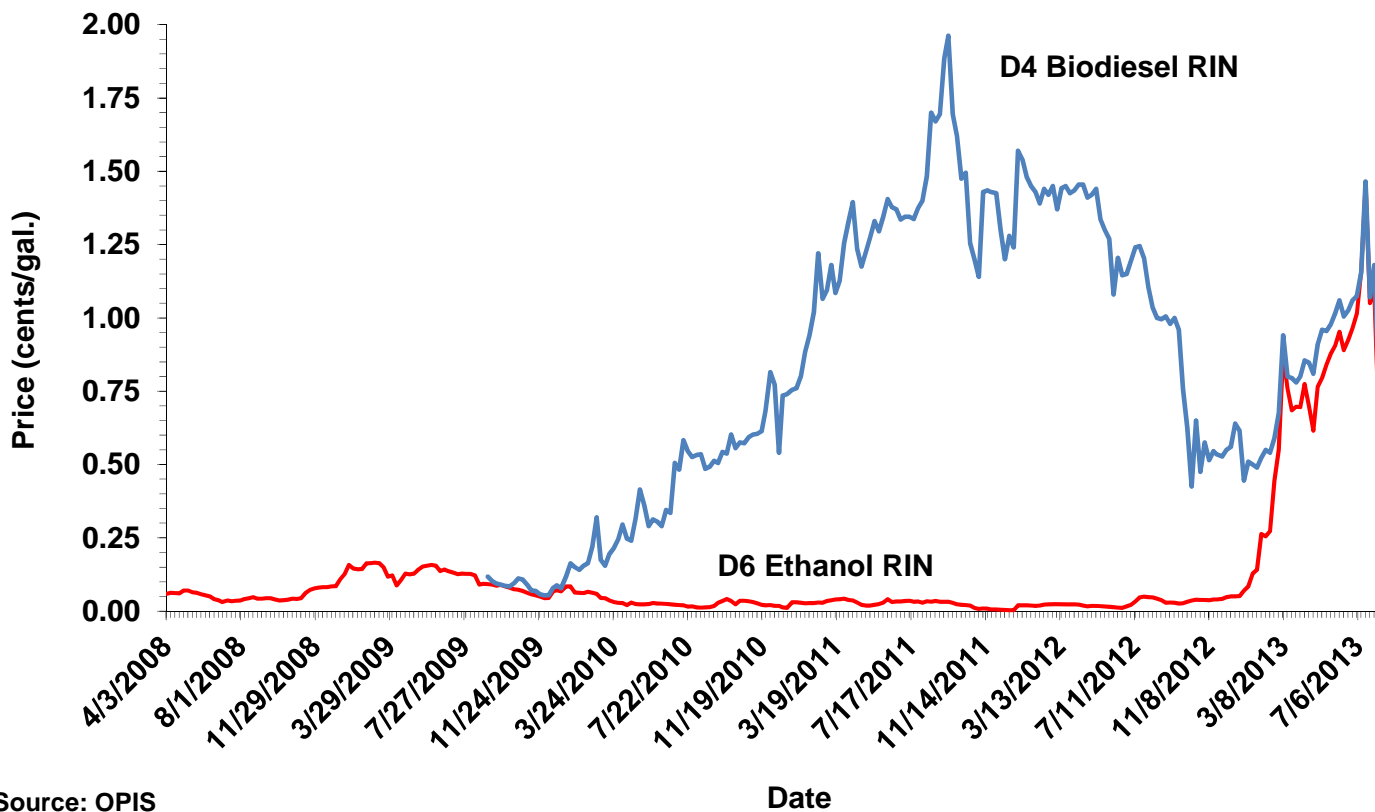
The Ethanol Market: RFS Mandate



The Ethanol Market: RFS Mandate



Weekly (Thursday) Price of D4 Biodiesel and D6 Ethanol RINs in the Secondary Market, 04/03/08 - 08/15/2013



Source: OPIS



Are There Ways Around the Ethanol Blend Wall?

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E15

- US EPA approved 15% ethanol blends for 2001 and newer vehicle models in January 2011
- Less than 20 gas stations in the U.S. out of 120,000 currently offer E15
- Implementation, has been delayed by a number of factors
 - Some state laws limit ethanol blends to 10%
 - Liability issues associated with dispensing E15
 - Cost of installing blender pumps at retail stations
 - Lack of consumer awareness and understanding
 - Some car manufacturers will not warranty engines if E15 used



<http://www.chooseethanol.com/what-is-ethanol/entry/e15>



E85

- Up to 85% ethanol blends have been approved for “flex fuel” vehicles for some time
- Over 11 million flex fuel vehicles on the road
- Represents a large potential consumption base for ethanol, perhaps large as 5-6 billion gallons annually
- Only about 40 million gallons of E85 used in 2012, or less than one tank per vehicle



<http://www.greencar.com/articles/flexing-ford-mustang-muscle-e85-performance-car.php>

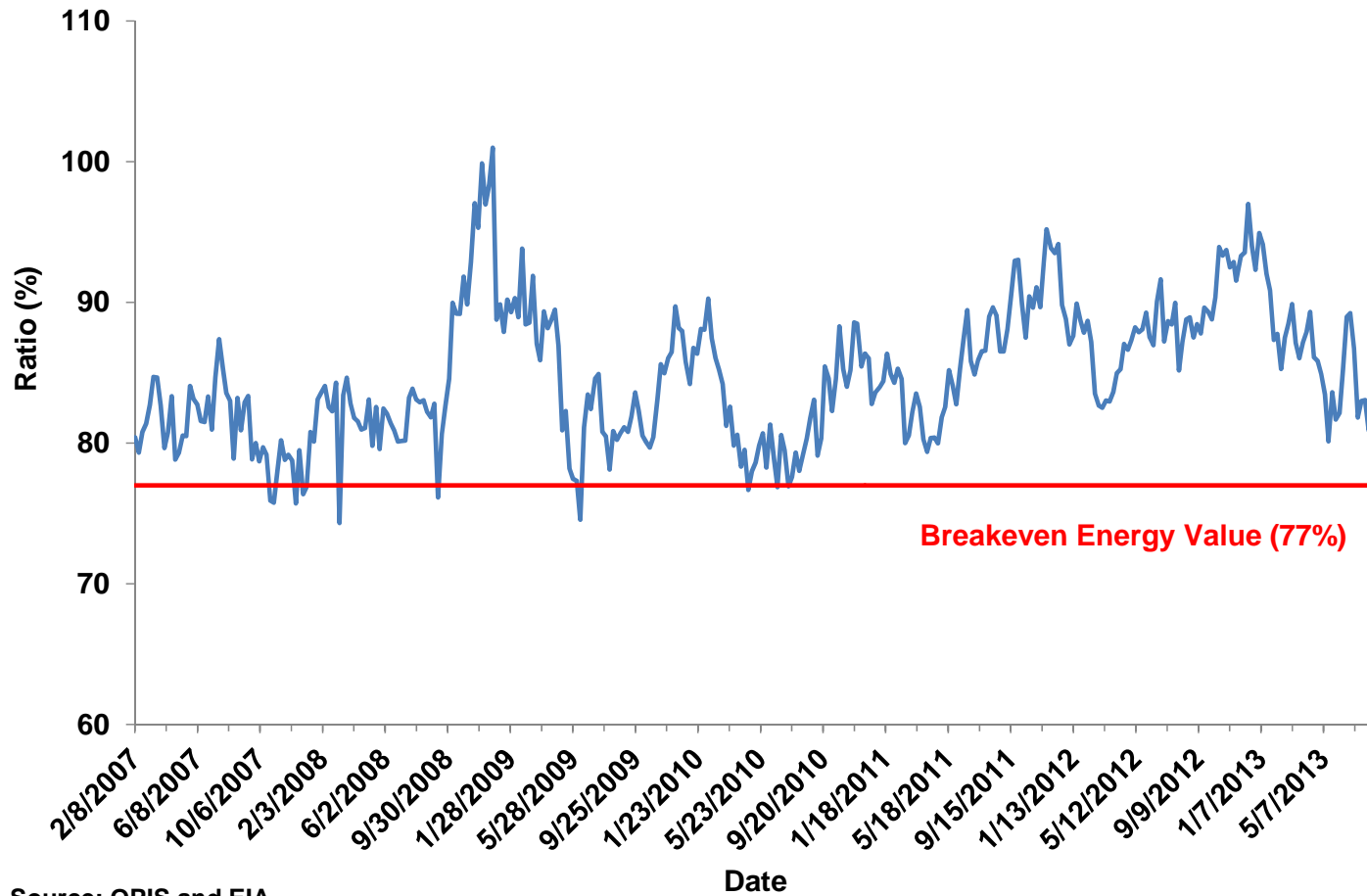


http://www.afdc.energy.gov/fuels/ethanol_e85.html

E85 Pricing

- A gallon of ethanol has only about 2/3 of the energy content of a gallon of E10 gasoline
- Implies that a gallon of E85 will reduce gas mileage about 23% compared to E10 gasoline
- Suggests E85 should be priced at about 77% of the pump price of E10 gasoline
 - \$3.50 pump price of E10 translates into a breakeven E85 price of \$2.70
 - A further discount may be required by consumers to compensate for more frequent refueling stops

Ratio of Weekly Midwest Retail E85 and E10 (all grades) Prices, 2/8/2007 - 8/15/2013



Source: OPIS and EIA


E85 Use through 2015

□ Positive factors

- High crude oil and gasoline prices
- Lower corn and ethanol prices
- High D6 ethanol RINs prices

□ Negative factors

- Less than 3,000 stations out of 120,000 currently offer E85
- Geographic concentration of stations in Midwest
- Lack of critical mass of stations in any area
- Cost of adding E85 pumps (\$10k to \$250k)
- Varying ethanol content (51 to 83%)
- Negative consumer perceptions (Consumer Reports)
- RFS uncertainty



***What are EPA's Options for
Implementing the RFS and
Implications for Grain Markets
through 2015?***

EPA Options in 2014 and 2015

1. Continue the status quo (no waiving of advanced or total RFS mandate as cellulosic mandate is waived)
2. Write down advanced mandate and total RFS mandate near the amount of cellulosic mandate write down
3. Freeze all mandates at 2013 levels going forward

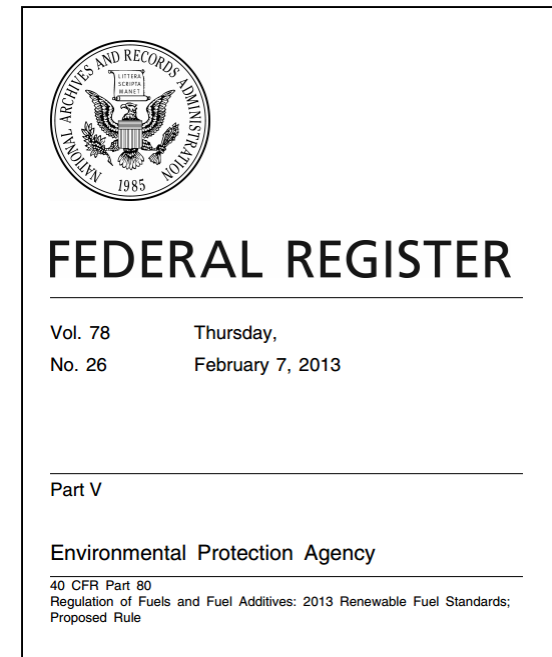


Table 1. EPA Policy Options for Implementing the Renewable Fuels Standards for 2013-2015---Billion Gallons except Biodiesel Feedstock (Billion Pounds) and Corn (Billion Bushels)

RFS Category	Status Quo Option			Writedown Option			Freeze Option		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Advanced	2.75	3.75	5.50	2.75	2.75	2.75	2.75	2.75	2.75
Renewable	13.80	14.40	15.00	13.80	14.40	15.00	13.80	13.80	13.80
Total	16.55	18.15	20.50	16.55	17.15	17.75	16.55	16.55	16.55
Reduction in Total	n/a	n/a	n/a	0.00	-1.00	-2.75	0.00	-1.60	-3.95
Compliance Scenario: Mainly Biodiesel									
Biodiesel	1.36	2.40	5.08	1.36	1.73	2.98	1.36	1.57	1.78
E85	0.14	0.41	0.68	0.14	0.41	0.68	0.14	0.41	0.68
End-of-Year RINs	1.19	0.00	0.00	1.19	0.00	0.00	1.19	0.35	0.00
Biodiesel Feedstock	10.22	17.98	38.13	10.22	12.98	22.38	10.22	11.75	13.38
Corn for Ethanol	4.74	4.77	4.79	4.74	4.91	4.93	4.74	4.91	4.93
Compliance Scenario: Mainly E85									
Biodiesel	1.36	1.80	2.74	1.36	1.57	1.50	1.36	1.57	1.50
E85	0.14	1.62	4.55	0.14	0.73	3.36	0.14	0.73	0.93
End-of-Year RINs	1.19	0.00	0.00	1.19	0.00	0.00	1.19	0.59	0.00
Biodiesel Feedstock	10.22	13.48	20.53	10.22	11.78	11.23	10.22	11.75	11.23
Corn for Ethanol	4.74	5.00	5.65	4.74	5.00	5.66	4.74	5.00	5.00

Note: n/a not applicable.

Which Option will the EPA Pick?

“Given the history of the market and relevant constraints, EPA does not currently foresee a scenario in which the market could consume enough ethanol sold in blends greater than E10, and/or produce sufficient volumes of non-ethanol biofuels (biodiesel, renewable diesel, biogas, etc.), to meet the volumes of total renewable fuel and advanced biofuel stated in the statute. Given these challenges, EPA anticipates that in the 2014 proposed rule, we will propose adjustments to the 2014 volume requirements, including to both the advanced biofuel and total renewable fuel categories.”

Source: “Regulation of Fuels and Fuel Additives: 2013 Renewable Fuel Standards.”
Federal Register, Vol. 78, No. 158, August 15, 2013, p.49823.

*** EO12866 Review - Draft - Do Not Cite, Quote, or Release During Review ***

Table I-1
Proposed 2014 Volume Requirements^a

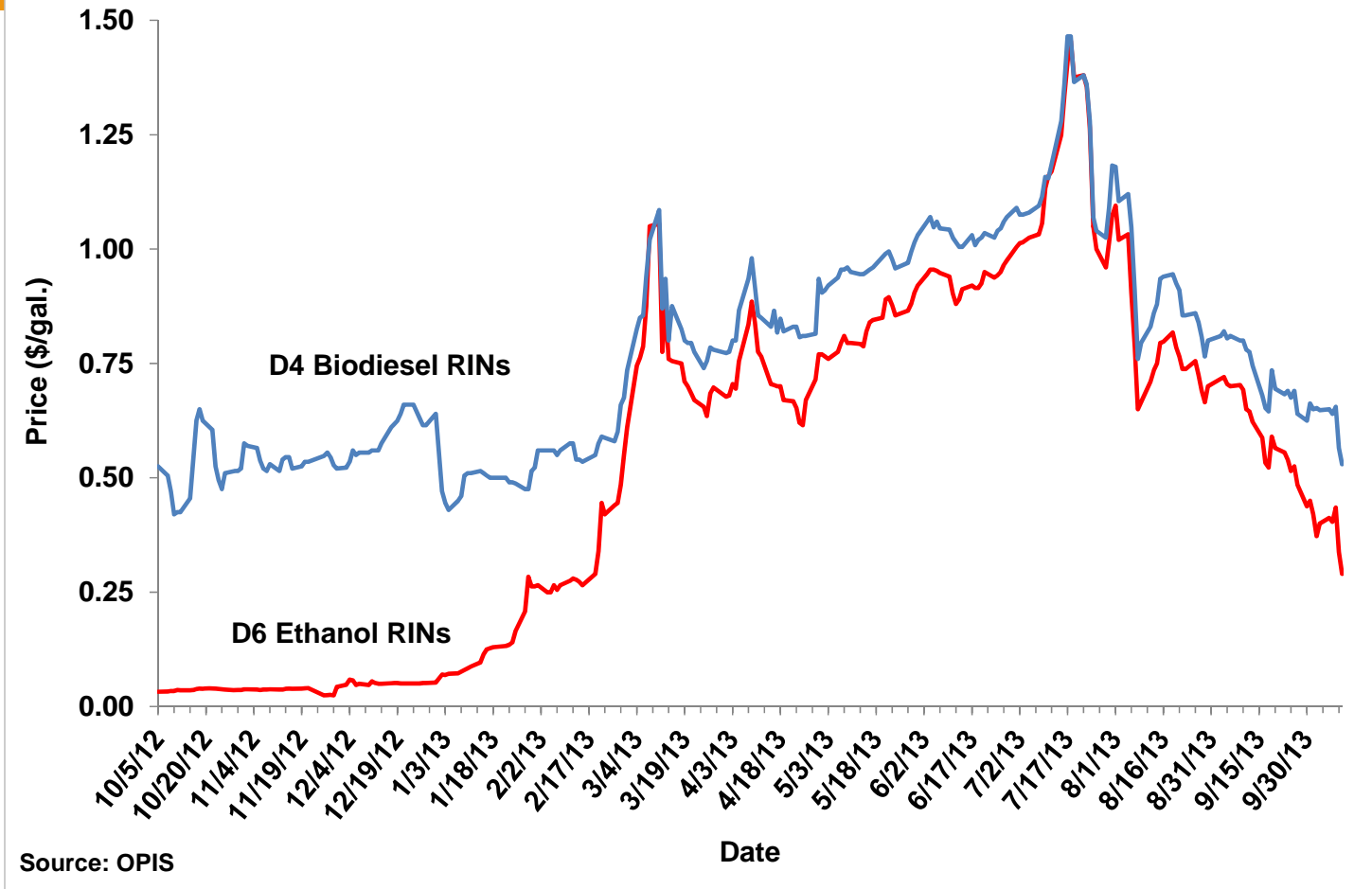
Cellulosic biofuel	23 mill gal
Biomass-based diesel	1.28 bill gal
Advanced biofuel	2.21 bill gal
Renewable fuel	15.21 bill gal

^a All volumes are ethanol-equivalent, except for biomass-based diesel which is actual.

Table 1. EPA Policy Options for Implementing the Renewable Fuels Standards for 2013-2015---Billion Gallons except Biodiesel Feedstock (Billion Pounds) and Corn (Billion Bushels)

	Freeze Option			Preliminary EPA		
	2013	2014	2015	2013	2014	2015
RFS Category						
Advanced	2.75	2.75	2.75	2.75	2.21	2.21
Renewable	13.80	13.80	13.80	13.80	13.00	13.00
Total	16.55	16.55	16.55	16.55	15.21	15.21
Reduction in Total	0.00	-1.60	-3.95	0.00	-2.94	-5.29
Compliance Scenario: Mainly E85						
Biodiesel	1.36	1.57	1.50	1.36	1.28	1.28
E85	0.14	0.73	0.93	0.14	0.14	0.14
End-of-Year RINs	1.19	0.59	0.00	1.19	1.15	0.92
Biodiesel Feedstock	10.22	11.75	11.23	10.22	9.59	9.60
Corn for Ethanol	4.74	5.00	5.00	4.74	4.87	4.85

Daily Price of D4 Biodiesel and D6 Ethanol RINs, 10/5/2012 - 10/11/2013



www.farmdocdaily.illinois.edu

The screenshot shows the farmdocDAILY website. At the top left is a sun icon. The main header features the 'farmdocDAILY' logo in blue and orange. To the right of the logo are social media icons for Facebook, Twitter, and RSS, and a search bar labeled 'SEARCH FARMDOC DAILY' with a 'Go' button. Below the header is an orange navigation bar with the text 'Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign' and a 'click to visit farmdoc' link. A secondary navigation bar contains links for 'Home', 'About', 'Search Categories', 'Search Authors', and 'Search Month'. The main content area is divided into two columns. The left column features two articles: one dated August 20, 2013, titled 'Hedging the 2013 Corn and Soybean Crop Given Crop Insurance' by Gary Schnitkey, and another dated August 19, 2013, titled 'Large Number of Late Season Corn Market Factors' by Darrel Good. Each article includes a short summary and a 'Continue reading...' link. The right column contains a 'CORPORATE SPONSOR' section for TIAA-CREF and the Center for Farmland Research, and a 'SUPPORTERS' section for 1st Farm Credit Services and Farm Credit Services of Illinois. At the bottom right of the right column is a 'farmdoc Prices and Weather' section with a table of commodity prices and a link to visit the full page.

farmdocDAILY

Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign

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August 20, 2013

Hedging the 2013 Corn and Soybean Crop Given Crop Insurance

As of this writing, downside revenue risk on the 2013 corn crop is small for those farmers who bought crop revenue products at high coverage levels, given that yields are expected to be at or below guarantee levels. For farmers in this situation, hedging corn will not increase protection against lower revenues. More downside revenue risks exist for soybeans.

Continue reading...

Posted by **Gary Schnitkey** [Permalink](#) 1

August 19, 2013

Large Number of Late Season Corn Market Factors

Listen to MP3 podcast

Corn prices at this time of year are typically dominated by yield prospects of the U.S. crop with those prospects pretty well settled. This year, there is considerable uncertainty about U.S. production prospects as well as changing indications of corn consumption.

Continue reading...

Posted by **Darrel Good** [Permalink](#) 1

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Symbol	Last	Chg
Corn	474-6	-0-6
Soybeans	1287-0	-3-4
Soybean Oil (P)	43.18s	-0.60
Soybean Meal	400.8	-1.2
Wheat	646-0	weak

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