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# The Simple Economics of RINs and RFS Reform

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10<sup>th</sup> Annual Biofuels: Science and Sustainability Tour

# Fraud? Manipulation? Bankruptcy? Reform?

ENERGY & ENVIRONMENT

## *U.S. Struggles to Rescue Green Program Hit by Fraud*

By MATTHEW L. WALD OCT. 11, 2012

BUSINESS DAY | THE HOUSE EDGE

## *Wall St. Exploits Ethanol Credits, and Prices Spike*

By GRETCHEN MORGENSEN and ROBERT GEBELOFF SEPT. 14, 2013

Bloomberg Markets Markets Tech Pursuits Politics Opinion Businessweek

## Icahn Calls on EPA to Fix ‘Mother of All Short Squeezes’

By Laura Blowitt and Zachary Mider August 15, 2016, 2:21 PM CDT Updated on August 16, 2016, 2:31 PM CDT

Bloomberg Markets Tech Pursuits Politics Opinion Businessweek

## Biggest U.S. East Coast Oil Refinery Files for Bankruptcy

By Barbara J. Powell and Tiffany Kary January 22, 2018, 12:26 AM CST Updated on January 22, 2018, 10:46 AM CST

→ Expenses tied to renewable fuels spur Chapter 11 filing

Forbes

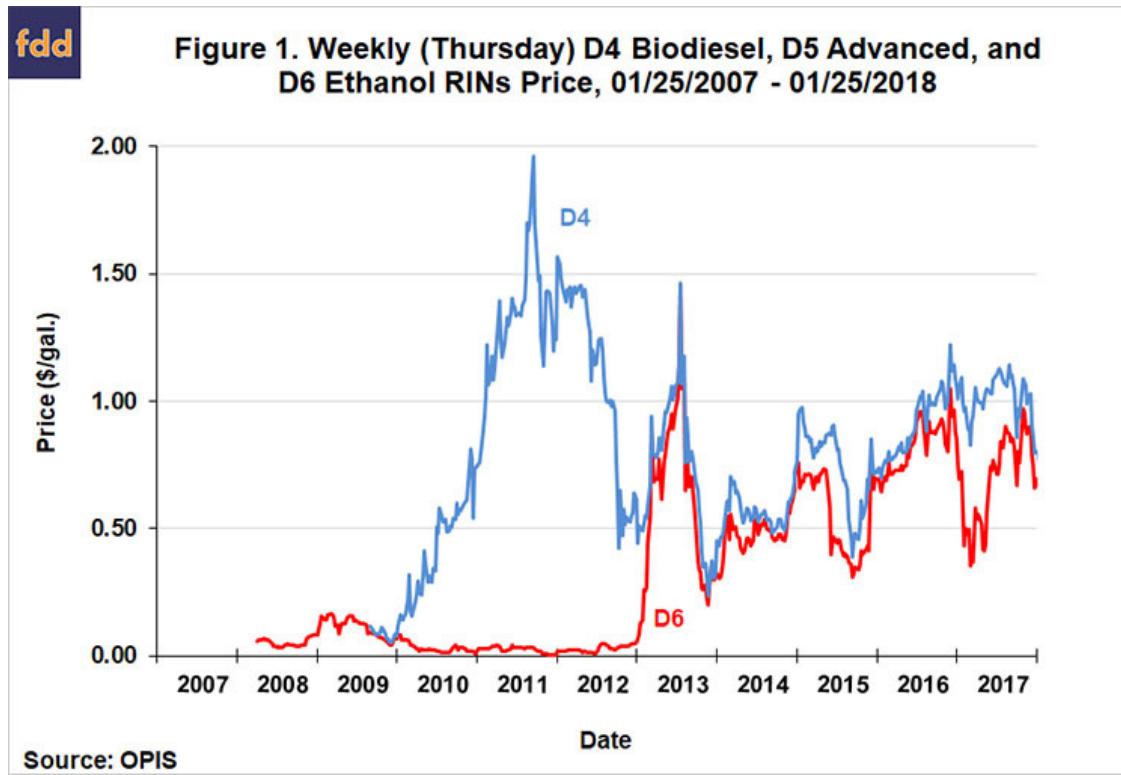
## Texas Senators Cruz And Cornyn Fight To Push Competing Ethanol RFS Reform Plans

S&P Global  
Platts

## New US EPA chief defends small refinery waivers to biofuel mandate

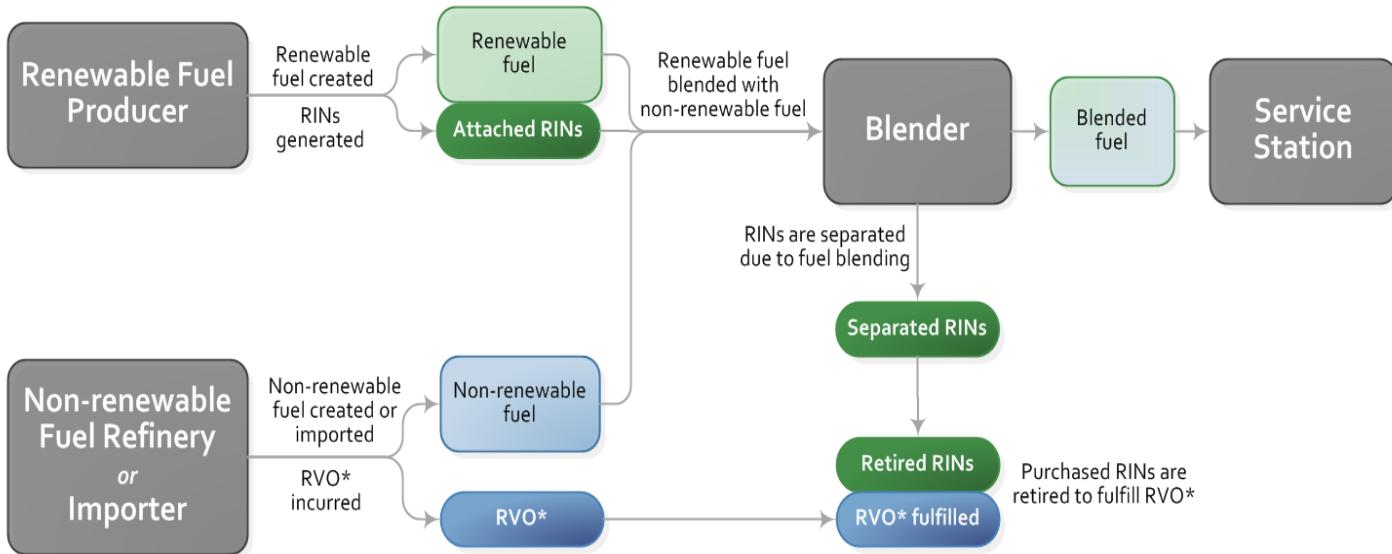
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# Why are prices so volatile?



# RIN Market Basics

# The Lifecycle of a RIN



\* RVO = Renewable Volume Obligation

# Nesting and RIN Prices

## Conventional renewable fuel (D6)

**Example feedstock:** Corn starch

**Required lifecycle GHG reduction:** 20% or more

## Advanced biofuel (D5)

**Example feedstocks:** Sugarcane, biobutanol, bionaphtha

**Required lifecycle GHG reduction:** 50% or more

## Cellulosic biofuel (D3)

**Example feedstocks:** Corn stover, wood chips,  
miscanthus, biogas

**Required lifecycle GHG reduction:** 60% or more

## Biomass-based diesel (D4)

**Example feedstocks:** Soybean oil, canola oil,  
waste oil, animal fats

**Required lifecycle GHG reduction:** 50% or more

# The Simple Economics of RIN Prices: Ethanol Markets

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# RINs and Ethanol Markets: All about the blend wall



Prices with \$0.00/RIN

# RINs and Ethanol Markets: All about the blend wall



Prices with \$0.25/RIN

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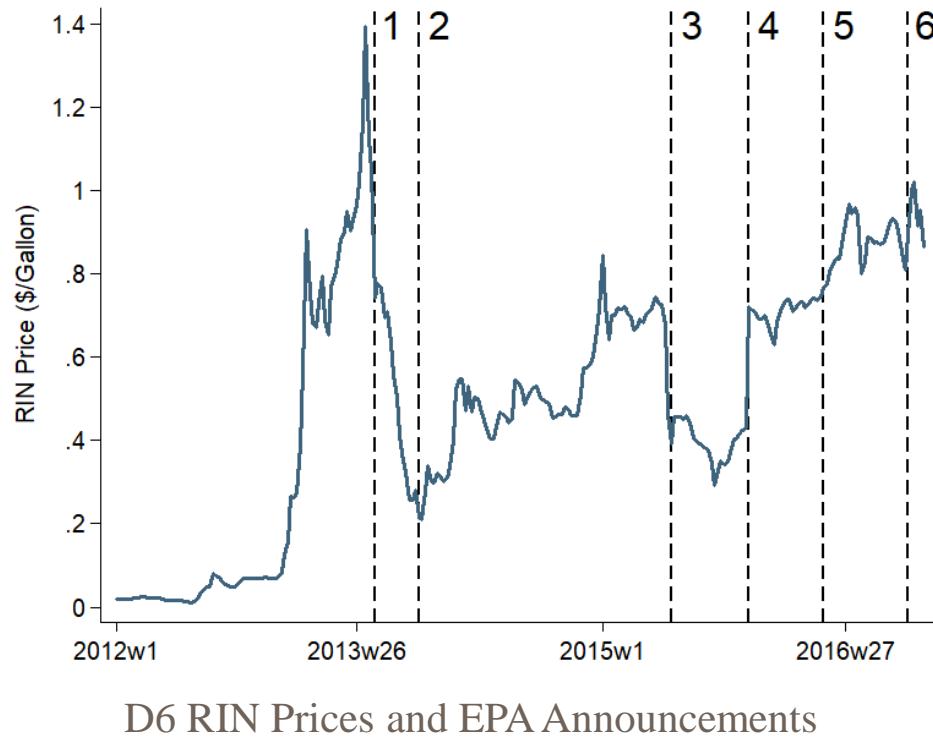
# RINs and Ethanol Markets: All about the blend wall



Prices with \$0.75/RIN

10

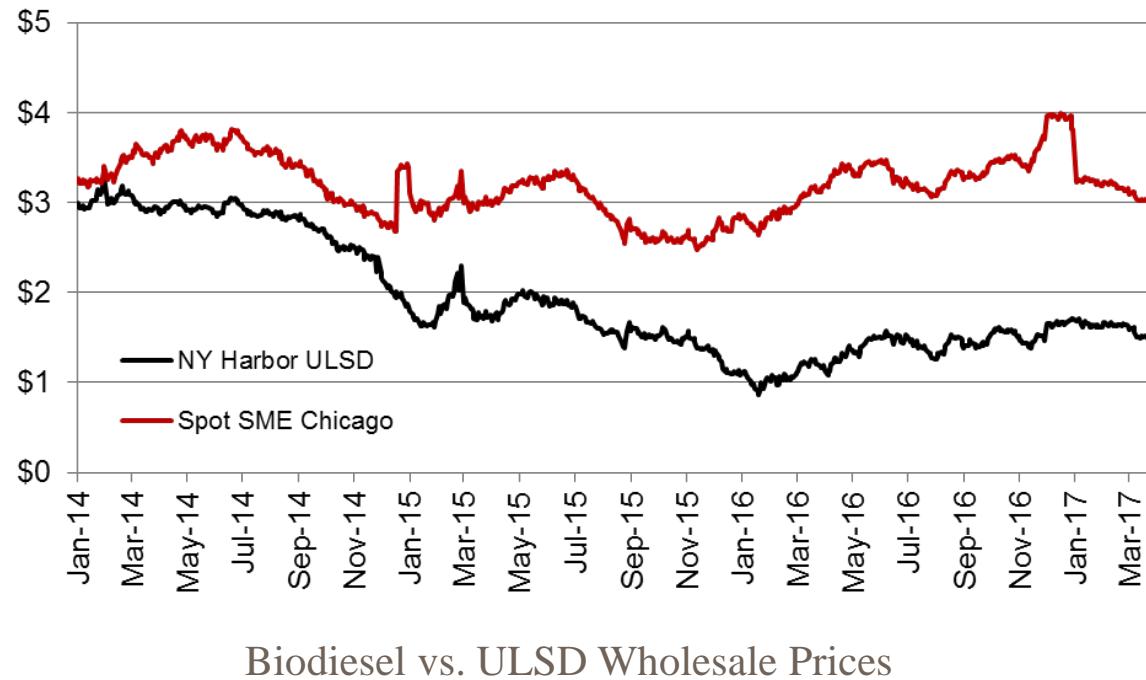
# RINs and Ethanol Markets: All about the blend wall



# The Simple Economics of RIN Prices: Biodiesel Markets

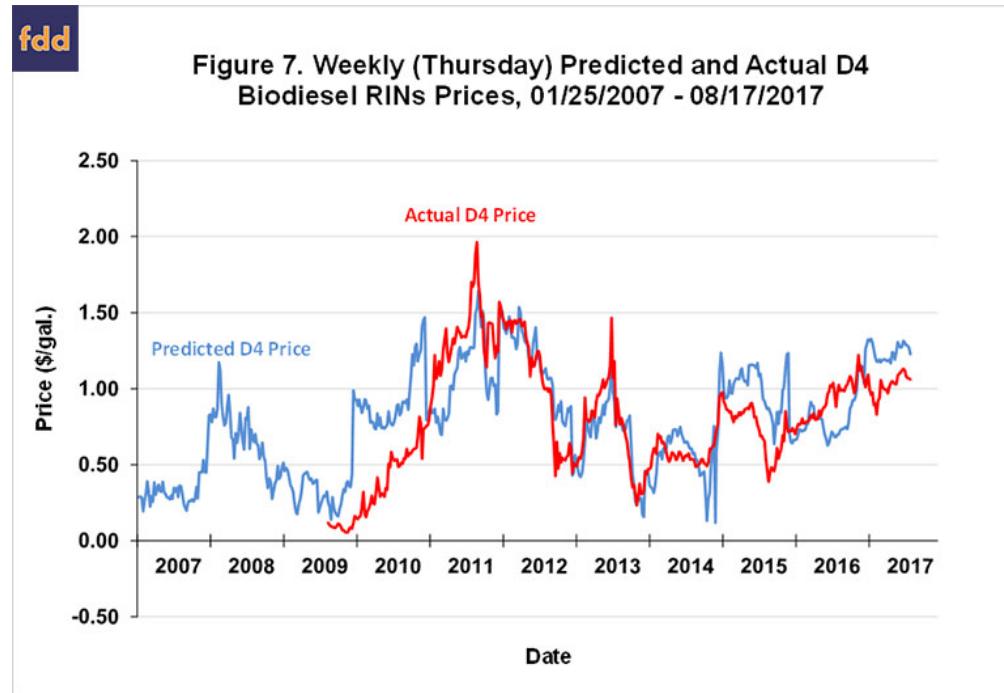
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# RINs and Biodiesel Markets: All about production cost



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# RINs and Biodiesel Markets: All about production cost



Predicted versus Actual D4 RIN Prices

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# Key takeaways

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# Number 1 – RINs serve a vital role in RFS compliance

**RINs are the mechanism that ensures that the fuel industry meets Congressional biofuel blending mandates**

1. Track biofuel blending and use
2. Stimulate biofuel demand, discourage gasoline/diesel use

## High RIN prices signal

1. High compliance costs (blendwall, biodiesel)
2. High investment value in biofuel production and distribution infrastructure

## Number 2 – RIN markets are working

### Most evidence shows RIN markets are efficient and free of manipulation

1. Prices adjust quickly to changing compliance costs
2. CFTC Senate hearing indicated little evidence of manipulation
3. Better data/transparency would only help!

### Fraud has happened, but only affects small number of RINs

1. Tens of *millions* of fraudulent RINs vs. over 135 *billion* RINs generated to date
2. Third-party quality assurance programs have stepped in to help

## Number 3 – RIN costs are reflected in downstream prices

### **Refiners are compensated for RIN costs**

1. Wholesale gasoline and diesel prices are higher because of RINs
2. Refiners with blending capacity have no competitive advantage over those that purchase RINs on the market
3. Small refiner exemptions could give a competitive advantage to refiners with exemptions

### **RFS costs are primarily due to shifting market shares from refiners to biofuel producers**

1. Small impact on consumers because most fuel is blended with biofuel

## Number 4 – Details matter in any reform proposal

### **E15 waivers would likely have a small impact on RIN prices**

1. Need high RIN prices to stimulate demand, especially in the short-run

### **RIN price caps could play an important, stabilizing role in RIN markets**

1. To date, EPA has limited RIN prices through mandate adjustments, a significant cause of RIN market volatility
2. Tradeoff: If RIN cap binds, biofuel use in U.S. will be below mandated levels

## (Other) Academic experts to follow



Scott Irwin  
University of Illinois



Bruce Babcock  
UC Riverside



Aaron Smith  
UC Davis



James Stock  
Harvard University

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