

Emerging Issues Forum

Ethanol 2018

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Roger Read

Senior Analyst

roger.read@wellsfargo.com

713-319-1688

Lauren Hendrix

Associate Analyst

lauren.hendrix@wellsfargo.com

713-319-1655

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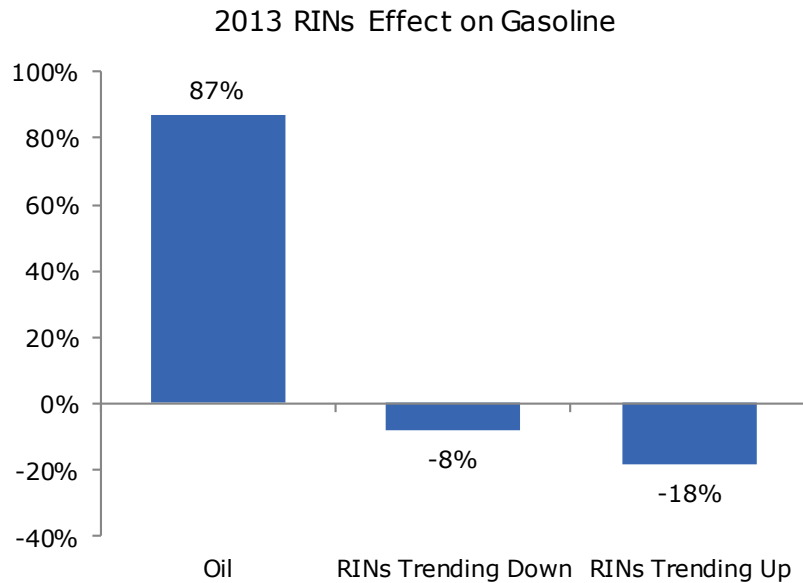
Key Takeaways

- RINs deliver a net benefit to most Independent Refiners
 - In 2013, changes in RINs prices had little impact on gasoline prices
 - In 2017, increases and declines in RINs were highly correlated with gasoline price changes
 - Oil remains biggest driver, but its importance had declined in 2017
- Consumers bear the cost; much like a tax
 - But unlike a conventional tax, the “price” of the RIN remains in the system
 - Should some other entity end up with the cash (i.e., federal government)?
 - Was this the goal?
- Market conditions evolve
 - Since RFS expansion in 2007 U.S. has doubled oil production become major product exporter
 - Several technology dependent biofuels did not become commercially available
 - Gasoline demand may peak by 2020
 - Implications if no RVP waiver granted for ethanol
 - Risk that ethanol demand would decline along with gasoline post 2020
 - GHG emissions, RVP levels, octane needs
 - PES bankruptcy, subsequent RINs settlement and waiver program expansions to a reported 25 small refineries

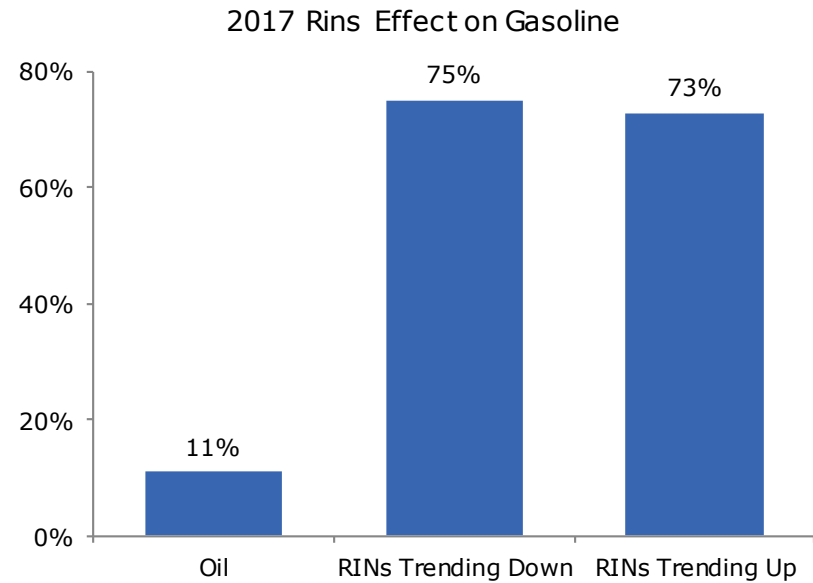
Key Takeaways (cont.)

- Policy implications
 - Major changes are up to Congress
 - Neither side will be happy long-term with administrative-only solutions
 - Both sides need to accept some of the positions and complaints of the other before a legislative solution is likely to move forward
 - Why doesn't biofuel industry feel it can stand on its own without a mandate?
- EPA Administrative Pathways
 - Congress granted the E10 RVP waiver; appears unlikely EPA possesses authority
 - Current EPA more agreeable to refiners' waiver requests – we expect the EPA to continue wielding the waiver “hammer” on the RINs “nail” given lack of other tools
 - Broad range of authority over RINs program but we see price cap as unlikely to work any better than other price control systems
- Blend Wall
 - Sign of success that ethanol has acquired approximately 10% of the market
 - Higher ethanol blends possess similar or lower RVPs, but no waiver
 - What would it take to get Congress to grant a higher ethanol blend waiver?

RINs and the Impact on Gasoline Prices



Source: Bloomberg and Wells Fargo Securities, LLC



Source: Bloomberg and Wells Fargo Securities, LLC

Oil/Gasoline Correlations		
LLS/Gasoline	Correlation	R-squared
2013	0.785	62%
2017	0.683	47%

Source: Bloomberg and Wells Fargo Securities, LLC

- **Dramatic Changes from 2013 to 2017**
 - In 2013, changes in RINs prices had little impact on gasoline prices
 - In 2017, increases and declines in RINs were highly correlated with gasoline price changes
 - Oil remains biggest driver, but its importance had declined in 2017

2013 to 2017 RINs Estimated Margin Impacts

2013 RINs Case - Assumes 10% of RINs in Crack, \$0.59 RINs Price			
in \$/day unless indicated			
Wholesale/retail integration	100%	50%	0%
Gasoline sales (gals/day)	10,500,000	10,500,000	10,500,000
Adjusted crack (\$/gal)	0.304	0.304	0.304
Gross margin	3,193,833	3,193,833	3,193,833
RINs expense 100% (\$0.59/RIN)	688,333	688,333	688,333
Gross margin, net RINs	2,505,499	2,505,499	2,505,499
Retail/wholesale recapture	688,333	344,167	0
Gross margin, adjusted net	3,193,833	2,849,666	2,505,499
Lost margin, net	0	(344,167)	(688,333)

2017 RINs Case - Assumes 50% of RINs in Crack, \$0.85 RINs Price			
in \$/day unless indicated			
Wholesale/retail integration	105%	65%	15%
Gasoline sales (gals/day)	10,500,000	10,500,000	10,500,000
Adjusted crack (\$/gal)	0.345	0.345	0.345
Gross margin	3,620,833	3,620,833	3,620,833
RINs expense 100% (\$0.59/RIN)	991,667	991,667	991,667
Gross margin, net RINs	2,629,166	2,629,166	2,629,166
Retail/wholesale recapture	1,041,250	644,583	148,750
Gross margin, adjusted net	3,670,416	3,273,750	2,777,916
Gross margin expansion vs. 2013	476,584	79,917	(415,916)
RINs borne by retail consumers (\$/gal)	0.045	0.008	(0.040)

2017 RINs Case - Assumes 85% of RINs in Crack, \$0.85 RINs Price			
in \$/day unless indicated			
Wholesale/retail integration	105%	65%	15%
Gasoline sales (gals/day)	10,500,000	10,500,000	10,500,000
Adjusted crack (\$/gal)	0.378	0.378	0.378
Gross margin	3,967,916	3,967,916	3,967,916
RINs expense 100% (\$0.59/RIN)	991,667	991,667	991,667
Gross margin, net RINs	2,976,249	2,976,249	2,976,249
Retail/wholesale recapture	1,041,250	644,583	148,750
Gross margin, adjusted net	4,017,499	3,620,832	3,124,999
Gross margin expansion vs. 2013	823,667	427,000	(68,833)
RINs borne by retail consumers (\$/gal)	0.078	0.041	(0.007)

Source for all tables: Bloomberg and Wells Fargo Securities, LLC estimates

RINs Correlated with Refining Equity Performance; Retail Pays

Equities/RINs Correlations		
Ticker	2013	2017
ANDV ¹	0.39	0.71
CLMT	0.51	0.69
DK	0.23	0.36
HFC	(0.12)	0.40
MPC ¹	0.13	0.53
PBF	(0.18)	0.39
PSX ¹	(0.13)	0.56
VLO	(0.28)	0.41
Average	0.07	0.51

¹Integrated wholesale/retail ops

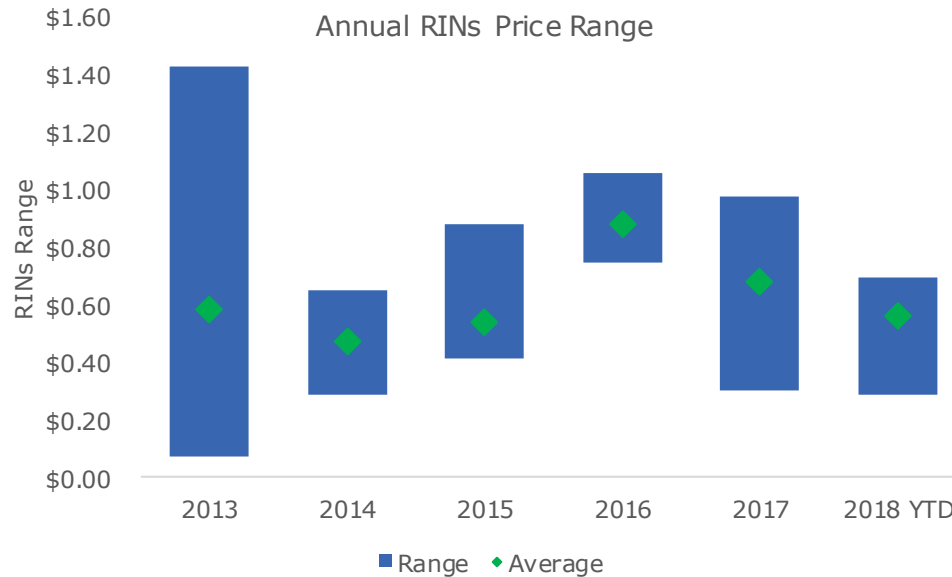
Source: Bloomberg and Wells Fargo Securities, LLC

Consumers Increasingly Bear RINs Costs			
RINs Cost Evolution	2013	2017	2017
% of RIN reflected in crack spread	10%	50%	85%
Refining capture rate including RINs	78%	73%	75%
Refiner % of RINS costs	90%	52%	17%
Consumer % of RINs costs	10%	48%	83%

Source: Bloomberg and Wells Fargo Securities, LLC

- Oil price collapse and drilling downturn should arrest but not derail growth
- The Permian Basin is just getting started
- Uncompleted well backlog in the Bakken stood at 725 in December; equivalent to ~4.5 months at TTM levels of activity

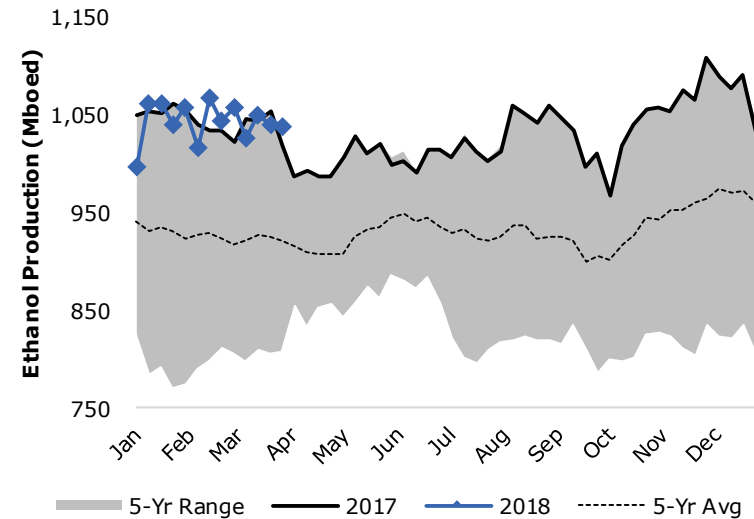
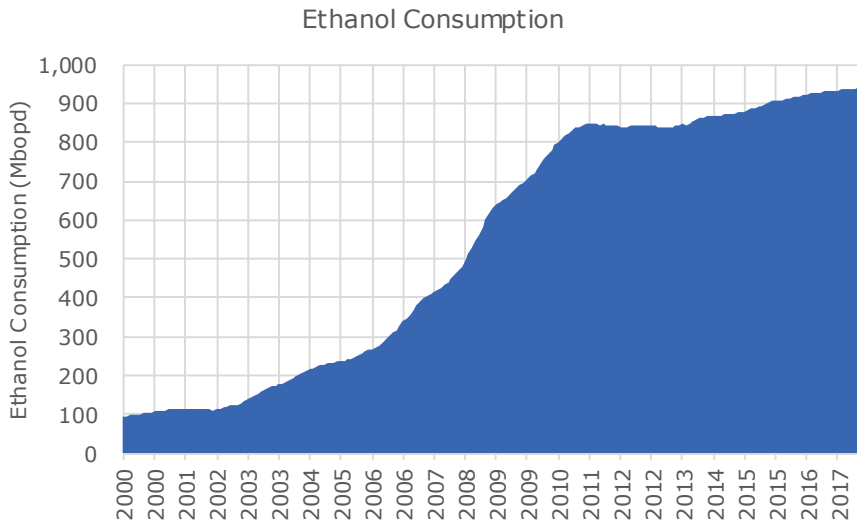
RINs Volatility a Complicating Factor



Source: Bloomberg and Wells Fargo Securities, LLC

- Annual max/min and averages highlight budget/planning challenges
- RINs prices affected by supply/demand and EPA intervention
- Higher RINs prices have not resulted in meaningful increase in ethanol consumption/blending

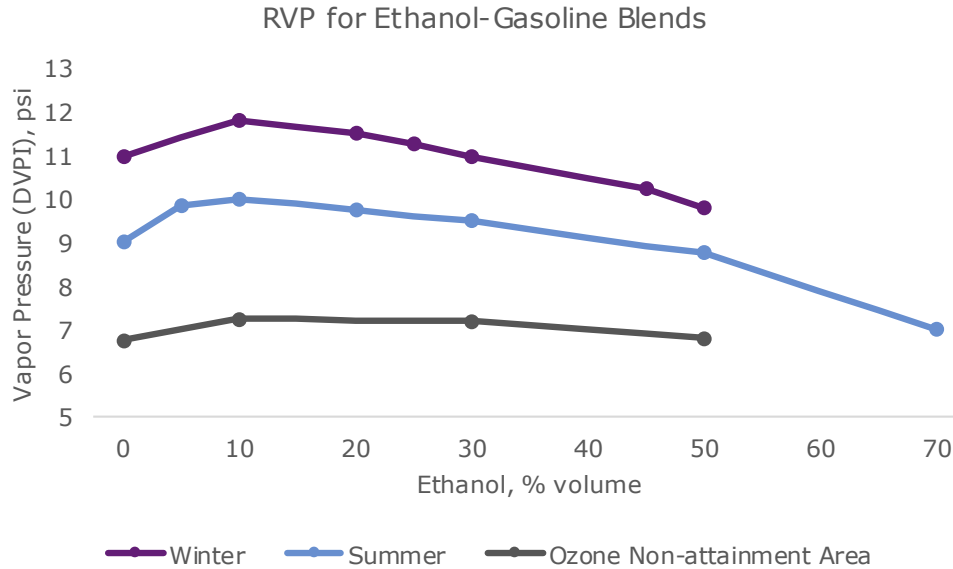
U.S. Ethanol Consumption and Production



Source for both charts: EIA and Wells Fargo Securities, LLC

- Dramatic growth from 2001 to 2010; CAGR = 24.9%
- Post 2010 CAGR = 1.6%
- If goal is to “protect” the current RFS structure then further growth may be hard to achieve given overall fuel fundamentals and existing emissions rules
- Without RVP waiver on higher ethanol blends could this be the high water mark?

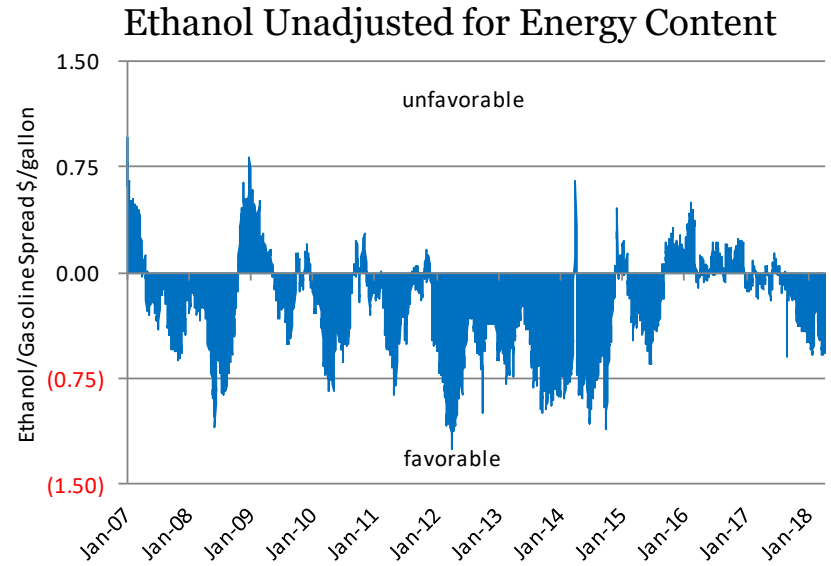
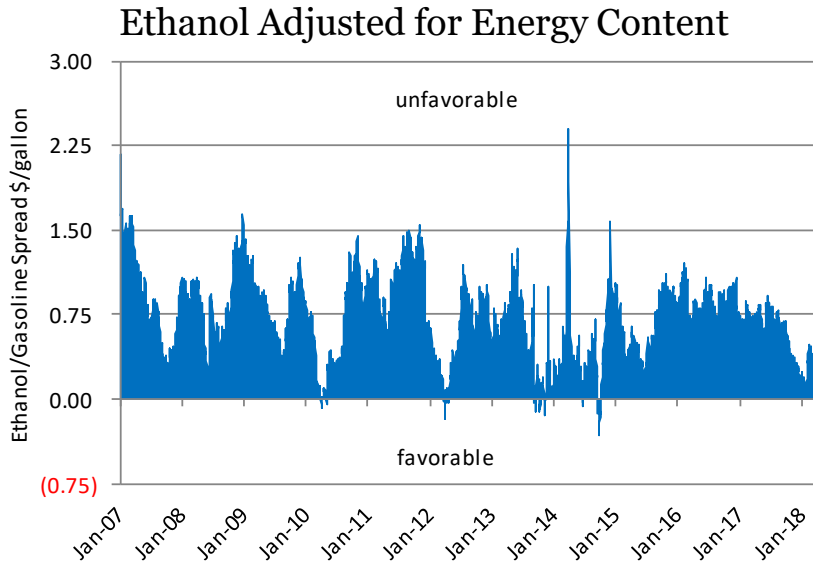
Ethanol Blends' Effects on RVP



Source: EIA, EPA and Wells Fargo Securities, LLC estimates

- E10 RVP is highest of ethanol blends, particularly for winter blends
- Extending the waiver to E15 and higher blends would likely require a waiver, but typically results in lower RVP
- Congressional action may be difficult to achieve given competing interests

Ethanol Vs. Gasoline Cost Comparisons



Source for both charts: Bloomberg and Wells Fargo Securities, LLC estimates

- Ethanol adjusted for BTUs rarely cheaper than gasoline
- Ethanol unadjusted for BTUs typically much cheaper than gasoline
- Thus higher ethanol blends (i.e., >E10) will likely result in lower retail pump prices and potentially be more attractive to consumers

Conclusion

- Market conditions change. Reasonable to presume that conditions that supported RFS expansion post 2007 are different today
- RINs are an imperfect tool and are not supporting higher ethanol consumption
- Ethanol as an octane enhancer has a strong case but needs to get Congress' ear on RVP issues
- There should be another oil price spike, in our view

Threats and Risks

- Global economic slowdown/recession
- Gasoline demand peak on combination of efficiency, EVs and GHG restrictions
- Other regulatory policy changes
- Significant capacity expansions
- Oil price spike on unplanned outages

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