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US Biofuels Market Update Q3 2018

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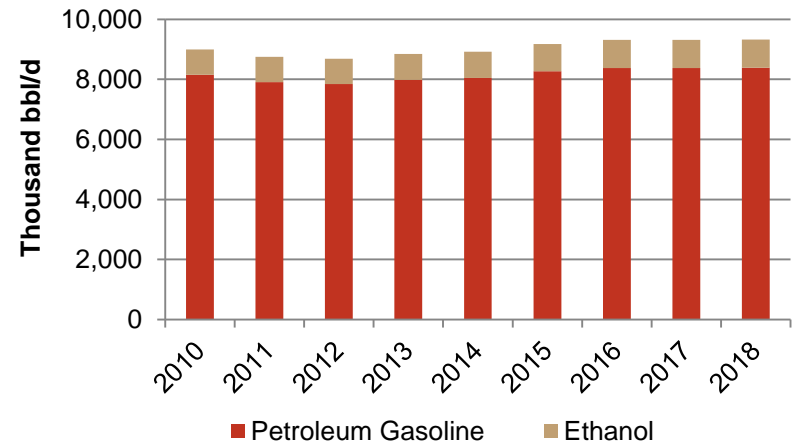
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US Fuel Demand Supported by GDP Growth

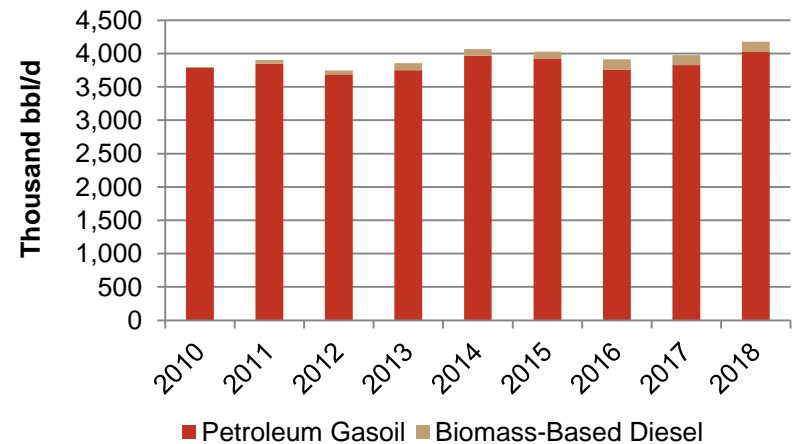
Mild biofuels growth expected as EPA waivers lower effective mandate volumes

- US GDP growth accelerated to over 3% in H1 2018, up from 2.2% in 2017
- H1 2018 data shows the US is on pace for relatively flat gasoline demand and gasoil demand growth over 5%
 - Gasoline pool relatively flat in 2017 and 2018 (rising prices partly offsetting GDP effects), following 1.5% growth in 2016
 - Diesel demand increase of nearly 7% supported by economic growth and drilling activity
 - Ethanol demand is increasing at a rate of around 0.7%, outpacing overall gasoline demand thanks to E15/E85 growth
- US biofuel usage is driven by the RFS
 - Proposed 2019 mandate represents an increase of 0.59 billion gallons over 2018...
 - ...but liberal use of small refinery waivers by EPA more than offsets the increase

US Gasoline Pool



US Gasoil Pool

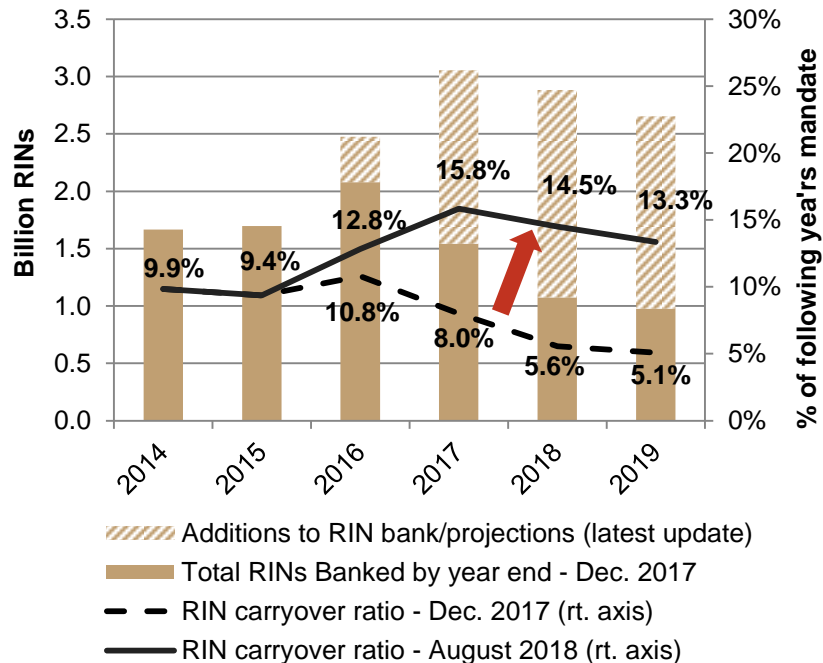


Source: EIA

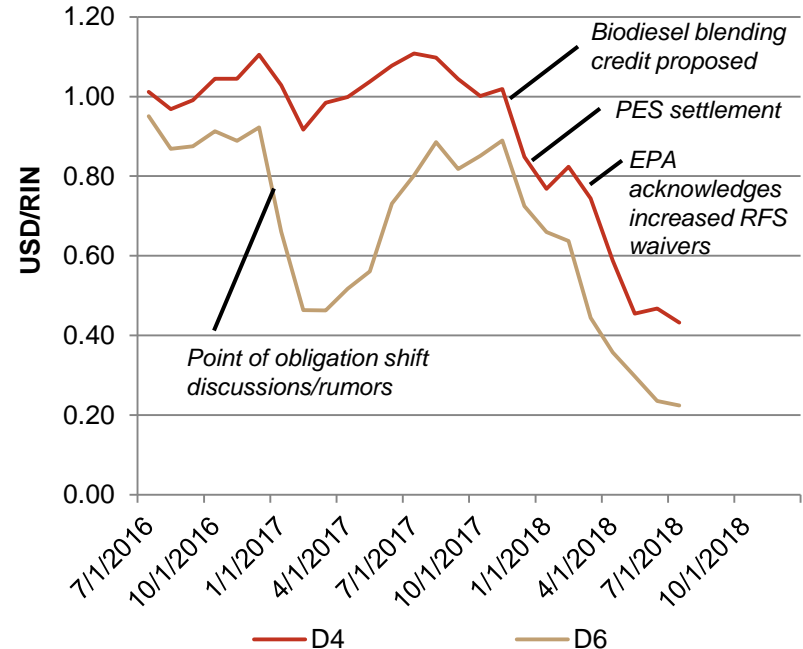
EPA Waivers Pummel RIN Prices

Bearish vegetable oil market adds to downward pressure on RINs

RFS Total RIN Carryover



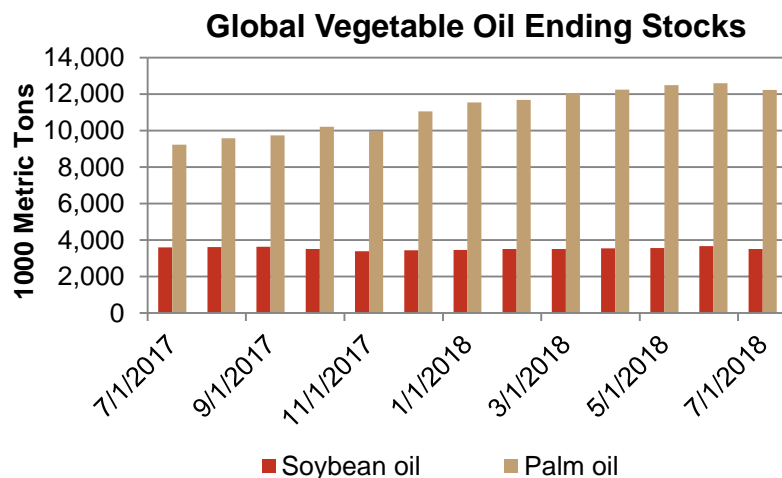
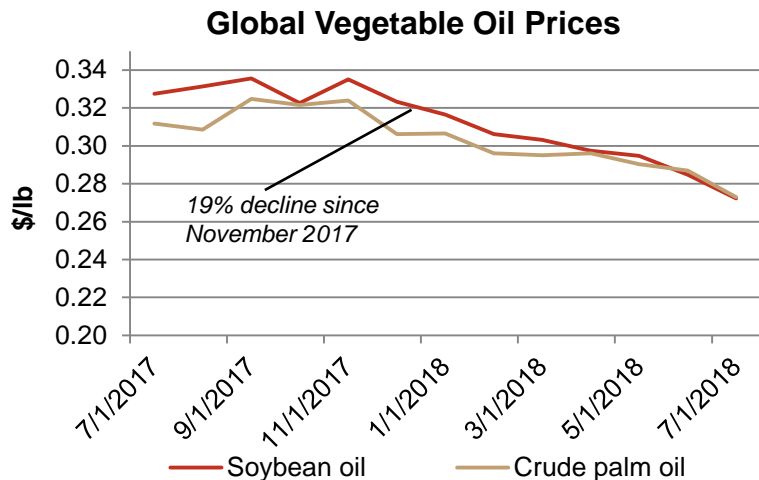
Historical D4/D6 RIN Prices



- 2018 RIN price decline driven by multiple factors, but primarily the increase in small refinery RFS waivers granted (0.79 billion RINs for 2016, 1.46 billion for 2017)
- RIN prices have also been impacted by declining vegetable oil prices (directly lowering biodiesel prices D4 RIN prices) and the PES RIN settlement

Bearish Factors Weigh on Vegetable Oil Prices

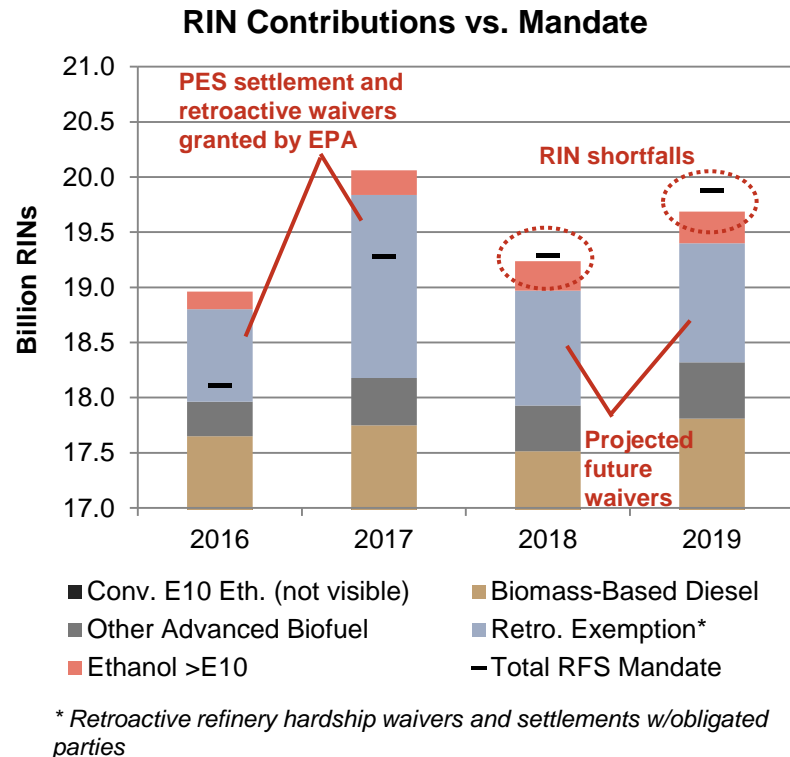
Reduced biodiesel production costs and lower premium vs. diesel support lower D4 RIN prices



- India, the world's largest importer of palm oil, has increased its import tariff on crude palm oil twice since November 2017, reaching a rate of 44% in March
 - Indian palm oil imports reached a 4 ½-year low in May
 - Indian 2018 YTD vegetable oil import demand growth has slowed to 1%
- US soy oil prices have been affected by palm oil trends as well as US-China trade tensions
 - Soybean prices have fallen 15% since the US' June tariff announcement
 - Increased Brazilian soybean exports to China are expected to compensate for only 30% of the lost US exports to China
- The decline in vegetable oil prices has reduced biodiesel production costs and the biodiesel price premium to diesel

Waivers the Most Important Marginal “Supply”

Projected RIN carryover trends at whim of future waiver expectations

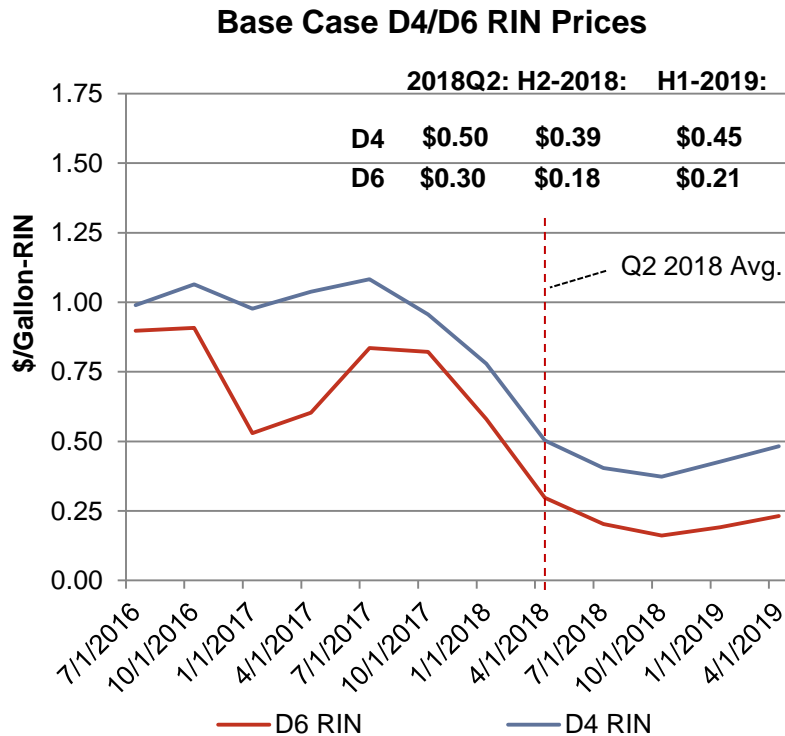


Source: Stratas Advisors

- EPA’s retroactive small refinery waivers and the PES settlement—2.5 billion RINs in total—easily pushed 2016 and 2017 into net positive RIN generation
- Projected waiver levels assumed to apply to roughly the average of waived refining capacity in 2016 and 2017 (should be lower than 2017 given lack of applications through H1 2018)
 - Resulting RIN balances show slight shortfalls in both 2018 and 2019 (resulting in RIN bank drawdowns)...
 - ...but regulatory uncertainty has grown immensely; Wheeler does not appear to be any more responsive to the powerful agricultural lobby than Pruitt was

No Decisive Signs of Short-Term Strength

Seasonal increase in vegoil prices should support D4 prices in early 2019



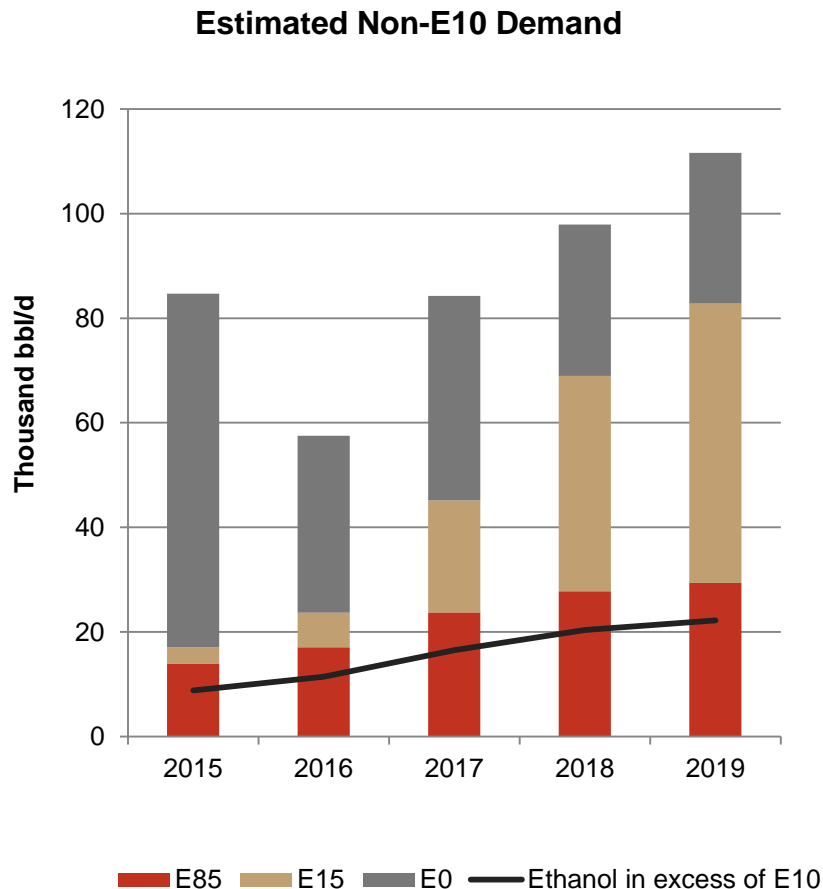
Note: Quarters are designated by their first month; value indicated is average for whole quarter

Source: Stratas Advisors

- Wheeler’s stance on the RFS appears similar to Pruitt, and corn lobby appeals continue to show little effect on actual policy
- Waivers set bearish precedent in terms of RFS enforcement
- Barring re-allocation of waived volumes or other RVO increase, RIN balance expected to have minimal bullish impact through next 3 quarters
- Vegetable oil prices projected to come off of current lows in early 2019, partly due to seasonal trends

E15 Volumes Expected to Exceed E85 in 2018

Volume growth may taper quickly as most infrastructure funds have been used

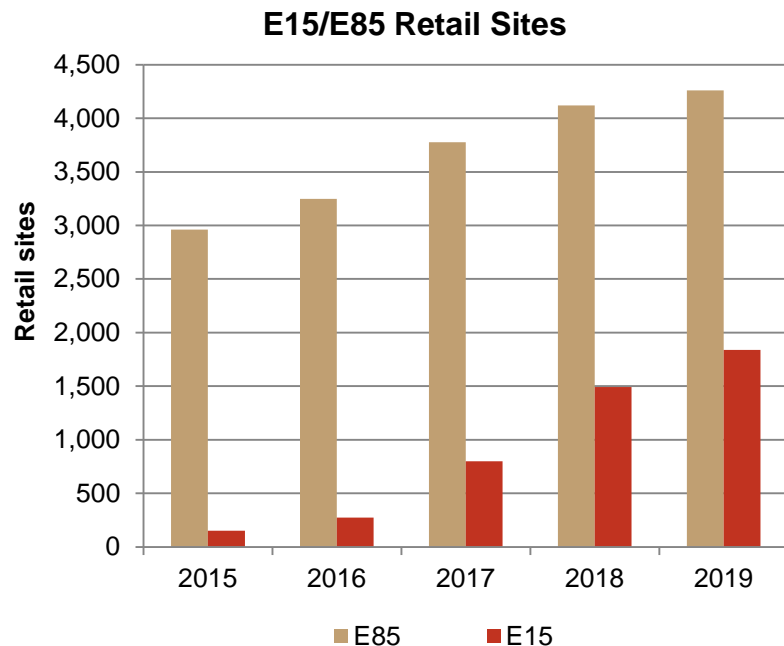


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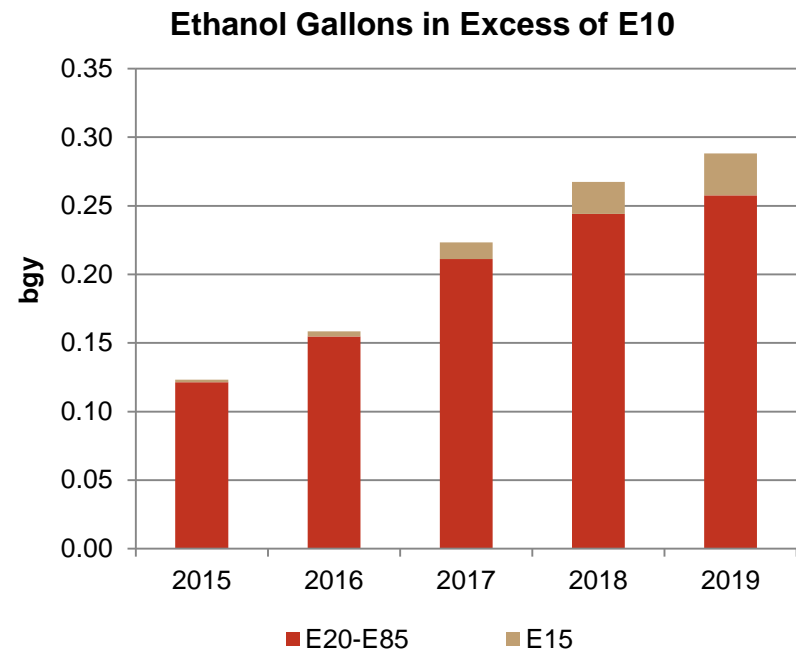
- Higher ethanol blends have seen rapid growth in recent years, supported by infrastructure incentives and RIN-based price discounts
 - Most E15 retailers negotiate to ensure they capture a fuel discount based on the RIN price
- E85 retail sites in 2018: 4,000+
- E15 retail sites in 2018: 1,400+
- Combined E15/E85 sites amount to around 3% of total US retail sites
- The USDA and biofuel industry infrastructure programs are expected to convert around 2,000 sites to E15
 - These programs have targeted large/advantaged retail sites with the highest throughput levels, around 3 times the national average
- E15 currently ~0.4% of US gasoline

E15 Ethanol Volume Above E10 Still Limited

E85 consumption growth an important side effect of blender-pump-based E15 site growth



Source: Stratas Advisors from various



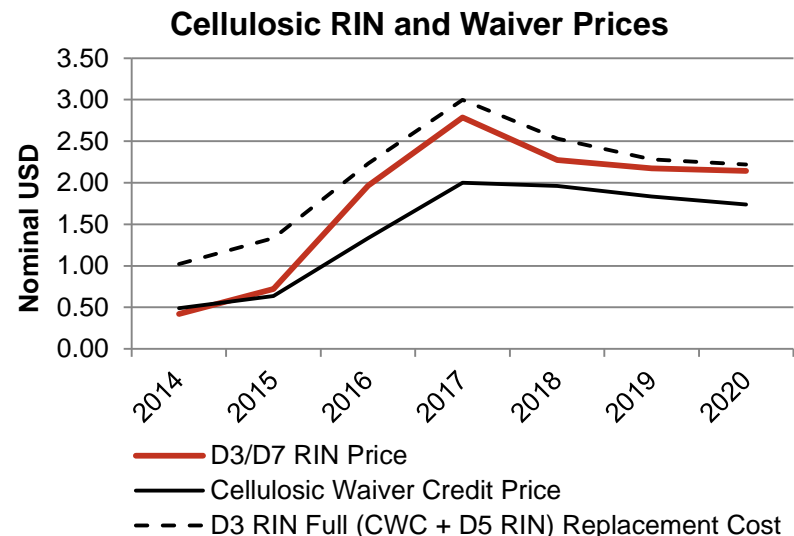
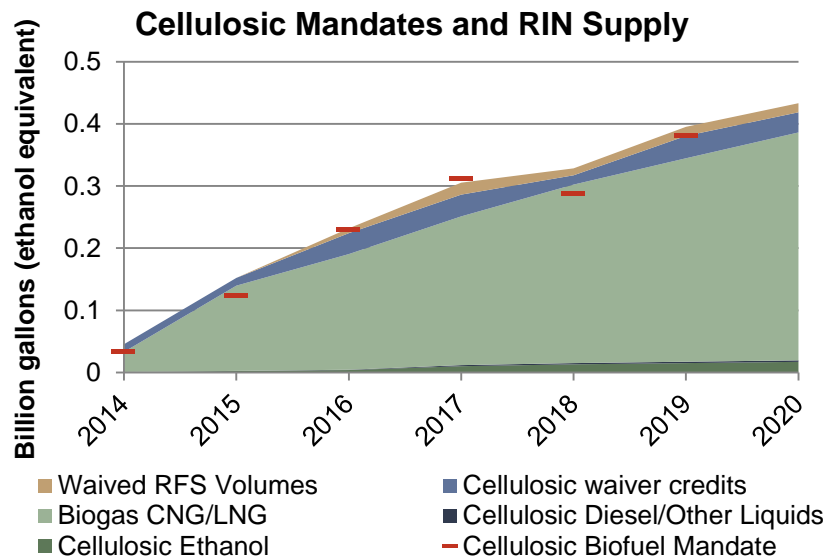
Source: Stratas Advisors

- E15 sites expected to exceed 1,700 by the end of 2018, likely to average around 1,500 for the year; E15 and E85 largely growing in tandem given blender pump usage
- Based on site growth, average throughput per site, and average E15 ethanol content, ethanol above 10% in E15 likely to exceed 30 million gallons by 2019

RNG now a key source of RIN supply growth

Cellulosic biofuel (biogas specifically) has grown with relatively modest fanfare

- EPA proposed a 2019 cellulosic biofuel mandate of 381 million gallons (+32%)
- Cellulosic biofuel growth is expected to fall short of the 2019 mandate given that YTD 2018 RNG growth (14%) is well short of EPA's estimated growth rate of 30.5%; this shortfall will edge D3 RIN prices closer to cellulosic waiver credit-based replacement cost (CWC + D5 RIN)
- Modeling analysis shows that volumes are now large enough that a shift in trajectory can cause D4/D6 RIN prices to move by 20% or more by 2020



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