Get Ready for a Bumpy Ride – *It Could be a Turbulent Year for Gasoline Prices*

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March 15, 2013

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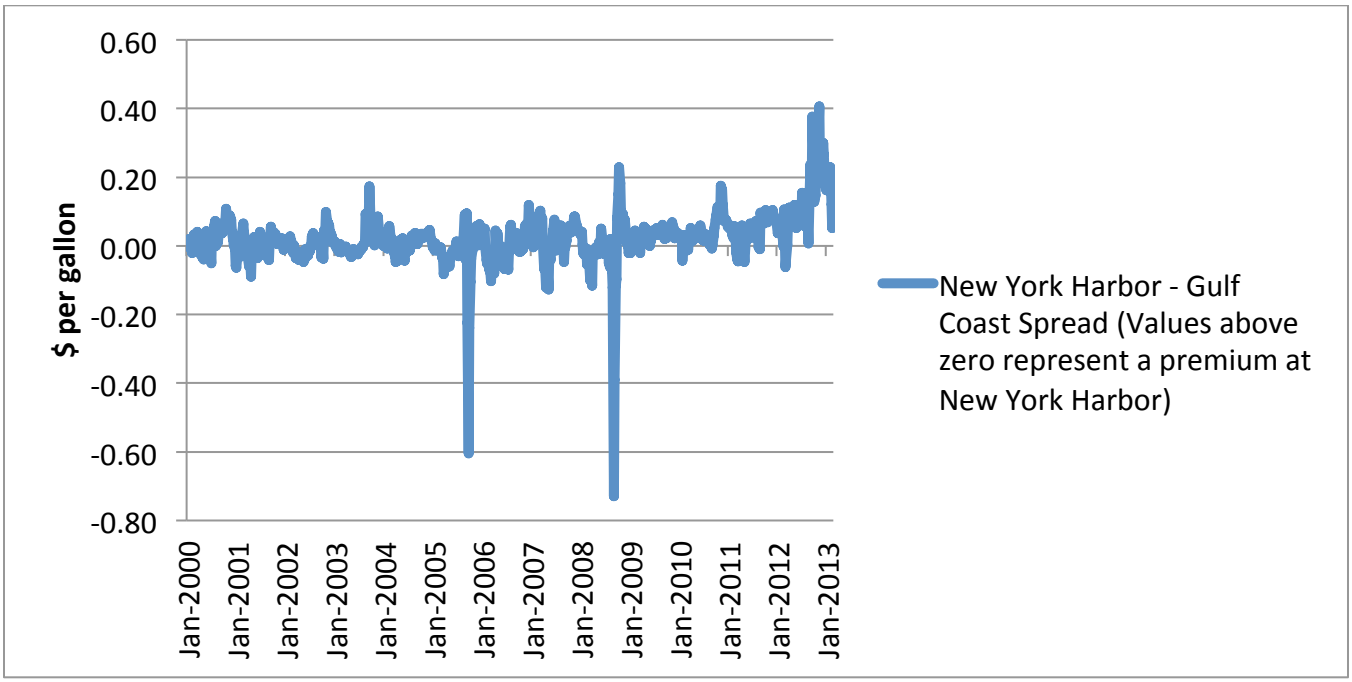
Regulatory constraints are set to drive volatility in the gasoline market over the next 12 to 24 months.

From the summer of 2012 through mid-February of this year, the price differential, or spread, between gasoline in New York Harbor and the Gulf Coast (NYH - GC) had been wider than at any similar period in recent history. During this time, retail gasoline in PADD 1[1] (East Coast) typically sold at a premium of $0.20 - $0.30 per gallon to retail gasoline in PADD 3 (Gulf Coast), well above the historical premium. The spread peaked at $0.41 per gallon in November, although this peak is partially attributed to Hurricane Sandy. The spread began to collapse in mid-February with improvements in the Northeastern supply chain and temporary refining issues in the Gulf Coast. The spread currently sits at a more 'normal' level of about $0.05 per gallon. However, it is far from certain that this calm will persist given the upcoming summer driving season, the tenuous supply situation in the Atlantic Basin (U.S. East Coast and Europe), and several regulatory hurdles which are emerging as serious barriers to the supply of refined products in the United States.

Figure 1. New York Harbor – Gulf Coast Gasoline Spread



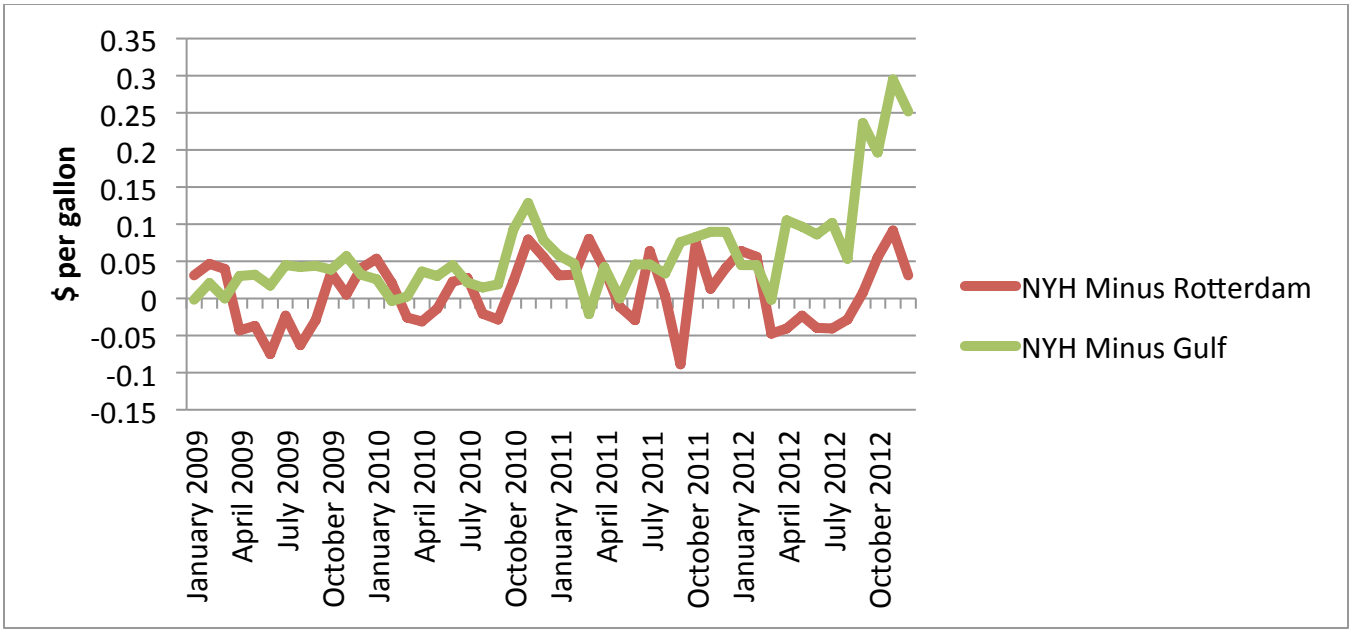
Source: EIA Data, EPRINC Calculations

[1] Petroleum Administration Defense District 1 (East Coast), see figure 9 at the end of the report for a map of all 5 PADDs.
[2] EIA data for PADD 1 product supplied – finished gasoline, for August – Jan 2010-2011, 2011-2012, and 2012-2013.

As it stands now, the duration and depth of the price spread was costly. From the beginning of August 2012 through January 2013, the NYH - GC spread increased retail gasoline expenditures in PADD 1 by approximately $1.5 billion compared to an environment in which NYH - GC spread remained at is Aug 2011 - Jan 2012 level and by $3 billion had the spread remained at its Aug 2010 – Jan 2011 level.[2]

A combination of economic and infrastructure issues culminated in the record NYH - GC spread, but regulatory constraints prevented the spread from being addressed earlier. Several PADD 1 refineries have closed during the past few years due to poor economics. The closures reduced local supplies of gasoline, leading to greater imports from PADD 3 and Europe. This left PADD 1 vulnerable to unexpected refinery outages – which struck this past fall and winter and contributed to the wide spread. The Colonial pipeline, which carries refined product from PADD 3 to PADD 1, is at full capacity (100,000 b/d [barrels per day] expansion underway). Gulf Coast refiners have increased gasoline exports abroad as discounted crudes from the Bakken and Canada have enabled high crude throughput and healthy margins. But the Jones Act has rendered the shipment of these supplies from the Gulf Coast to the East Coast prohibitively expensive; the opportunity for the GC to set the marginal price in NYH does not exist. That leaves relatively expensive Brent-priced gasoline from Europe, a region that has lost 1.8 mm b/d of refining capacity since 2009, as the marginal supply and price setter for PADD 1.

Figure 2. NYH vs. Rotterdam and Gulf gasoline spreads (Gulf is cheaper than Rotterdam)



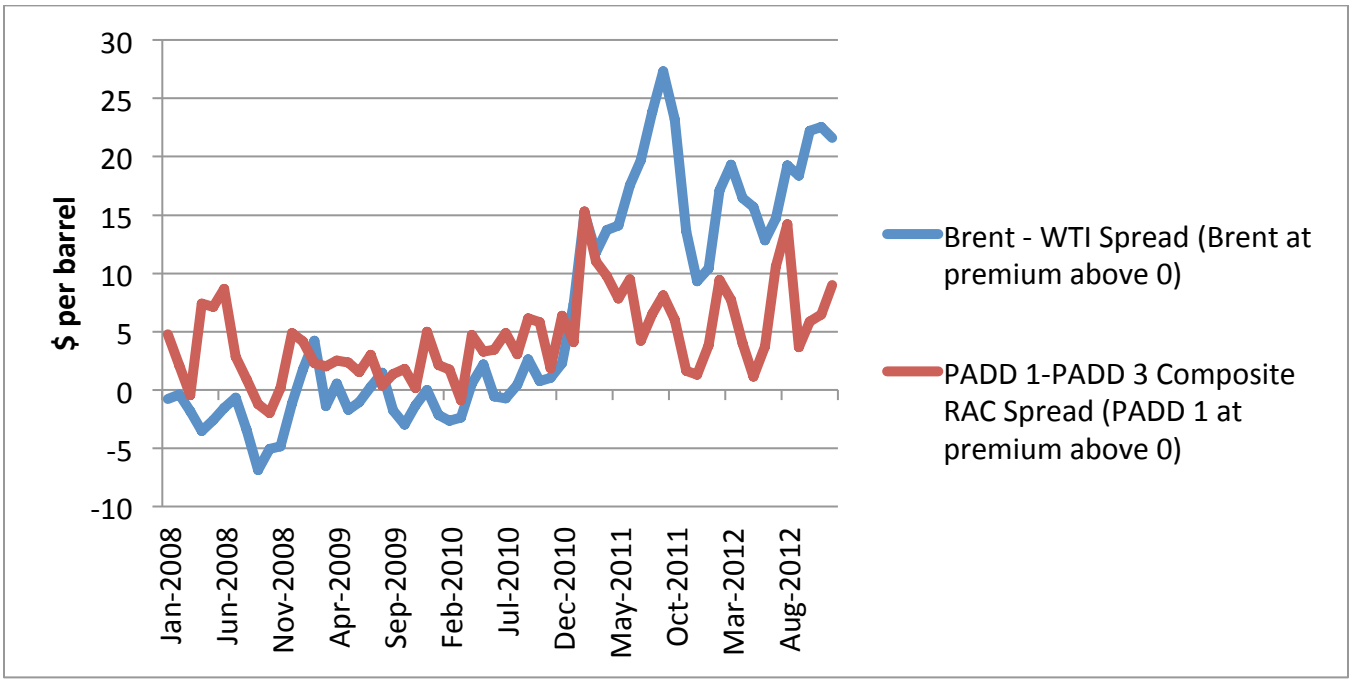
Source: EIA Data, IEA Data, EPRINC Calculations

[2] EIA data for PADD 1 product supplied – finished gasoline, for August – Jan 2010-2011, 2011-2012, and 2012-2013.

The situation could have been much worse for PADD 1 had Delta and the Carlyle Group not purchased two Northeastern refineries scheduled to be shut last year. In April, Delta announced the purchase of ConocoPhillips' 185,000 b/d Trainer refinery and in July the Carlyle Group announced the purchase of Sunoco's 330,000 b/d Philadelphia refinery. One of the main considerations in both purchases was the potential for discounted crude to be shipped by rail from North Dakota's Bakken play. Bakken crude is currently selling at a discount to both Brent and WTI crude markers because of its long distance from major refining centers in need of light sweet - crude. This has left new production somewhat stranded and driven down prices to offset higher transportation costs. Refiners across the U.S. are utilizing the optionality provided by rail to ship discounted Bakken crude to their facilities, thus picking up some of the steep Bakken discount.

Figure 3 shows both the Brent - WTI spread and the PADD 1 – PADD 3 refinery acquisition cost spread.

Figure 3. The Brent-WTI Spread and PADD 1 – PADD 3 Refiner Crude Cost Spread



Source: EIA Data, EPRINC Calculations

The recent decoupling of the two spreads suggests that shipments of Bakken and other stranded crudes by rail to PADD 1 are having a noticeable impact in reducing PADD 1 crude costs, thus contributing to a healthier operating environment for the remaining PADD 1 refiners. PADD 1 refiners have replaced some Brent-priced imports such as Nigerian light - sweet, which currently sells at a premium of approximately $20 per barrel to WTI, with light - sweet crude sent by rail from the Bakken.

Even with transportation costs included, these rail shipments from North Dakota sell at a discount of several dollars to waterborne Brent imports from abroad. This effectively lowers operating costs relative to a similar refinery processing strictly Brent-priced crude.

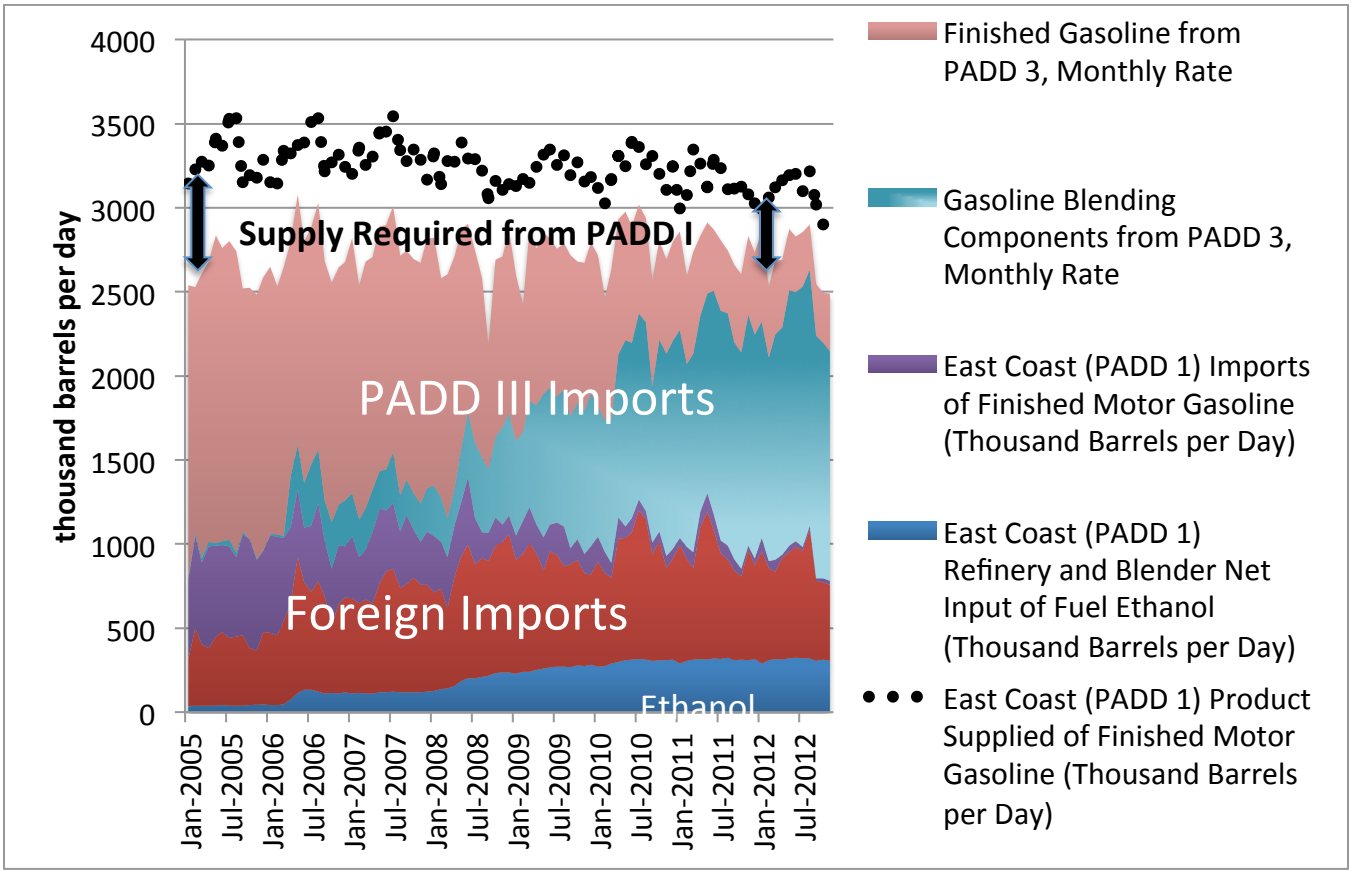
The Philadelphia and Trainer refineries were both scheduled to be shut down in 2012. Had they not been rescued, PADD 1 refining capacity would be 40% lower than its current operable capacity of 1.29 mm b/d and the region would be subject to increased imports and volatility. PADD 1 has lost 400,000 b/d of capacity, nearly 25%, since December 2009.

Regulatory Constraints

Over the next 12 to 24 months, expect regulatory constraints to create further volatility in the U.S. gasoline market. Gulf refiners will continue to produce a large surplus of gasoline as long as margins remain healthy. A small portion of this surplus will eventually find its way into the Colonial pipeline when expansions are completed later this year, but the bulk of the surplus will be exported to Mexico, Central America and South America rather than PADD 1. The Jones Act requires that products shipped from one U.S. port to another must use a U.S. built, flagged and crewed vessel. Such vessels are in limited supply and extremely costly, effectively eliminating the possibility of shipping gasoline from the Gulf to the East Coast by sea. The PADD 1 gasoline market remains in a delicate balance and any supply issues such as unexpected maintenance in the Northeast, reduced shipments from PADD 3 through the Colonial pipeline or from the struggling European refining sector could cause the spread to reopen. Logistic and economic constraints imposed by the Jones Act prevent the market from adjusting in a timely manner.

Figure 4 shows sources of PADD 1 gasoline supplies. Note that gasoline imports to PADD 1 have remained stable in recent years as both demand and domestic supply have fallen, increasing PADD 1's relative dependence on gasoline supplies from other regions and countries.

Figure 4. PADD 1 Sources of Gasoline Supply



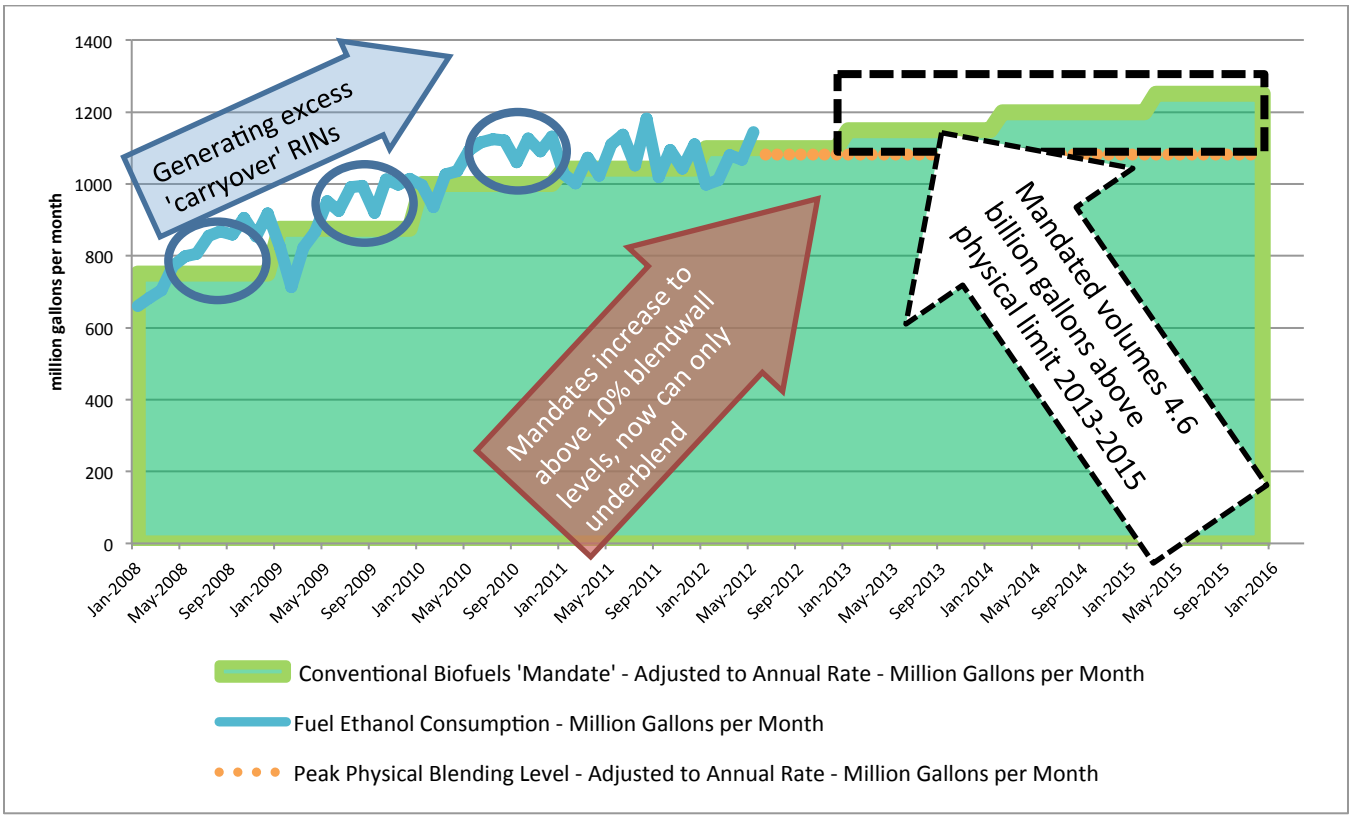
Source: EIA data

Complicating matters, the gasoline market is in the first stages of its crash into the 'blend wall'. Refiners and other obligated parties have been forced into 'underblending' mode for 2013 and beyond. RFS (Renewable Fuel Standard) volumetric requirements for 2013 are greater than the volumes obligated parties can blend under the physical 10% blend wall. This necessitates the drawdown of carryover RIN (Renewable Identification Numbers) stockpiles to meet obligations in 2013 and 2014 given the absence of economically and logistically feasible alternatives to meeting RFS obligations.[3] Carryover RINs are expected to be exhausted sometime in 2014. This has caused what could be considered panic buying over the past few weeks. RIN prices skyrocketed from barely more than a nickel on December 31 to over a dollar on March 7. Ongoing RIN price volatility does not bode well for

[3] When compared on a cost per BTU basis (rather than a cost per gallon of fuel), E15 and E15 are more expensive than gasoline and have been for many years. Therefore, consumers will be unlikely to adopt these fuels unless the pricing relationship reverses. Widespread adoption of E15 and E85 is also hindered by infrastructure constraints such as a relatively small number of E85 and E15 pumps as well as a limited vehicle fleet built and approved for E85 and E15.

gasoline market stability going into the summer and should RIN costs remain at elevated levels, cost pass-through will soon be felt at the pump.

Figure 5. Underblending: Ethanol Blending, RFS Mandates and RIN Balances



Source: EIA data, EPRINC calculations and assumptions.

The U.S. refined products market has entered a phase in which the RFS discourages the supply of gasoline and diesel into the U.S. market. Low cost RFS compliance options such as blending ethanol at under 10% concentration, the banking of carryover RINs and the purchase of sub-$0.05 per gallon RINs are nearly exhausted. Obligated parties must now move up the compliance cost curve. This implies purchasing relatively expensive RINs, exporting greater volumes of gasoline and diesel (only fuel supplied to the U.S. market falls under the RFS, therefore exports do not count towards renewable volumetric obligations), importing less gasoline (imports do require RFS compliance) and blending more biodiesel (currently 10% more expensive than petroleum based diesel[4]).

[4] According to the Department of Energy's January 2013 "Alternative Fuel Price Report," http://www.afdc.energy.gov/uploads/publication/alternative_fuel_price_report_jan_2013.pdf

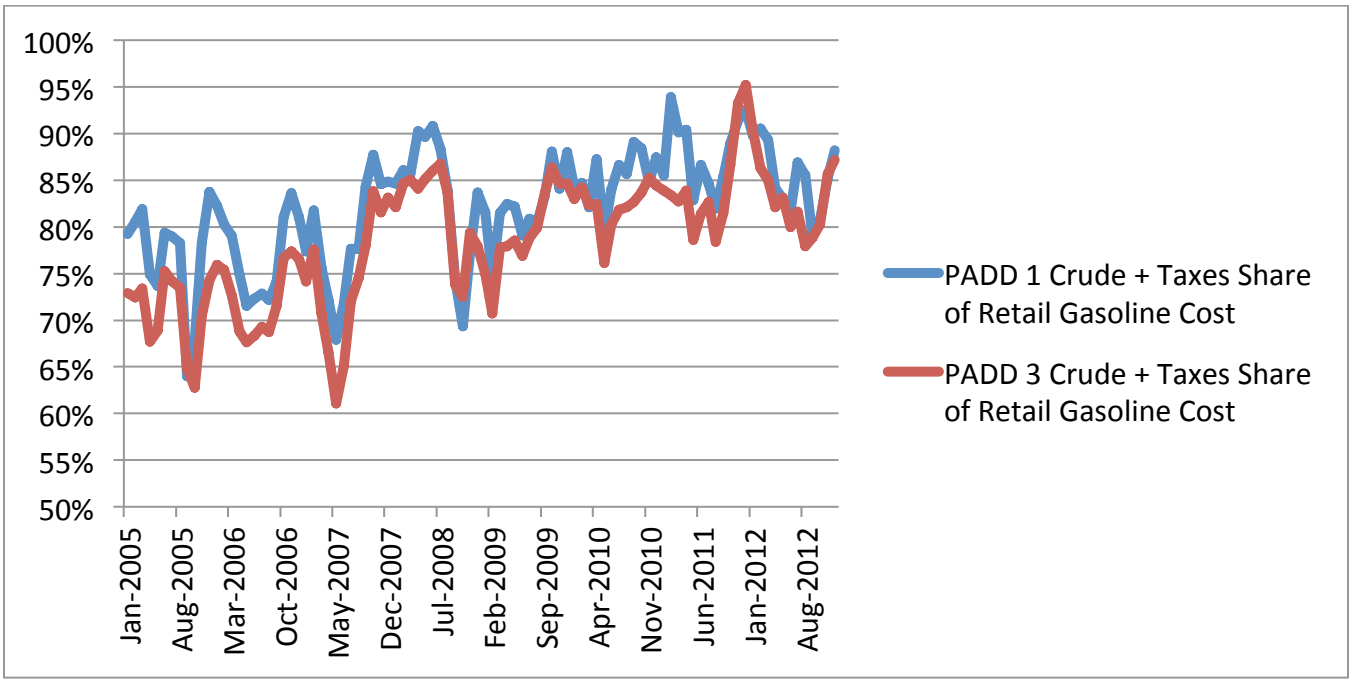
Conclusion

The existing national regulatory framework and physical infrastructure includes fuel mandates, constraints on refinery additions and operations, bottlenecks in the distribution of crude oil to processing centers and in some cases constraints on the movement of transportation fuels. The recent volatility in gasoline prices in the Northeast is clearly driven by market forces, but the slow pace at which the market adjusted to the price run up suggests more dislocations are on the horizon. In a recent public presentation at CSIS, Heather Zichal, Deputy Assistant to the President for Energy and Climate Change, raised the question of whether we need to revisit our regulatory programs designed before the recent surge in domestic production of oil and gas. The recent volatility in PADD 1 gasoline prices and emerging volatility in the ethanol and RIN markets suggest she may be right.

A Note on the Cost of Gasoline

Since 2005, the cost of crude oil along with federal and state gasoline taxes has accounted for about 80% of the retail price of gasoline.[5] The remaining 20% of the retail price covers the costs and profits associated with the refining, distribution and retail sale of gasoline. Over the past several years crude oil's share of the price of gasoline has grown, reducing refining and distributions' relative contribution to the retail cost of gasoline. Figure 6 shows crude oil and taxes' combined share of the retail gasoline price in PADDs 1 and 3.[6] Crude oil and taxes currently account for about 90% of the cost of gasoline in both PADD 1 and PADD 3.

Figure 6. Crude Oil and Taxes' Share of the Retail Gasoline Price



Source: EIA data, EPRINC calculations. Assumes $0.50/gallon combined federal and state gasoline tax for PADD 1 and $0.40/gallon for PADD 3. Crude oil costs assume 1 gallon of crude oil per gallon of gasoline; EIA data for the composite refiner acquisition cost of crude for a given PADD.

Figures 7 and 8 below show the actual cost contribution of crude oil, taxes and refining/distribution/retail markup to the retail gasoline price using a simple gasoline crack spread. Note that PADD 1 has a higher retail price due to both higher crude costs and taxes. Refining and

[5] For actual gasoline taxes by state see API's gasoline tax map: http://www.api.org/oil-and-natural-gas-overview/industry-economics/~/media/Files/Statistics/Gasoline-Tax-Map.ashx

[6] Crude oil costs assume 1 gallon of crude oil per gallon of gasoline; EIA data for the composite refiner acquisition cost of crude by PADD. Federal and state taxes set at a combined $0.50 for PADD 1 and $0.40 for PADD 3.

distribution costs were slightly lower in 2013, likely due to lower refining margins in PADD 1 offsetting higher transportation costs.

Figure 7. PADD 3 Crude Oil and Taxes' Share of the Retail Gasoline Price

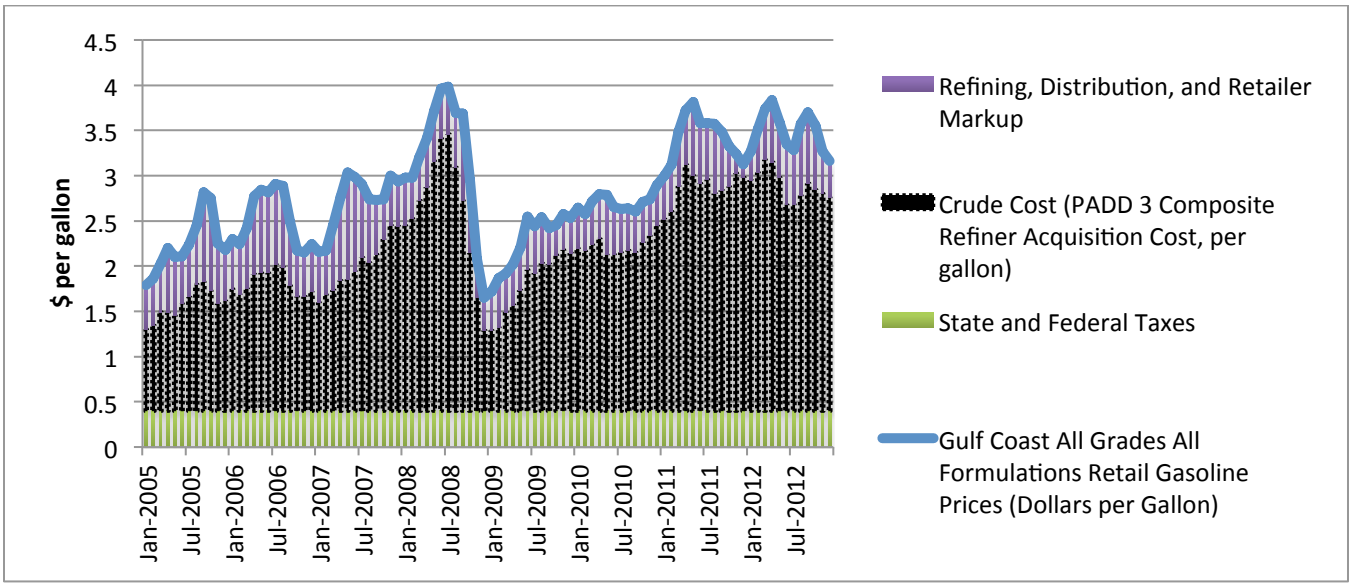
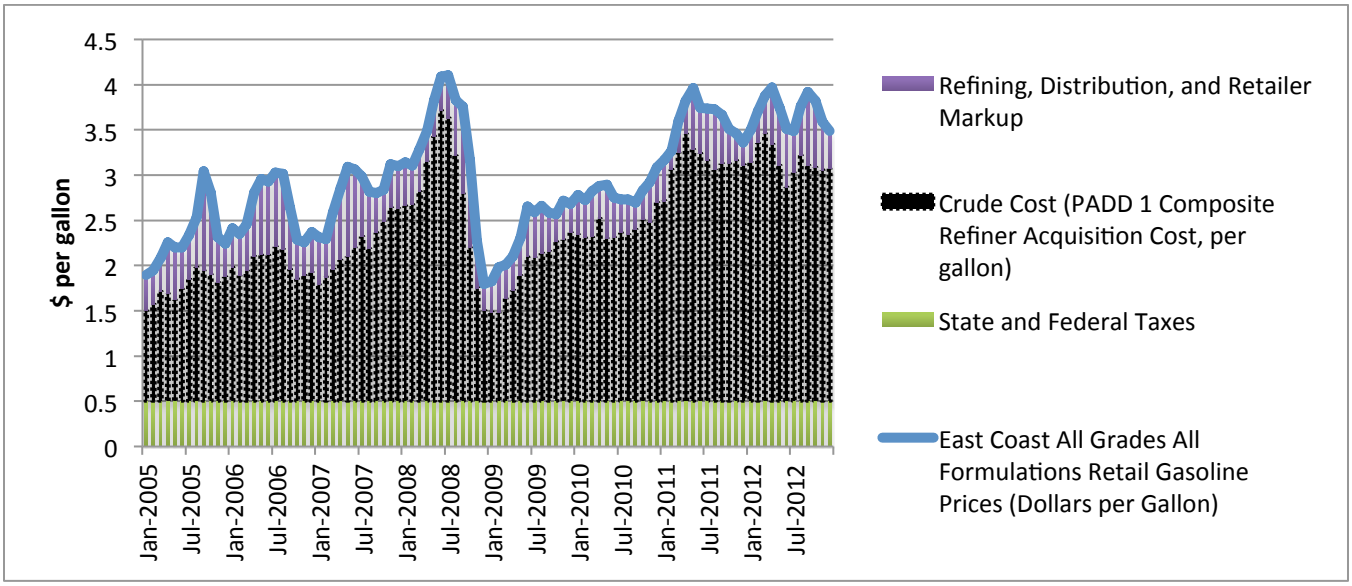
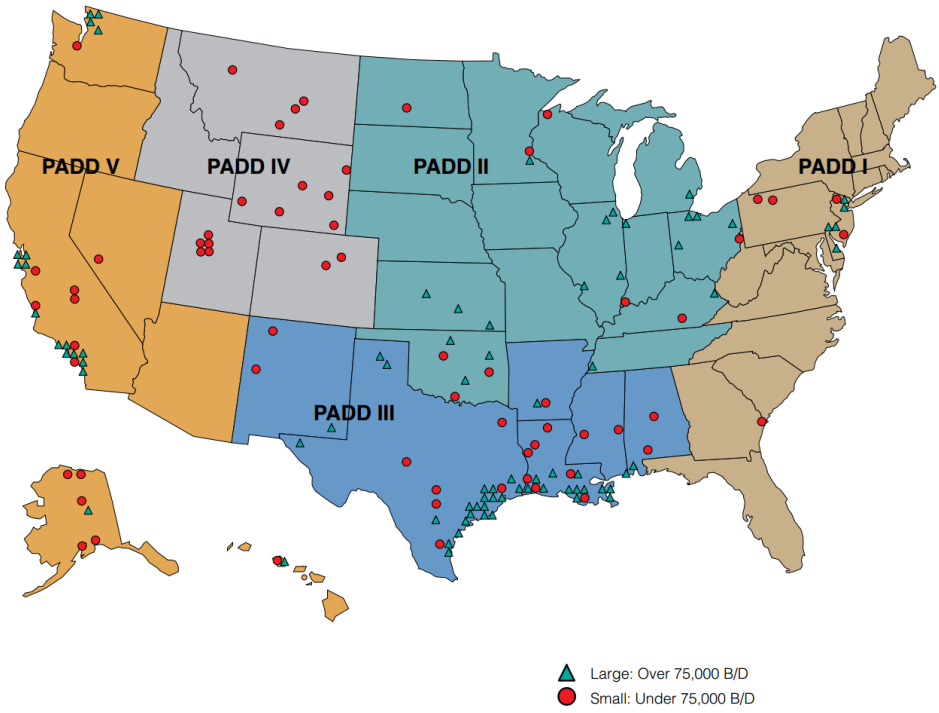


Figure 8. PADD 1 Crude Oil and Taxes' Share of the Retail Gasoline Price



Source for 7 and 8: EIA data, EPRINC calculations and estimates

Figure 9. U.S. Petroleum Administration Defense Districts



Source: EIA