



Freeze It – A Proposal for Implementing RFS2 through 2015

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In our *farmdoc daily* post on [February 13](#) of this year, we traced through the implications of implementing RFS2 as currently quantified through 2015. We made the following qualifying assumptions in that analysis:

- Cellulosic mandates would continue to be written down to near zero in each year,
- Total mandated biofuels quantities would not be altered,
- Annual imports and exports of ethanol would be equal at 500 million gallons,
- A domestic ethanol blend wall of 12.9, 13.1 and 13.4 billion gallons in 2013, 2014, and 2015, respectively,
- The annual mandated minimum for biomass-based biodiesel would remain at 1.28 billion gallons,
- Ethanol (D6) RINs stocks totaled 2.6 billion gallons at the start of 2013, and
- Biodiesel (D4) RINs stocks totaled 330 million gallons (ethanol equivalent) at the beginning of 2013.

That analysis resulted in the following conclusions:

- Annual U.S. ethanol production would equal the blend wall amounts of 12.9, 13.1, and 13.4 billion gallons in 2013, 2014, and 2015, respectively,
- Annual corn consumption for ethanol production would be 4.61, 4.68, and 4.79 billion bushels in 2013, 2014, and 2015, respectively,
- Biomass-based biodiesel production would increase from 1.28 billion gallons in 2013, to 2.57 billion gallons in 2014, and 4.73 billion gallons in 2015,
- Feedstock requirements for biomass-based biodiesel production would increase from 9.6 billion pounds in 2013, to 19.3 billion pounds in 2014, and 35.5 billion pounds in 2015,
- Ethanol RINs stocks would be depleted sometime in 2014, and
- Biodiesel RINs stocks would be depleted in 2013.

We found these outcomes problematic for two reasons. First, the capacity to produce the required level of

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biomass-based biodiesel beyond 2014 does not currently exist. Second, the feedstock requirements for biomass-based biodiesel production in 2014 and 2015 would overwhelm those markets. These issues stem primarily from the assumed very slow expansion in the size of the domestic ethanol blend wall. Ethanol consumption is being limited by a lack of growth in domestic motor fuel consumption and slow growth in the consumption of E15 and E85. The ethanol blend wall results in larger quantities of advanced biofuels to meet the total RFS. These blend wall constraints have now been expressed in the form of [rapidly increasing D6 RINs](#) prices since the first of the year. These issues become even more problematic beyond 2015.

Here, we present a proposal for implementing the RFS2 through 2015 that recognizes the constraints implied by the E10 blend wall and will avert the impact of the issues identified in the previous analysis. We believe the proposal is realistic because it balances the competing interests of various parties in the policy process and allows some additional time for regulators, legislators, and industry participants to consider any adjustments to RFS2 that might be needed in the longer-run. Our proposal is to simply cap or “freeze” the advanced biofuels and total mandates for 2014 and 2015 at the 2013 level of 2.75 billion gallons for advanced biofuels and 16.55 billion gallons for all biofuels. The RFS2 currently requires 3.75 billion gallons of advanced biofuels in 2014 and 5.5 billion gallons in 2015. The mandates are for 18.15 billion gallons of all biofuels in 2014 and 20.5 billion gallons in 2015.

Tables 1 through 7 are similar to the tables included in our previous analysis and trace through the implications of this proposal, with one change in the assumptions compared to our previous analysis. Due to the re-instatement of the biodiesel tax credit of \$1 per gallon (and assuming the tax credit is extended to 2014 and 2015), the analysis here assumes that imported Brazilian sugarcane ethanol will have an economic disadvantage to biomass-based biodiesel in meeting the undifferentiated advanced biofuels requirements. As a result, annual ethanol imports are assumed to be 200 million gallons rather than 500 million gallons assumed in the previous analysis.

Table 1. U.S. Renewable Fuels Standard for 2013-2015--Billion Gallons						
Calendar		Advanced				Renewable
Year	Total	Cellulosic	Biodiesel(a)	Undifferentiated	Total	
2013	16.55	1.00	1.28	0.47	2.75	13.80
2014	18.15	1.75	*	2.00	3.75	14.40
2015	20.50	3.00	*	2.50	5.50	15.00

(a) each gallon of biodiesel receives 1.5 gallons credit towards RFS
* minimum of 1.0 billion gallons

Table 2. Implementation of U.S. Renewable Fuels Standard for 2013-2015 under a Freeze Proposal--Billion Gallons						
Calendar		Advanced				Renewable
Year	Total	Cellulosic	Biodiesel(a)	Undifferentiated	Total	
2013	16.55	0.00	1.28	0.47	2.75	13.80
2014	16.55	0.00	1.28	0.47	2.75	13.80
2015	16.55	0.00	1.28	0.47	2.75	13.80

(a) each gallon of biodiesel receives 1.5 gallons credit towards RFS
* minimum of 1.0 billion gallons

Table 3. Writedown of U.S. Renewable Fuels Standard for 2013-2015 under a Freeze Proposal--Billion Gallons						
Calendar		Advanced				Renewable
Year	Total	Cellulosic	Biodiesel(a)	Undifferentiated	Total	
2013	0.00	1.00	0.00	0.00	0.00	0.00
2014	1.60	1.75	0.00	1.53	1.00	0.60
2015	3.95	3.00	0.00	2.03	2.75	1.20

(a) each gallon of biodiesel receives 1.5 gallons credit towards RFS
* minimum of 1.0 billion gallons

Table 4. Advanced RFS for 2013-2015--Billion Gallons					
Calendar		Cellulosic		Undifferentiated	
Year	Total	Cellulosic	Biodiesel	Biodiesel	Brazilian Ethanol
2013	2.75	0	1.28	0.00	0.20
2014	2.75	0	1.28	0.42	0.20
2015	2.75	0	1.28	0.42	0.20

Notes: Each gallon of biodiesel receives 1.5 gallons of credit toward meeting RFS mandates. Undifferentiated biodiesel in 2013 is assumed to be zero due to the use of 220 million gallons of D4 biodiesel RINS credits.

Table 5. U.S. Ethanol Balance Sheet and Implied Corn Consumption for 2013-2015---Billion						
Calendar	Ethanol					Corn Consumption (bil. bu.)
	RFS	Consumption	Imports	Exports	Production	
2013	13.8	12.9	0.20	0.50	13.20	4.80
2014	13.8	13.1	0.20	0.50	13.40	4.87
2015	13.8	13.4	0.20	0.50	13.70	4.98

Note: Assumes zero stock change each year. All ethanol variables exclude denaturant volumes.

Table 6. U.S. Renewable (D6) RINS Stock--Billion Gallons				
Calendar	Mandate -			
	Beginning	Production	Exports	Ending
2013	2.6	0.6	0.5	1.5
2014	1.5	0.4	0.5	0.6
2015	0.6	0.1	0.5	0.0

Table 7. U.S. Biodiesel Production for 2013-2015--Billion Gallons except Feedstock					
Calendar	Mandate	Undifferentiated		Total	Feedstock Requirement (bil. lbs.)
		Biodiesel Gap	Renewable Gap		
2013	1.28	0.00	0.00	1.28	9.6
2014	1.28	0.42	0.00	1.70	12.8
2015	1.28	0.42	0.00	1.70	12.8

The results of the analysis of this proposal differ from the results of the previous analysis of full implementation of RFS2 through 2015 as follows:

- Annual domestic ethanol production is 300 million gallons larger as a result of smaller Brazilian sugarcane ethanol imports,
- Annual corn consumption for domestic ethanol production is 190 million bushels larger,
- D6 RINs stocks are sufficient to fill the difference between the ethanol blend wall and the mandate for renewable biofuels through 2015,
- Domestic biomass-based biodiesel requirements are reduced from 2.57 billion gallons to 1.7 billion gallons in 2014 and from 4.73 billion gallons to 1.7 billion gallons in 2015, and
- Biomass-based feedstock requirements are reduced from 19.3 to 12.8 billion pounds in 2013 and from 35.5 to 12.8 billion pounds in 2014.

There are several critical assumptions in this analysis that could impact the conclusions. Three assumptions are particularly important. First, if the biodiesel tax credit is not extended to 2014 and 2015 Brazilian ethanol would likely be more competitive with biomass-based biodiesel in meeting the advanced biofuels mandate so that imports would be larger than assumed here. Larger imports would in turn reduce domestic ethanol production and consumption under the blend wall assumption and therefore reduce the

amount of corn used to produce ethanol. There would likely be minimal impact on biomass-based biodiesel production and consumption since larger quantities would be required to replace domestic ethanol pushed out by imported ethanol. Second, this analysis assumes that only biomass-based biodiesel and Brazilian ethanol are available to meet the advanced biofuels requirements. In fact, small quantities of other biofuels are available and could reduce the production of biomass-based biodiesel from the levels assumed here. EPA, for example, projects that consumption of other advanced biofuels could reach 150 million gallons in 2013. Third, the assumption about the size of the domestic ethanol blend wall is important in determining the amount of RINs stocks needed to meet the RFS2. Based on the current slow pace of implementation of E15 and the non-competitive pricing of E85 the growth assumption used here may be too optimistic. A smaller blend wall would require a faster pace of RINs use or slightly larger production and consumption of biomass-based biodiesel in 2014 and 2015 to meet the renewable fuels mandate gap.

Implications

We believe our proposal to freeze RFS2 mandates in 2014 and 2015 at 2013 levels represents a pragmatic way forward. It is realistic in that it would not force large scale adoption of E15, E85, or biodiesel. This is particularly important since it is by no means clear whether the infrastructure investments necessary for widespread E15 or E85 adoption could actually be made in this time frame. There is also uncertainty whether sufficient biodiesel production capacity would be available. However, the proposal does provide incentive for modest growth in E15 and/or E85 penetration by keeping the mandate for renewable fuels above the current E10 blend wall. Even with relatively slow growth in domestic ethanol production through 2015, the proposal would maintain a high rate of use of ethanol production capacity and would provide for modest growth in the large demand base for corn. An increasing percentage of the domestic biodiesel capacity would be utilized without straining that capacity. Similarly, requirements for biodiesel feedstock would grow, but the growth would not overwhelm those markets. Obligated parties in the motor fuel supply chain could more easily meet their blending obligations with a combination of physical blending and use of RINs stocks. Finally, implementation of the proposal would also likely reduce the price of D6 ethanol RINs and eliminate the differential impact of those high prices on obligated parties. The key for the success of the proposal is that regulators, legislators, and industry participants use the next two years to develop a mutually agreeable biofuels policy beyond 2015.