

# RENEWABLE FUEL STANDARD ASSESSMENT WHITE PAPER

## Blend Wall/ Fuel Compatibility Issues

The Committee on Energy and Commerce is issuing a series of white papers as the first step in reviewing the renewable fuel standard (RFS). The RFS was created by the Energy Policy Act of 2005 and greatly expanded under the Energy Independence and Security Act of 2007. It sets targets and timetables for four categories of biofuels to be added into the nation's transportation fuel supply. Each category must meet specific requirements as to its feedstock and its lifecycle greenhouse gas emissions. The four categories are: conventional biofuel (corn-derived ethanol), biodiesel, cellulosic biofuel, and undifferentiated advanced biofuel. The targets for the four categories total 16.55 billion gallons for 2013, of which not more than 13.8 billion gallons is conventional biofuel. Conventional biofuel is scheduled to reach its cap of 15 billion gallons by 2015, while the other categories continue to rise until the total RFS reaches 36 billion gallons by 2022.

It has been more than five years since the RFS was last revised, and we now have a wealth of actual implementation experience with it. In some respects, the RFS has unfolded as expected, but in others it has not. Several implementation challenges have emerged that received little if any consideration prior to passage of the Energy Independence and Security Act of 2007. Furthermore, the overall energy landscape has changed since 2007. It is time to undertake an assessment of the RFS.

For this reason, we are initiating a series of white papers setting out a number of emerging issues with the RFS. Each will provide an overview of an issue and solicit input from interested stakeholders in the form of answers to questions posed. This, the first white paper, will address the so-called blend wall and fuel compatibility issues. Four subsequent white papers with questions will address other economic, environmental, and policy issues.

### **The Blend Wall and Fuel Compatibility Issues - Overview**

Chief among the challenges posed by the RFS is the -- blend wall -- the limit at which ethanol can be readily added to the gasoline supply in order to comply with the RFS. Gasoline blends containing up to 10 percent ethanol (E-10) have long been approved and used in motor vehicles and other gasoline-powered equipment. However, the targets in the RFS may soon necessitate that more than 10 percent be added to the gasoline supply.<sup>1</sup> Such blends have not been used previously in conventional vehicles. It should be noted that there are roughly 9 million flexible fuel vehicles that are designed to run on blends containing up to 85 percent ethanol (E-85), out of 225 million passenger vehicles in the U.S.<sup>2</sup> However, these higher ethanol blends are rarely used and most flexible fuel vehicles run almost exclusively on E-10.<sup>3</sup>

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<sup>1</sup> Annual Energy Outlook 2012 p. 97.

<sup>2</sup> U.S. Energy Information Administration (2012). Annual Energy Outlook 2012, Table 40, *available at* <http://www.eia.gov/forecasts/aeo/data.cfm>

<sup>3</sup> Annual Energy Outlook 2012, p. 97.

The blend wall is approaching much faster than anticipated. When the RFS was last revised in 2007, America was using 142 billion gallons of gasoline annually and the Energy Information Administration (EIA) projected continued increases of about 1 percent annually.<sup>4</sup> In retrospect, 2007 turned out to be the peak year for gasoline consumption, which has declined ever since. According to EIA, 134 billion gallons were used in 2012, well below the approximately 150 billion gallons that had been projected.

Thus, the mandated amounts of ethanol in the RFS must be mixed into a considerably smaller-than-expected pool of gasoline. The ethanol portion of the mandate is no more than 13.8 billion gallons in 2013, 14.4 billion in 2014, and 15 billion in 2015 and thereafter. Depending on overall gasoline usage and other factors, the 10 percent blend wall may be reached as soon as late 2013 or 2014.<sup>5</sup>

The Clean Air Act prohibits any new fuel or fuel additive from being introduced into commerce unless EPA grants a waiver based on an applicant's demonstration that the new fuel will not cause or contribute to vehicles failing to meet their emissions standards over their useful life.<sup>6</sup> Gasoline containing up to 10% ethanol received such a waiver in 1978, and ethanol manufacturers submitted a waiver request for gasoline blends containing up to 15% ethanol (E-15) in 2009.<sup>7</sup> After extensive testing of E-15, in 2010, EPA granted a partial waiver and approved its use for model year 2001 and newer cars and light duty trucks.<sup>8</sup> However, the agency did not approve E-15 for use in vehicles older than model year 2001 (more than 30 percent of the nation's fleet) as well as all motorcycles, heavy duty vehicles, boats, off-road vehicles like snowmobiles, and small engine equipment like lawnmowers and chain saws.

Thus, the waiver allowing sale of E-15 does not allow its sale for use in hundreds of millions of gasoline-powered vehicles and other pieces of equipment. Concerns have been raised that mistakenly using E-15 in these products could cause engine damage.<sup>9</sup> Major automakers have argued that using E-15 will void most warranties, including those of post-2001

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<sup>4</sup> EIA Frequently Asked Questions; How much gasoline does the United States consume?, at <http://www.eia.gov/tools/faqs/faq.cfm?id=23&t=10>; EIA Annual Energy Outlook 2007 p. 73.

<sup>5</sup> Congressional Research Service, Renewable Fuel Standard (RFS): Overview and Issues, March 14, 2013, p. 28. In addition to questions about overall gasoline usage, obligated parties are allowed to under-comply with the RFS targets in one year in exchange for over-complying the next. Thus, the exact date of the blend wall cannot be precisely determined.

<sup>6</sup> Clean Air Act section 211(f).

<sup>7</sup> See U.S. EPA, *Notice of Receipt of a Clean Air Act Waiver Application To Increase the Allowable Ethanol Content of Gasoline to 15 Percent; Request for Comment*, 74 Fed. Reg. 18228 (Apr. 21, 2009).

<sup>8</sup> EPA, Fuels and Fuel Additives, E15 (a blend of gasoline and ethanol), at <http://www.epa.gov/otaq/regs/fuels/additive/e15/>.

<sup>9</sup> See, Coordinating Research Council, Intermediate-Level Ethanol Blends Engine Durability Study, April 2012 at <http://www.crao.com/reports/recentstudies2012/CM-136-09-1B%20Engine%20Durability/CRC%20CM-136-09-1B%20Final%20Report.pdf>; National Renewable Energy Laboratory, High Ethanol Fuel Endurance: A Study of the Effects of Running Gasoline with 15% Ethanol Concentration in Current Production Outboard Four-Stroke Engines and Conventional Two-Stroke Outboard Marine Engines, June 30, 2011, at <http://www.nrel.gov/docs/fy12osti/52909.pdf>.

vehicles.<sup>10</sup> Nonetheless, there are serious questions whether E-15 can be sold at gas stations alongside E-10 without widespread instances of misfueling. AAA has warned against the introduction of E-15 because of misfueling risks.<sup>11</sup>

The closest precedent to the shift to E-15 was the transition from leaded to unleaded gasoline undertaken by EPA in the 1970s and 1980s. In many respects, that was an easier transition because the older leaded-gasoline engines could run with unleaded gasoline, while the newer unleaded-only vehicles were designed so that the nozzles carrying leaded gasoline did not fit into the gas tank. Even so, widespread misfueling occurred, suggesting bigger problems this time around.

As part of the approval process for this new fuel, EPA is requiring fuel retailers to submit a misfueling mitigation plan (MMP) which must be approved before E-15 is offered for sale.<sup>12</sup> The MMP includes labeling requirements for pumps dispensing E-15 as well as other anti-misfueling measures. However, some have questioned whether misfueling can be prevented.<sup>13</sup> Furthermore, compliance with the MMP provides little liability protection for fuel producers and retailers should consumer misfueling occur.

Fuel retailers may incur significant up-front costs to make E-15 available. Most gas pumps and underground storage tanks are not approved to handle this new fuel. Thus far, only a handful of gas stations currently carry E-15.<sup>14</sup>

EPA's partial waiver and MMP process has made it technically possible but potentially difficult for America's 160,000 gas stations to begin carrying E-15. The RFS does not require any particular gas station to sell E-15 or any consumer to use it, but unless many do, the evidence suggests that it will not be possible for the nation as a whole to remain in compliance with the targets in the RFS.<sup>15</sup> To the extent E-15 does become available and the MMPs are not successful, there is a risk of misfueling for the millions of owners of gasoline powered vehicles and other equipment that was not designed to use it. The potential mismatch between what the RFS will soon require and what the nation is ready to handle is one of the key reasons why we are undertaking this assessment.

EPA does have the authority to waive or modify the ethanol targets in the RFS, but the agency has interpreted this authority very narrowly to apply only under very extreme circumstances. Most recently, several States, in response to last summer's drought, asked for a waiver from EPA in meeting the RFS requirements. EPA denied this waiver, arguing that there

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<sup>10</sup> Congressional Research Service, Intermediate-Level Blends of Ethanol in Gasoline, and the Ethanol "Blend Wall," July 1, 2011, p. 5.

<sup>11</sup> AAA Press Release, New E15 Gasoline May Damage Vehicles and Cause Consumer Confusion, November 30, 2012.

<sup>12</sup> EPA, Fuels and Fuel Additives, E15 Misfueling Mitigation Plans, at <http://www.epa.gov/otaq/regs/fuels/additive/e15/e15-mmp.htm>

<sup>13</sup> See, Testimony of Jeffrey Miller, on behalf of the National Association of Convenience Stores (NACS), before the House Energy and Commerce Committee, Subcommittee on Energy and Power, May 5, 2011, at <http://archives.republicans.energycommerce.house.gov/Media/file/Hearings/Energy/050511/Miller.pdf>

<sup>14</sup> Congressional Research Service, Renewable Fuel Standard (RFS): Overview and Issues, March 14, 2013, p.29.

<sup>15</sup> Id. at 28.

was no clear evidence that harm from high corn prices was directly attributable to the RFS. This waiver denial has raised concerns whether the existing waiver process could be used to address any blend wall issues that may arise.

### **Questions for Stakeholder Comment**

1. To what extent was the blend wall anticipated in the debates over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?
2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?
3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?
4. What is the likely impact, if any, of the blend wall on retail gasoline prices?
5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?
6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?
7. Is E-15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E-85 and other fuels that prevent their misfueling that can also be applied to E-15? What specific actions are companies taking to address potential misfueling concerns under MMPs?
8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?
9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?
10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?
11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?

Please respond by April 5, 2013, to [RFS@mail.house.gov](mailto:RFS@mail.house.gov). Should you have any questions, you may contact Majority staff Ben Lieberman at (202) 225-2927, or Minority staff Alexandra Teitz at (202) 225-4409.