



## Kentucky Journal of Equine, Agriculture, & Natural Resources Law

Volume 9 | Issue 1

Article 8

2016

### EPA Not to Blame for RFS Pitfalls: A Call to Congress to Restructure the RFS Program

Garlan Joseph VanHook  
*University of Kentucky*

Follow this and additional works at: <https://uknowledge.uky.edu/kjeanrl>



Part of the [Environmental Law Commons](#), and the [Oil, Gas, and Mineral Law Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

#### Recommended Citation

VanHook, Garlan Joseph (2016) "EPA Not to Blame for RFS Pitfalls: A Call to Congress to Restructure the RFS Program," *Kentucky Journal of Equine, Agriculture, & Natural Resources Law*. Vol. 9 : Iss. 1 , Article 8. Available at: <https://uknowledge.uky.edu/kjeanrl/vol9/iss1/8>

This Note is brought to you for free and open access by the Law Journals at UKnowledge. It has been accepted for inclusion in *Kentucky Journal of Equine, Agriculture, & Natural Resources Law* by an authorized editor of UKnowledge. For more information, please contact [UKnowledge@lsv.uky.edu](mailto:UKnowledge@lsv.uky.edu).

# EPA NOT TO BLAME FOR RFS PITFALLS: A CALL TO CONGRESS TO RESTRUCTURE THE RFS PROGRAM

*Garlan Joseph VanHook\**

## I. INTRODUCTION

Congress created the Renewable Fuel Standard (“RFS”) in 2005 and greatly enhanced the legislation in 2007.<sup>1</sup> The RFS mandated minimum volumes of renewable fuel that must be blended into the volume of gasoline produced in the United States during the year.<sup>2</sup> The Environmental Protection Agency (“EPA”) was given authority to enforce the RFS and adjust the requirements as necessary.<sup>3</sup>

The RFS, codified under 42 U.S.C. § 7545(o)(2), established fuel blending minimums that were to increase, over time, up to 36 billion gallons in the year 2022.<sup>4</sup> The original applicable minimums for 2015 and 2016 were 20.5 and 22.25 billion gallons respectively.<sup>5</sup> The EPA has been challenged with the annual task of establishing blending volume requirements and enforcement mechanisms.<sup>6</sup> The most recent volume announcement by the EPA reduced the minimum blending volumes for 2015 to 16.93 billion gallons, and 18.11 billion gallons

---

\* Articles Editor, KY. J. EQUINE AGRIC. & NAT. RESOURCES L., 2016-2017; B.B.A. Marketing and Management 2014 University of Kentucky; J.D. expected May 2017, University of Kentucky College of Law.

<sup>1</sup> *Renewable Fuel Standard Program*, ENVTL. PROT. AGENCY (Sept. 29, 2015), <http://www.epa.gov/renewable-fuel-standard-program> [hereinafter ENVTL. PROT. AGENCY, *Renewable Fuel Standard Program*]; 42 U.S.C. § 7545.

<sup>2</sup> *Program Overview for Renewable Fuel Standard Program*, ENVTL. PROT. AGENCY (Sept. 28, 2015), <http://www.epa.gov/renewable-fuel-standard-program/program-overview-renewable-fuel-standard-program> [hereinafter ENVTL. PROT. AGENCY, *Program Overview*].

<sup>3</sup> *Id.*

<sup>4</sup> 42 U.S.C. § 7545(o)(2).

<sup>5</sup> *Id.*

<sup>6</sup> See *Program Overview for Renewable Fuel Standard Program*, *supra* note 2.

for 2016.<sup>7</sup> The reduction in the volume amounts is also paired with a reduction in the percentage volume increase for each year.<sup>8</sup> However, even with the reduced standards, there is uncertainty if the fuel market will be able to absorb the statutorily required amount of renewable fuels.<sup>9</sup> The EPA's action acknowledges that Congress's estimates, concocted nearly a decade ago, were overly ambitious and relied on an erroneous assumption that consumption of fuel would continually increase.<sup>10</sup>

The most debated issue in regards to the RFS is the existence of a maximum amount of renewable fuels that the United States fuel market can absorb.<sup>11</sup> This market limitation is commonly referred to as the "blend wall."<sup>12</sup> The U.S. fuel market is not prepared to absorb a substantial amount of biofuel at this time.<sup>13</sup> There have been efforts by the U.S. government to increase ethanol consumption, which has been coupled with efforts by U.S. auto manufacturers to create flex-fuel vehicles that can run on "E85," fuel blends with up to 85 percent ethanol.<sup>14</sup> Most vehicles in the U.S. are limited to operating

<sup>7</sup> *Final Renewable Fuel Standards for 2014, 2015 and 2016, and the Biomass-Based Diesel Volume for 2017*, ENVTL. PROT. AGENCY (Dec. 1, 2015), <http://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuel-standards-2014-2015-and-2016-and-biomass-based>.

<sup>8</sup> *Id.*

<sup>9</sup> See Christopher Doering, *EPA Approves Lower Ethanol Increase in U.S. Fuel Supply Than 2007 Law*, USA TODAY (Nov. 30, 2015), <http://www.usatoday.com/story/news/politics/2015/11/30/epa-approves-lower-ethanol-increase-us-fuel-supply-than-2007-law/76574544/>.

<sup>10</sup> See Alan Neuhauser, *EPA Raises Fuel Requirements, Lowers Standards, Upsets Everybody*, U.S. NEWS (May 29, 2015), <http://www.usnews.com/news/articles/2015/05/29/epa-raises-renewable-fuel-requirements-lowers-standards-upsets-everybody>; *Fill Up On Facts*, AM. PETROLEUM INST. 4 (Aug. 2015), <http://www.americanpetroleuminstitute.com/~media/Files/Policy/Fuels-and-Renewables/Renewable-Fuel-Standard-Primer/Renewable-Fuel-Standard-primer-low-res.pdf>.

<sup>11</sup> Amy Harder, *EPA Proposes Three-Year Ethanol Rule*, WALL ST. J. (May 29, 2015), <http://www.wsj.com/articles/epa-proposes-three-year-ethanol-rule-1432911962>.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *Flex-fuel Vehicles*, U.S. DEPT OF ENERGY, <https://www.fueleconomy.gov/feg/flextech.shtml> (last visited Jan. 9, 2016).

effectively on 10 percent ethanol blends (E10).<sup>15</sup> Blends higher than E10 can cause damage to the vehicle's motor and fuel system.<sup>16</sup> For this reason, many auto manufacturers will not warranty a vehicle that has used blends higher than E10.<sup>17</sup> Government regulations caused 95 percent of the U.S. fuel supply to be blended with up to 10 percent ethanol in order to increase the demand for ethanol fuels,<sup>18</sup> but little progress has been made to extend the limitation beyond 10 percent. For these reasons, the blend wall is a real issue, there is a limitation on what the maximum amount of ethanol fuel the U.S. market can consume.

In addition to the normal corn-based ethanol, the EPA has adjusted the requirement of cellulosic biofuels to be developed in the coming years.<sup>19</sup> Cellulosic biofuels are made using wood, grasses, or inedible parts of plants.<sup>20</sup> However, the technology and the ability to produce and blend the cellulosic fuels still have not amassed to large-scale production.<sup>21</sup> As of 2014, no cellulosic fuels had been mixed into the consumer market.<sup>22</sup> The 2015 amendment that lowered the requirement of corn ethanol, while raising the cellulosic ethanol has many in the industry wary of potential consequences.<sup>23</sup> Cellulosic ethanol can guide the future of biofuels in the United States, but the RFS guidelines need to legislatively adjust to make the development goals feasible.

If Congress desires to continue the development and use of renewable fuels, there must be significant changes made to the RFS program. Congress should attempt to mimic an ethanol fuel market plan similar to Brazil. The Brazilian government developed an effective market for ethanol fuels by focusing on creating demand for the product, by developing infrastructure and flex-fuel vehicles, and allowed the supply of ethanol to adapt

---

<sup>15</sup> *Ethanol*, U.S. DEP'T OF ENERGY, <https://www.fueleconomy.gov/feg/ethanol.shtml> (last visited Jan. 9, 2016) [hereinafter U.S. DEP'T OF ENERGY, *Ethanol*].

<sup>16</sup> *Id.*

<sup>17</sup> *See Fill Up On Facts*, *supra* note 10.

<sup>18</sup> Neuhauser, *supra* note 10.

<sup>19</sup> Doering, *supra* note 9.

<sup>20</sup> *Id.*

<sup>21</sup> *Fill Up On Facts*, *supra* note 10, at 6.

<sup>22</sup> *Id.*

<sup>23</sup> Neuhauser, *supra* note 10.

naturally.<sup>24</sup> The U.S. strategy in the RFS was to achieve the same results by the inverse of what Brazil implemented, and for that reason, the RFS has failed.<sup>25</sup> Due to the demand-based system that Brazil created, the country does not face the same blend wall issue present in the United States.<sup>26</sup> Renewable fuels can drive an energy independent future for the United States, but the current RFS is not suitable to achieve the goals originally desired by Congress.

First, this note introduces and expands on the issues facing the current RFS and concludes that Congress should repeal the original RFS and establish a new RFS. The standard should be a demand-based market percentage, set at a level below the blend wall percentage, which will eliminate the need for physical volume blending gallons to be calculated by the EPA each year. The volume-based percentage would provide absolute certainty to the fuel producers and would avoid the issue of breaching the blend wall completely, so long as the volume level is set at or below the limitation. Determining ethanol-blending volumes for fuel producers should not be decided by Congress or the EPA to estimate years in advance when the demand is uncertain. If the market cannot absorb a product, the government should not require it. Government mandates taking the fuel market out of equilibrium can have disastrous economic effects.<sup>27</sup>

This note then concludes that if Congress desires to increase ethanol blending volume requirements for fuel producers, they should first focus on passing legislation to create greater demand for ethanol fuels and improve the national infrastructure for ethanol fuels. This can be achieved by requiring auto manufacturers to alter the fuel systems and engines in the vehicles to run on higher blends of ethanol fuels. Congress should mimic ethanol market systems, such as Brazil, that have

---

<sup>24</sup> See Ryan Villarreal, *How Brazil Turned Ethanol into a Unique Success*, INT'L BUS. TIMES (Feb. 8, 2013), <http://www.ibtimes.com/how-brazil-turned-ethanol-unique-success-1064308>.

<sup>25</sup> See *Fill Up On Facts*, *supra* note 10, at 4-5.

<sup>26</sup> See Nestor Rabello & Reese Ewing, *Brazil to Raise Ethanol Blend in Gasoline to 27 Pct on Feb. 15*, REUTERS (Feb. 2, 2015), <http://www.reuters.com/article/brazil-ethanol-blend-idUSL1N0VC0X120150202> (stating that the Brazilian government can change the ethanol blend in gasoline, up or down without economic recourse).

<sup>27</sup> See *Fill Up On Facts*, *supra* note 10, at 4-5.

achieved astounding success by approaching the demand issue of ethanol fuels first, allowing the supply to naturally increase for ethanol-blended fuels. If this is done correctly, the blend wall can be shifted higher, and the economic consequences of breaching the blend wall can be avoided in the United States. Blending levels will be able to be increased, and Congress can more effectively achieve the original goals of the RFS.

Finally, this note concludes that Congress should repeal and restructure the RFS instead of relying on the EPA to use their agency authority to make the expectation of the RFS reasonable. The system in place provides no certainty to the fuel producers, nor to the farmers who rely on the standard for subsidies. Interrelated with this, is that many of the original goals of Congress in passing the RFS in 2007 have been achieved. Today, dependence on foreign oil is at an all-time low this century,<sup>28</sup> and emissions levels are declining as other standards set forth by the EPA are taking effect.<sup>29</sup>

## II. ISSUES GIVING RISE TO THE FAILURE OF THE RFS

### A. *The Blend Wall*

The most prevalent issue in the RFS debate is the “blend wall.”<sup>30</sup> The blend wall is a market maximum of the amount of ethanol-blended fuel that the U.S. gasoline market can actually absorb.<sup>31</sup> There is a physical maximum to the amount of ethanol the market can absorb because most U.S. vehicles are not manufactured to operate on ethanol blends greater than 10 percent (E10).<sup>32</sup> However, there are some flex-fuel vehicles that can operate on up to 85 percent (E85) ethanol blends.<sup>33</sup> Some parties argue that the blend wall limit is firm at 10 percent, given

---

<sup>28</sup> *How Much Oil Consumed in the United States Comes from Foreign Sources?*, U.S. ENERGY INFO. ADMIN. (Sep. 14, 2015), <https://www.eia.gov/tools/faqs/faq.cfm?id=32&t=6>.

<sup>29</sup> *See Sources of Greenhouse Gas Emissions*, ENVTL. PROT. AGENCY (Dec. 11, 2015), <http://www3.epa.gov/climatechange/ghgemissions/sources.html>.

<sup>30</sup> *See Harder*, *supra* note 11.

<sup>31</sup> *Id.*

<sup>32</sup> *Fill Up On Facts*, *supra* note 10, at 9.

<sup>33</sup> *Flex-fuel Vehicles*, *supra* note 14.

that 95 percent of the fuel base is blended at this level.<sup>34</sup> But, the RFS minimum blending requirement, even as adjusted by the EPA for 2015, still leads to breaching the blend wall market limitation in the near future.<sup>35</sup> This breach could cause great market disruption in the fuel industry, which will cause greater economic impact, including a potentially burdensome price impact on American consumers.<sup>36</sup>

Most vehicles in the United States are not manufactured to operate on potent ethanol blends above 10 percent.<sup>37</sup> For this reason, 95 percent of gasoline in the U.S. is blended with up to 10 percent ethanol.<sup>38</sup> At a 10 percent ethanol blend, there is little or no damage to most vehicles on the road.<sup>39</sup> However, at a 15 percent blend (E15), there are many issues that can become prevalent.<sup>40</sup> E15 is corrosive to rubber and certain metals, which can cause damage to major components of the engine and fuel system.<sup>41</sup> Ethanol bonds with water particles in the air when the tank remains stagnant for extended periods of time causing moisture to clog up pumps and filters in the fuel system.<sup>42</sup>

Most vehicles produced after 2007 do not have issues with E15 operation.<sup>43</sup> However, vehicles produced before 2007 should not use E15 at all.<sup>44</sup> It is important to note that most auto manufacturers do not warranty a vehicle that has used greater than E10 blends, even though the newer models have been designed to accept it.<sup>45</sup> It has only been in recent years, 2012 and 2013, that GM and Ford began to warranty their vehicles for E15 use.<sup>46</sup> Other popular manufacturers have yet to adopt the

<sup>34</sup> See *Fill Up On Facts*, *supra* note 10, at 7.

<sup>35</sup> Doering, *supra* note 9.

<sup>36</sup> *Fill Up On Facts*, *supra* note 10, at 8.

<sup>37</sup> *Id.*

<sup>38</sup> Neuhauser, *supra* note 10.

<sup>39</sup> *Ethanol*, *supra* note 15.

<sup>40</sup> Ben Wojdyla, *Four Things to Know About E15*, POPULAR MECH. (Feb. 13, 2013), <http://www.popularmechanics.com/cars/hybrid-electric/a11687/four-things-to-know-about-e15-15096134/>.

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> Wojdyla, *supra* note 40.

<sup>46</sup> *Id.*

extended ethanol use warranty, including Chrysler, BMW, and Nissan.<sup>47</sup>

Another major limiting factor in ethanol use is derived from small motors and seasonal recreational vehicles, which are in the most danger of being damaged by ethanol blends.<sup>48</sup> This is because small engines do not have as complex of fuel systems to cope with the ethanol blends.<sup>49</sup> Ethanol causes the engine to run hotter, and since small engines are not designed to run with intensified heat, the risk of damage increases with ethanol usage.<sup>50</sup> Moreover, seasonal use vehicles such as lawn mowers and boats tend to sit for extended periods of time, giving the ethanol time to congeal and, thus, the potential of ruining the engine.<sup>51</sup> The higher the ethanol blend present in the fuel, the greater chance damage will occur.<sup>52</sup> If the fuel blend minimum is increased, an alternative source of non-blended gasoline will be needed for boats and other seasonal equipment with small engines.

Ethanol's adoption in the U.S. is limited, in large part, because of the above noted usage limitations. There is currently a maximum amount of blended fuel that the U.S. fuel market can absorb.<sup>53</sup> Until something can be done to improve the ability of automobiles in the U.S. to accept the higher blended fuels, discussed below, there must be a limit on the amount of ethanol blending the government can require. For this reason, Congress should revisit the RFS and restructure the program to provide more certainty for the future of ethanol adoption.

### *B. Basic Economics Principals Applied to the Blend Wall*

Some argue that the blend wall is exactly at 10 percent because of the 10 percent general blending allowance.<sup>54</sup> The American Petroleum Institute sometimes refers to the blend wall,

---

<sup>47</sup> See *Fill Up On Facts*, *supra* note 10, at 9.

<sup>48</sup> Wojdyla, *supra* note 40.

<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> See *id.*

<sup>53</sup> See *Fill Up On Facts*, *supra* note 10, at 7.

<sup>54</sup> *Id.*



as the "E10 blend wall."<sup>55</sup> It seems that for the majority, 10 percent is the maximum blend the market can absorb, but there are many flex-fuel vehicles on the road that have the ability to operate on up to E85 blends.<sup>56</sup> The issue with flex-fuel vehicles is the lack of adoption by the consumers themselves.<sup>57</sup> Thus, despite public use, it appears that the blend wall can be increased up to E85 with negligible effects.<sup>58</sup> Currently, the EPA should be cautious to breach the 10 percent level, until other factors can be improved. The upward increase in the market limitation would allow a greater amount of renewable fuels to be produced giving more leeway for the RFS.<sup>59</sup>

Assuming there is a determinable blend wall, there is an economic danger in allowing government regulation to interfere with market constraints such as the blend wall.<sup>60</sup> This is a simple application of economics when the government sets a standard requiring a level of production that is higher than what is demanded by the market, the restraint takes the market out of equilibrium. The gap that is created in that situation imposes repugnant possibilities: pay a penalty to the government for non-compliance, produce a product that will not be sold, or reduce the price of the product in order to create more demand for the product. In any of these circumstances, producers will have issues with their bottom line, strictly to meet arbitrary government compliance standards.

On the inverse, corn growers and biofuel producers are pleased with government mandates set at a level above the actual market demand.<sup>61</sup> The RFS creates a demand for the product they produce that is greater than the free market will allow, which means improved profits for corn growers and biofuel producers. However, even these parties can be upset when the EPA decides to lower the demand for their product, as was done

---

<sup>55</sup> *Id.*

<sup>56</sup> *Flex-fuel Vehicles, supra* note 16.

<sup>57</sup> *See Fill Up On Facts, supra* note 10, at 12.

<sup>58</sup> *See id.*

<sup>59</sup> *See Discussion, infra*, Part III, Section C.

<sup>60</sup> *See Fill Up On Facts, supra* note 10, at 8.

<sup>61</sup> Neuhauser, *supra* note 10.

in the most recent announcement.<sup>62</sup> The EPA is trapped in a catch-22 no matter what its decision is, as at least one party will be dissatisfied.<sup>63</sup> These problems could be solved with congressional intervention, allowing the political process to make the determination of a reliable standard in relation to the RFS.

The current RFS system ignores actual demand to establish ethanol-blending volumes and establishes arbitrary volume minimums that are outdated and unrealistic.<sup>64</sup> Requiring the production of certain estimated volumes of ethanol, not necessarily related to a percentage of actual demand, can create an economic issue, as explained above. The current RFS requires fuel producers to blend a minimum volume of ethanol, which is determined before an accurate estimate of demand can be made.<sup>65</sup> If this government mandated minimum volume ever exceeds the maximum volume demanded, the fuel producers will have to make one of three decisions: reduce the price to increase demand; produce a product that doesn't sell; or pay the penalty for not complying with the standards.<sup>66</sup> A decision of that nature should not be one a business has to make to ensure compliance with arbitrary governmental standards.

In conclusion, Congress should adopt a blending standard that is based on a percentage of demand that could easily be calculated and feasibly complied with. There will be no economic issues so long as the percentage is at or below the blend wall level. Producers could calculate the amount of ethanol to blend based on the demand and sales they have. For example, if the producer was selling 1 million gallons of fuel and the applicable minimum was 10 percent, they would know with certainty that they must blend 100 thousand gallons of ethanol. This standard would have no market equilibrium issues because the variables are directly based on actual market conditions not estimated predictions of demand. The RFS system would be more malleable for the EPA if Congress were to adopt measures that would increase the blend wall.

---

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> See *Fill Up On Facts*, *supra* note 10, at 4.

<sup>65</sup> See *id.*

<sup>66</sup> See *Program Overview*, *supra* note 2.

### III. STRUCTURING THE NEW RFS PROGRAM: A FOCUS ON BRAZIL

The ethanol market in Brazil is one to be envied by the United States Congress. Brazil's ethanol program has proven very successful with its demand-focused approach.<sup>67</sup> In Brazil, the world leader in ethanol production and consumption, the government, in conjunction with fuel producers and auto manufacturers, has spent the last few decades developing ethanol infrastructure and technology.<sup>68</sup> As a reward for this perseverance, Brazil does not face the same low blend wall issue found in the United States.<sup>69</sup> Brazil developed a demand for ethanol fuel first and then allowed the supply to adapt naturally.<sup>70</sup>

By passing the RFS, Congress has attempted to achieve the same results by the inverse.<sup>71</sup> With that decision came a failed attempt at instituting an otherwise intelligent legislative scheme. If Congress is truly adamant about increasing ethanol use, they must increase the demand first, like the system adopted by Brazil. The process is gradual, and will not take place at the snap of the legislative finger. The basic requirements to increase demand are infrastructure adjustments, expanded automotive ability to use flex-fuels, and consumer adoption.

#### A. Infrastructure

The infrastructure adjustments that must be made relate to the distribution of ethanol produced.<sup>72</sup> One of the first rules in

<sup>67</sup> See Larry Rohter, *With Big Boost from Sugar Cane, Brazil is Satisfying Its Fuel Needs*, N.Y. TIMES (April 10, 2006), <http://www.nytimes.com/2006/04/10/world/americas/10brazil.html?pagewanted=1&sq=Bus h%20Brazil%20ethanol&st=nyt&scp=5&r=0>.

<sup>68</sup> See *id.* and see Villarreal, *supra* note 24.

<sup>69</sup> See Rabello & Ewing, *supra* note 26 (stating that the Brazilian government can change the ethanol blend in gasoline, up or down without economic recourse).

<sup>70</sup> See Rohter, *supra* note 67.

<sup>71</sup> See *generally Program Overview*, *supra* note 2 (The program required ethanol supply minimums to be added to the overall fuel supply, as opposed to demand focused development of ethanol consumption).

<sup>72</sup> RANDY SCHNEPF & BRENT D. YACOBUCCI, RENEWABLE FUEL STANDARD: OVERVIEW AND ISSUES 26 (Diane Publishing Co. 2010).

marketing relates to the place, or better known as “location, location, location!” Only 2,707 fuel stations across the U.S., excluding privately owned stations, have storage tanks suitable for high ethanol blends, such as E85.<sup>73</sup> A “crowdsourced” website estimates the number is 3,339, including private stations.<sup>74</sup> This is out of a total of 159,200 retail fueling stations in the United States.<sup>75</sup> What is more surprising is the lack of adoption in major population areas such as California, which only has 113 stations, almost half of Indiana’s 219.<sup>76</sup> Congress should focus on market expansion to reach larger populations if they expect to be able to continue increasing the ethanol blending requirements. Congress cannot expect the small, saturated, Midwestern markets to continue to absorb the majority of ethanol based fuel.<sup>77</sup>

Infrastructure adjustments will need to be made to fuel pumps and fuel storage equipment because of ethanol’s corrosive nature, particularly in higher blended ethanol fuels.<sup>78</sup> Although the industry-leading Underwriters Laboratories (“UL”) have recorded no documented failures with the existing tanks dispensing higher ethanol blends, there are unique specifications that UL requires for E85 dispensing.<sup>79</sup> Most states rely on UL specifications for fuel pump safety.<sup>80</sup> Not all existing tanks and pumps meet those specifications.<sup>81</sup> In some cases, only one aspect needs to be replaced or retrofitted to be in compliance with UL standards.<sup>82</sup> However, in some cases, it is necessary to replace the entire system to accommodate E85.<sup>83</sup> Currently, there are a limited number of federal, state, and local incentives for retailers to mitigate the costs of accommodating higher ethanol blends.<sup>84</sup>

---

<sup>73</sup> *Ethanol Fueling Station Locations*, U.S. DEPT OF ENERGY (June 17, 2015), [http://www.afdc.energy.gov/fuels/ethanol\\_locations.html](http://www.afdc.energy.gov/fuels/ethanol_locations.html).

<sup>74</sup> *E85 Prices*, E85Prices.com, <http://e85prices.com/> (last visited Jan. 18, 2016).

<sup>75</sup> *E85: A Market Performance Analysis and Forecast*, FUELS INST. 4, [http://fuelsinstitute.org/ResearchArticles/E85\\_AMarketPerformanceAnalysisForecast.pdf](http://fuelsinstitute.org/ResearchArticles/E85_AMarketPerformanceAnalysisForecast.pdf) (last visited Jan. 18, 2016).

<sup>76</sup> See *Ethanol Fueling Station Locations*, supra note 73.

<sup>77</sup> See *id.* (Map portraying the locations of E85 are concentrated in Mid-West.)

<sup>78</sup> See *E85: A Market Performance Analysis and Forecast*, supra note 75, at 10.

<sup>79</sup> *Id.*

<sup>80</sup> See *id.*

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

However, in Kentucky the incentive is limited to \$5,000 per E85 pump; interestingly, the funding is provided by the Kentucky Corn Growers Association, not the Kentucky state government.<sup>85</sup> Creating new pumps or retrofitting existing systems to dispense E85 has a wide range of total costs.<sup>86</sup> To retrofit an existing tank, the cost can range from \$1,736 to \$68,000.<sup>87</sup> To add a new system altogether, the price range was \$7,559 to \$247,600.<sup>88</sup> Clearly, the discrepancy between being able to receive \$5,000 for a new pump and the \$7,559 lowest cost for new pump installation could cause hesitation for a business owner trying to update their station to provide E85.<sup>89</sup> Thus, in the new legislation there must be some tax benefit or funds available so more fuel stations can convert or add tanks for dispensing higher blends of ethanol. Replacing or modifying fuel tanks can be a very expensive investment for small businesses.<sup>90</sup> Incentives would be necessary to increase availability to consumers on a scale large enough to make a colorable impact.

---

<sup>85</sup> *Id.*; *Kentucky Laws and Incentives for Ethanol*, U.S. DEPT OF ENERGY (Mar. 8, 2015), <http://www.afdc.energy.gov/fuels/laws/ETH/KY>.

<sup>86</sup> *Cost of Adding E85 Fueling Capability to Existing Gasoline Stations: NREL Survey and Literature Search*, NAT'L. RENEWABLE ENERGY LAB. 1 (Mar. 2008), <http://www.afdc.energy.gov/pdfs/42390.pdf>.

<sup>87</sup> *Id.*

<sup>88</sup> *Id.*

<sup>89</sup> *See id.*

<sup>90</sup> *See id.*

*B. Automotive Ability: Flex-Fuel Vehicles and Manufacturer Fleet Minimums*

As mentioned above, many new U.S. automobiles have the ability to run on blends up to E15 without much risk of damage.<sup>91</sup> Yet, many of the major manufacturers still refuse to warranty vehicles that have used fuel blends higher than E10.<sup>92</sup> If there is an expectation of growth in consumption of ethanol-blended fuels, there has to be an ability to use the higher blended fuels in U.S. vehicles.

In Brazil, along with the mandates on ethanol use, the government created a cooperative project for auto manufacturers to produce ethanol fuel vehicles.<sup>93</sup> At the peak of the 1980 fuel crisis, more than half of the vehicles produced in Brazil were able to run on “neat ethanol,” or E100 (100 percent ethanol) blends.<sup>94</sup> In the mid-2000s, neat ethanol vehicles were replaced with flex-fuel vehicles that can use any blend of ethanol, from E20 to E100.<sup>95</sup> Because the majority of vehicles on the road in Brazil have the ability to run on blends of E20 and greater, the government can set blend volume percentages at or above 20 percent. In February of 2015, the government set the mandatory blend at 27 percent.<sup>96</sup>

In the U.S., the government must cooperate with or mandate auto manufacturers to increase the levels of ethanol that U.S. vehicles will operate on. The manufacturers are already compelled by EPA emissions standards.<sup>97</sup> Many of the companies that manufacture the E20 and greater flex-fuel vehicles in Brazil are subsidiaries of the major manufacturers established in the United States.<sup>98</sup> Many of the manufacturers already have flex-

---

<sup>91</sup> Wojdyla, *supra* note 40.

<sup>92</sup> *See id.*

<sup>93</sup> *See* Pedro Seraphim, *Brazil's Ethanol-Enhanced History*, ETHANOL PRODUCER MAG. (Aug. 10, 2009), <http://ethanolproducer.com/articles/5906/brazil-s-ethanol-enhanced-history/>.

<sup>94</sup> *See id.*

<sup>95</sup> *See id.*

<sup>96</sup> Rabello & Ewing, *supra* note 26.

<sup>97</sup> *Emission Standards Reference Guide: Basic Information*, U.S. ENVTL. PROT. AGENCY (Nov. 14, 2012), <http://www3.epa.gov/otaq/standards/basicinfo.htm>.

<sup>98</sup> Seraphim, *supra* note 93.

fuel vehicles on the market.<sup>99</sup> Increased availability of flex-fuel vehicles is an achievable goal if Congress would encourage widespread adoption through a new RFS program.

### *C. Consumer Adoption*

Up to this point, consumer adoption of ethanol-based fuels has been the most difficult issue to overcome in the United States.<sup>100</sup> The lack of adoption of higher blends of ethanol led to the national congressional mandate of 10 percent ethanol blending of the general gasoline supply.<sup>101</sup> Consumers owning flex-fuel vehicles capable of operating on up to E85 are not making the choice to fill up with E85.<sup>102</sup> The U.S. Energy Information Administration reported 201.39 million gallons of E85 were sold in 2013.<sup>103</sup> These were consumed by a total number of 12.8 million Flexible Fuel Vehicles, which accounted to only 15.7 gallons of E85 used per Flexible Fuel Vehicle on the road.<sup>104</sup>

In a market test in Minnesota, the largest E85 distributor in the U.S.,<sup>105</sup> empirical studies showed a direct relation between the price of E85 and the volume of consumption.<sup>106</sup> E85 was consistently cheaper than unleaded fuel,<sup>107</sup> but, not surprisingly, consumption was higher when the discount on E85 was greater.<sup>108</sup> Based on this evidence, price is clearly a factor in the consumption of E85.<sup>109</sup> If a larger scale of adoption across the U.S. was to happen and more consumers had the ability to use E85, Congress could establish price controls to encourage the consumer adoption of E85. In fact, if more flex-fuel vehicles were available, Congress could offer other alternatives, such as E15

<sup>99</sup> See *2015 Vehicle Buyer's Guide*, U.S. DEP'T OF ENERGY 30-39 (Feb. 2015), [http://www.afdc.energy.gov/uploads/publication/2015\\_vehicle\\_buyers\\_guide.pdf](http://www.afdc.energy.gov/uploads/publication/2015_vehicle_buyers_guide.pdf).

<sup>100</sup> See *E85: A Market Performance Analysis and Forecast*, *supra* note 75, at 34.

<sup>101</sup> See *Ethanol*, *supra* note 15.

<sup>102</sup> See *E85: A Market Performance Analysis and Forecast*, *supra* note 75, at 34.

<sup>103</sup> *Id.*

<sup>104</sup> *Id.*

<sup>105</sup> *Id.* at 5.

<sup>106</sup> See *id.* at 15, fig. 16.

<sup>107</sup> *Id.* at 3.

<sup>108</sup> See *id.* at 16, fig.17.

<sup>109</sup> See *id.*

and E20.<sup>110</sup> Each of these alternatives would expand the blend wall, and allow the RFS to increase blending minimums.

In conclusion, Congress can still achieve the original goals of the RFS with legislation. However, Congress must make adjustments to the RFS legislation if they want attainable goals. This begins by focusing on creating a demand for higher ethanol blends. Increased market percentage based blending minimums can follow the improving demand. The ethanol blending minimums will be more effective when the blend wall is increased, like the ethanol market in Brazil.

#### IV. CONGRESSIONAL OVERRELIANCE ON AGENCY DELEGATION

##### A. *Erroneous Estimations Provide Little Guidance for EPA*

Congress must abstain from its inaction in relation to the RFS. Congress has made no effort to update or improve the RFS statute since its amendment in 2007.<sup>111</sup> This inaction has caused the EPA to be perpetually inconsistent with establishing mandated volume limits.<sup>112</sup> Inconsistency creates problems for both the advocates and opponents of this issue.<sup>113</sup> Congressional reliance on the EPA's interpretation of the outdated RFS statute is unacceptable. Congress needs to provide clarification of the RFS's goals to improve the development of renewable fuels and the subsequent blending of those fuels into the petroleum supply. Uncertainty and failure within the RFS program have persisted for too long under the current legislation.<sup>114</sup>

Congress expressly delegated the authority to enforce the RFS to the EPA.<sup>115</sup> In 2007, Congress estimated that the mandatory minimum blending volumes, in total gallons, will increase each year through 2022.<sup>116</sup> The EPA was appointed to

---

<sup>110</sup> See *Ethanol Blends*, U.S. DEPT OF ENERGY (Dec. 16, 2014), [<https://perma.cc/CG4Z-7DPN>] [http://www.afdc.energy.gov/fuels/ethanol\\_blends.html](http://www.afdc.energy.gov/fuels/ethanol_blends.html).

<sup>111</sup> See *Renewable Fuel Standard*, U.S. DEPT OF ENERGY (June 06, 2014), <http://www.afdc.energy.gov/laws/RFS>.

<sup>112</sup> Doering, *supra* note 9.

<sup>113</sup> See *id.*

<sup>114</sup> See *Fill Up On Facts*, *supra* note 10, at 10.

<sup>115</sup> 42 U.S.C. § 7546; ENVTL. PROT. AGENCY, *Renewable Fuel Standard Program*, *supra* note 2.

<sup>116</sup> ENVTL. PROT. AGENCY, *Program Overview*, *supra* note 2.



adjust specific minimum blending volumes, annually, based on certain occurrences.<sup>117</sup> The original 2007 estimations were erroneous and based on assumptions that never came to fruition.<sup>118</sup> Since 2007, Congress has taken no action in updating the RFS to reflect the current real-world conditions.<sup>119</sup> Because of Congress's inaction, the EPA has relied on its delegated agency authority to substantially alter the blending requirements from the original legislation.<sup>120</sup> This has proven to be difficult, as the EPA has attempted to comply with original congressional intent to exponentially expand the use of renewable fuels when volume increases are proving impossible to accomplish due to market saturation and production restraints.<sup>121</sup>

When the RFS was passed in 2007, gasoline consumption had continuously increased every year since the early 1990's.<sup>122</sup> The peak of consumption for gasoline in the United States was in 2007, reaching 3.389 billion barrels in that year.<sup>123</sup> Since 2007, oil consumption levels have declined, and current consumption remains below that of 2007.<sup>124</sup> Gasoline demand reached its lowest point in the decade in 2012 at 3.17 billion barrels, however, demand for gasoline has begun to increase again, and 2015 demand was 3.35 billion barrels, falling just below the 2007 peak demand levels.<sup>125</sup>

Congress's intent to increase the volumes in the RFS was based on the assumption of a continued growth in demand for gasoline.<sup>126</sup> In actuality, the overall demand for gasoline has dropped since the adoption of the RFS.<sup>127</sup> An annual reduction in

<sup>117</sup> *Id.*

<sup>118</sup> See *Fill Up On Facts*, *supra* note 10, at 4-5.

<sup>119</sup> See Doering, *supra* note 9.

<sup>120</sup> See *id.*

<sup>121</sup> See *id.*

<sup>122</sup> See *U.S. Product Supplied of Finished Motor Gasoline*, U.S. ENERGY INFO. ADMIN. (Dec. 31, 2015), [<https://perma.cc/CYC9-AVBX>]  
<http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MGFUPUS1&f=A>  
 [hereinafter U.S. ENERGY INFO. ADMIN., *U.S. Product Supplied of Finished Motor Gasoline*].

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> See *Fill Up On Facts*, *supra* note 10, at 4.

<sup>127</sup> *Id.*

consumption was not expected in the original RFS.<sup>128</sup> Because the expectations of Congress did not materialize, the EPA has received little or no guidance on how to execute and enforce the RFS under the current circumstances.<sup>129</sup> Increasing blending standards, paired with the drop in fuel consumption, has accelerated the blend wall breaching issue.<sup>130</sup> Certainly, the original intent of Congress was not to flood the market with unnecessary ethanol fuels but merely to reduce U.S. reliance on foreign fossil fuels.<sup>131</sup>

Due largely in part to the lack of legislative guidance, the EPA failed to meet the November 30th, annual deadline for releasing ethanol mandates, in almost every year since the introduction of the RFS.<sup>132</sup> The delays from the EPA have caused concern for all parties with an interest in the RFS program, including both fuel producers and corn growers, who then also lack timely guidance on the annual compliance standards and crop production subsidy levels.<sup>133</sup>

Congress's estimates for increasing renewable fuel blending volume requirements were based on erroneous extrapolation of data from the years preceding 2007.<sup>134</sup> The global economic recession caused a drastic change in overall consumption, especially in gasoline, yet the legislation directly related to that market was never adjusted appropriately.<sup>135</sup> It is likely that Congress never revisited the RFS legislation because they had delegated agency authority to the EPA, who then had the freedom to adjust the implementation of the RFS as they deemed necessary.<sup>136</sup> The erroneous guidance from the legislation

---

<sup>128</sup> *Id.*

<sup>129</sup> Harder, *supra* note 11.

<sup>130</sup> *Fill Up On Facts*, *supra* note 10, at 4.

<sup>131</sup> See ENVTL. PROT. AGENCY, *Program Overview*, *supra* note 3 (Congress' original intent was to reduce dependence on foreign fossil fuels, the original minimum standards were to increase as the estimated oil dependence increased).

<sup>132</sup> *Fill Up On Facts*, *supra* note 10, at 8.

<sup>133</sup> *Id.*

<sup>134</sup> See *U.S. Product Supplied of Finished Motor Gasoline*, *supra* note 122.

<sup>135</sup> See *id.* (graphic depicting drop in supply of gasoline coinciding with the economic recession beginning in 2008).

<sup>136</sup> See Doering, *supra* note 11.

has left the EPA in a muddled reality,<sup>137</sup> and caused the EPA to experience uncertainty in how to uphold Congress's original intent while adapting procedures to feasibly meet current conditions.<sup>138</sup> Congressional action is dire, continued deference to the EPA will only cause a greater escalation of issues related to the RFS.

### *B. Inconsistencies in RFS Standards are Unsustainable*

The EPA is allowed waiver authority to adjust the yearly ethanol-blending volume levels based on severe economic or environmental harms, but they are restricted to follow the outdated model that Congress adopted.<sup>139</sup> Congress originally called for a substantial yearly increase in total volume of ethanol through 2022.<sup>140</sup> The most recent adaptation from the EPA has substantially reduced the total volumes and growth rate from the original.<sup>141</sup> However, inconsistency in the agency's announcements led fuel producers to fear that they will still be unable to meet compliance standards.<sup>142</sup> The inconsistency has also upset corn growers because corn subsidies are cut when the EPA unexpectedly reduces the government ethanol fuel blending mandate volume under the RFS.<sup>143</sup>

The EPA's inconsistency and uncertainty are best showcased with the 2016 volume blend announcements.<sup>144</sup> In May of 2015, the EPA acknowledged the blend wall issue and announced a significant reduction from the original congressionally mandated levels.<sup>145</sup> The blend volume proposed in May of 2015 for the 2016-year was 17.4 billion gallons, down from

---

<sup>137</sup> See *id.* The EPA is torn between conflicts resulting from the reality of fuel demand that was significantly reduced due to an economic recession and the abiding by the original intent of Congress to increase ethanol levels in the fuel supply.

<sup>138</sup> See *id.*

<sup>139</sup> ENVTL. PROT. AGENCY, *Program Overview*, *supra* note 2.

<sup>140</sup> *Id.*

<sup>141</sup> See *Supra* note 7.

<sup>142</sup> See Doering, *supra* note 9.

<sup>143</sup> *Id.*

<sup>144</sup> *Id.*

<sup>145</sup> Harder, *supra* note 11.

22.25 billion gallons prescribed by Congress in 2007.<sup>146</sup> However, in the final November announcement, the EPA blindsided fuel producers by increasing the blend volume from 17.4 to 18.11 billion gallons.<sup>147</sup> Uncertainty of this caliber is unacceptable for the fuel producers.<sup>148</sup> Thus, there is a dire need for congressional input to provide a measurable, calculable, reliable, and attainable standard.<sup>149</sup>

The current RFS system is not sustainable, placing a significant strain on the EPA to determine applicable blending volumes, while providing very little guidance.<sup>150</sup> Certainly, the EPA is capable of determining reasonably accurate and progressive volume blending limits.<sup>151</sup> However, the EPA has experienced pressure from both sides of the issue, each arguing in self-serving ways.<sup>152</sup> Fuel producers want lower blending requirements, while farmers and biofuel producers lobby the EPA to uphold the original RFS standards to support subsidies for their businesses.<sup>153</sup> No matter what action the EPA takes, they are upsetting the opposition.<sup>154</sup> The issue has become political,<sup>155</sup> but the EPA is not a political branch that is accountable to voters and constituents. Congress should utilize the political process to form standards that both proponents can agree with.

The major issue for the EPA lies within the guidance they have received, or lack thereof.<sup>156</sup> The EPA's failures in relation to the RFS are caused by Congress's unwillingness to adapt the RFS legislation for changed circumstances.<sup>157</sup> Only Congress has the power to make a substantial change to the legislation.<sup>158</sup> Until a legislative change is made, a great deal will remain uncertain for the EPA when attempting to establish blending standards.

---

<sup>146</sup> *Id.*

<sup>147</sup> *See* Doering, *supra* note 9.

<sup>148</sup> *See id.*

<sup>149</sup> *See id.*

<sup>150</sup> *See* Harder, *supra* note 11.

<sup>151</sup> *See supra* note 7.

<sup>152</sup> *See* Neuhauser, *supra* note 10.

<sup>153</sup> *See id.*

<sup>154</sup> *Id.*

<sup>155</sup> *See id.*

<sup>156</sup> *See* Harder, *supra* note 11.

<sup>157</sup> *See* Doering, *supra* note 9.

<sup>158</sup> *Id.*

Much like a chain reaction, uncertainty at the top causes uncertainty at the bottom. Fuel producers have faced as much caprice, if not more, than the EPA, in their efforts to comply with the RFS.<sup>159</sup> During the EPA's appointment as the administrator of the RFS legislation, the agency has failed nearly every year to meet the annual November 30th deadline in releasing the ethanol-blending volume requirements.<sup>160</sup> In some cases the EPA was late by over a year.<sup>161</sup> Moreover, there is fear that the EPA has too much authority from the original congressional mandate to adjust volume requirements, which could lead to potential economic and environmental harms, or inadequate domestic ethanol supply.<sup>162</sup> The adjustments that the EPA establishes could greatly exceed the reasonable expectations of fuel producers, or disappoint the corn growers and biofuel producers, as the EPA did with its most recent announcement.<sup>163</sup> It is within the EPA's authority to establish standards – even those that are inconceivable and impossible to meet evidenced by the original RFS standards – as long as they determine no significant economic harm will result.<sup>164</sup> This leads to insurmountable uncertainty for all parties involved.<sup>165</sup>

Every year, fuel producers are forced to blindly guess the applicable ethanol-blend volume that the EPA will establish without actual knowledge of the formula used to calculate the blending standards.<sup>166</sup> Occasionally the EPA releases the data in a timely manner allowing the fuel producers some certainty, but this has rarely been the case.<sup>167</sup> Therefore, Congress should revisit the legislation and establish a certain, easily determinable maximum based on a demand percentage that cannot be exceeded by the EPA. In some circumstances, it is dangerous to leave too much room for agency discretion. A simple change in appointment within the agency can drastically change the level of

<sup>159</sup> *See id.*

<sup>160</sup> *Fill Up On Facts*, *supra* note 10, at 10.

<sup>161</sup> *Id.*

<sup>162</sup> ENVTL. PROT. AGENCY, *Program Overview*, *supra* note 2.

<sup>163</sup> *See Doering*, *supra* note 10.

<sup>164</sup> *See* ENVTL. PROT. AGENCY, *Program Overview*, *supra* note 2.

<sup>165</sup> *See id.* *See generally* Harder, *supra* note 11.

<sup>166</sup> *See Fill Up On Facts*, *supra* note 10, at 10.

<sup>167</sup> *Id.*

enforcement and increase the uncertainty for all parties affected by the RFS. For all these reasons, Congress should take action to provide more guidance to the EPA in establishing the ethanol fuel blending volume requirements. This new legislation should create a measurable, calculable, consistent, and attainable standard that does not depend so heavily on agency interpretation of unrealistic legislation.

### *C. Congress's Original Intent Nearing a Wall: Needs New Plan of Action to Accomplish*

Congress's original intent for the RFS program was prudent at the time, and this should not be ignored in an updated version of the RFS. Congress's prevailing goal was energy independence.<sup>168</sup> The topic was popular at the time of the RFS's passing in 2005 and 2007; these were times of war, general market uncertainty, and an all-time high price for the supply of oil.<sup>169</sup> Independence from these uncontrollable factors in our energy supply was very attractive. Any amount of energy independence was desired. The second goal of the RFS is to reduce the United States greenhouse gas emissions.<sup>170</sup> Reducing greenhouse gas emissions should be the prevailing goal of the new RFS. Technology in advanced biofuels is allowing further reductions of greenhouse gasses in relation to ethanol production and consumption.<sup>171</sup>

In relation to independence from foreign oil, the United States has envied independence from foreign oil since the 1970s when gas shortages plagued the nation due to unrest in oil-producing countries, including OPEC's embargo that limited the

---

<sup>168</sup> ENVTL. PROT. AGENCY, *Renewable Fuel Standard Program*, *supra* note 1.

<sup>169</sup> *Id.*; See Jad Mouawad, *Rising Demand for Oil Provokes New Energy Crisis*, N.Y. TIMES (Nov. 9, 2007), [<https://perma.cc/Z9Z5-4J4E>]  
[http://www.nytimes.com/2007/11/09/business/worldbusiness/09oil.html?\\_r=1&hp&hpa&oref=slogin](http://www.nytimes.com/2007/11/09/business/worldbusiness/09oil.html?_r=1&hp&hpa&oref=slogin).

<sup>170</sup> ENVTL. PROT. AGENCY, *Renewable Fuel Standard Program*, *supra* note 1.

<sup>171</sup> *Ethanol Vehicle Emissions*, U.S. DEPT OF ENERGY (Dec. 16, 2015), [<https://perma.cc/9L78-Z246>]  
[http://www.afdc.energy.gov/vehicles/flexible\\_fuel\\_emissions.html](http://www.afdc.energy.gov/vehicles/flexible_fuel_emissions.html) [hereinafter U.S. DEPT OF ENERGY, *Ethanol Vehicle Emissions*].

supply of oil to the world.<sup>172</sup> The fuel independence issue climaxed in 2008 when oil prices climbed to an all-time high during June and July of 2008, peaking above \$140.00 per barrel.<sup>173</sup> In the United States, great strides toward energy independence have been made domestically in recent years.<sup>174</sup> Advances in technology have given access to fossil fuel reserves that were once unreachable and unrecoverable.<sup>175</sup> Although domestic independence has materialized through the controversial process of fracking, the process has greatly reduced our dependence on foreign oil.<sup>176</sup> Between 2010 and 2014, total U.S. crude oil imports declined by 20 percent.<sup>177</sup> Estimates from the Energy Information Administration (“EIA”) claim that at a market price of \$100 per barrel of oil, the United States could become a net exporter of oil by 2019.<sup>178</sup> Currently, the price per barrel of oil is below \$50 and continues to drop.<sup>179</sup> At current prices, the U.S. could still achieve energy independence in 2028.<sup>180</sup>

Renewable fuels bolster only a small, yet formidable, percentage of the U.S. domestic fuel supply.<sup>181</sup> In 2015, nearly 14 billion gallons of ethanol were blended into motor gasoline, accounting for about 10 percent of the total United States fuel

<sup>172</sup> Thanassis Cambanis, *American Energy Independence: the great shake-up*, BOS. GLOBE (May 26, 2013), [https://perma.cc/M5NW-9FJZ] <https://www.bostonglobe.com/ideas/2013/05/25/american-energy-independence-great-shake/pO9Lsad4cVQvjdpvxMI1DO/story.html>.

<sup>173</sup> *Crude Oil Historical Data*, INVESTING.COM (last visited Jan. 10, 2016), [https://perma.cc/KV5J-W66L] <http://www.investing.com/commodities/crude-oil-historical-data>.

<sup>174</sup> See *Fill Up On Facts*, *supra* note 10, at 3.

<sup>175</sup> Clifford Krauss & Eric Lipton, *U.S. Inches Toward Goal of Energy Independence*, N.Y. TIMES (Mar. 22, 2012), [https://perma.cc/6MNG-3A7C] <http://www.nytimes.com/2012/03/23/business/energy-environment/inching-toward-energy-independence-in-america.html>.

<sup>176</sup> *Id.*

<sup>177</sup> Nicole Friedman, *After Years of Decline, U.S. Oil Imports Rise*, WALL ST. J. (Oct. 26, 2015), [https://perma.cc/V2XJ-99S4] <http://www.wsj.com/articles/after-years-of-decline-u-s-oil-imports-rise-1445851800>.

<sup>178</sup> Chris Isidore, *U.S. Could be Energy Independent Within Four Years*, CNN MONEY (April 15, 2015), [https://perma.cc/MY4K-WRKD] <http://money.cnn.com/2015/04/15/investing/us-energy-independence/>.

<sup>179</sup> INVESTING.COM, *supra* note 173.

<sup>180</sup> Isidore, *supra* note 178.

<sup>181</sup> *How Much Ethanol is in Gasoline, and How Does it Affect Fuel Economy?*, U.S. ENERGY INFO. ADMIN. (Dec. 1, 2015), [https://perma.cc/FJ2X-6CXS] <http://www.eia.gov/tools/faqs/faq.cfm?id=27&t=10>.

supply.<sup>182</sup> The U.S. demand for gasoline is the highest in the world.<sup>183</sup> Due to the sheer size of the U.S. market,<sup>184</sup> it is highly unlikely that the U.S. could operate solely on renewable fuels in the foreseeable future.<sup>185</sup> However, a market currently exists for a substantial portion of the fuel supply to be provided by ethanol-blended sources.<sup>186</sup> With strong legislative guidance, the overall market could potentially increase for blended ethanol fuels.<sup>187</sup> Studies show that with proper guidance, biofuels could replace 30 percent of the U.S. gasoline market by 2030.<sup>188</sup> This market has not matured significantly enough in the U.S. to hinder fossil fuel dependence, but the prospect has serious potential.<sup>189</sup>

In relation to reducing the carbon emissions via ethanol blending, higher ethanol blends produce lower emission levels than petroleum-based gasoline.<sup>190</sup> Thus, an updated RFS should hone in on the strength in Congress's original intent. However, it is important to note that many limitations still exist to broadening national adoption of high ethanol blends.<sup>191</sup>

Some argue that emissions from the overall production of ethanol actually outweigh the benefit of ethanol over petroleum gasoline.<sup>192</sup> Per gallon, pure ethanol contains about 30 percent less energy than gasoline.<sup>193</sup> However, ethanol has a positive energy balance; the fuel production does not require more energy than the amount of energy contained in the fuel.<sup>194</sup> In general,

<sup>182</sup> *Id.*

<sup>183</sup> *Country Comparison: Refined Petroleum Products Consumption*, CENT. INTELLIGENCE AGENCY, [<https://perma.cc/C7HF-ZA4K>] <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2246rank.html> (last visited Jan. 10, 2016).

<sup>184</sup> See U.S. ENERGY INFO. ADMIN., *U.S. Product Supplied of Finished Motor Gasoline*, *supra* note 123.

<sup>185</sup> See *Ethanol Fuel Basics*, U.S. DEP'T OF ENERGY (Dec. 22, 2015), [<https://perma.cc/3P5H-3UT8>] [http://www.afdc.energy.gov/fuels/ethanol\\_fuel\\_basics.html](http://www.afdc.energy.gov/fuels/ethanol_fuel_basics.html) [hereinafter U.S. DEP'T OF ENERGY, *Ethanol Fuel Basics*].

<sup>186</sup> *Id.*

<sup>187</sup> *Id.*

<sup>188</sup> U.S. DEP'T OF ENERGY, *Ethanol Fuel Basics*, *supra* note 185.

<sup>189</sup> See *id.*

<sup>190</sup> U.S. DEP'T OF ENERGY, *Ethanol Vehicle Emissions*, *supra* note 171.

<sup>191</sup> See discussion, *supra* Part III.

<sup>192</sup> See Katie Colaneri, *AP: Environmental Impacts of Ethanol May Outweigh the Benefits*, STATE IMPACT (Nov. 12, 2013), [<https://perma.cc/C6E5-TK8P>] <https://stateimpact.npr.org/pennsylvania/2013/11/12/ethanol/>.

<sup>193</sup> U.S. DEP'T OF ENERGY, *Ethanol Fuel Basics*, *supra* note 185.

<sup>194</sup> *Id.*



using corn-based ethanol instead of gasoline reduces lifecycle greenhouse gas emissions by 19 to 48 percent, depending on the source and processes used in the ethanol production.<sup>195</sup>

In addition, advancing technologies in biofuels, including cellulosic ethanol production derived from plant byproducts in feedstock and non-edible plant material, is expected to greatly improve the ethanol energy balance.<sup>196</sup> The advancing cellulosic technology will further prove that ethanol is an environmentally friendly alternative to fossil fuels.<sup>197</sup> Cellulosic ethanol can reduce greenhouse gas emissions by as much as 86 percent over the lifetime of the fuel.<sup>198</sup> The 2015 EPA requirements added an increased focus on cellulosic fuel development.<sup>199</sup> To this point, only a negligible amount of cellulosic ethanol has been produced in comparison to the overall ethanol market.<sup>200</sup> Actual supply in 2013 was 810,185 gallons, up from 20 thousand gallons in 2012.<sup>201</sup> The most recent mandates expect booming growth in production, requiring 123 million gallons in 2015 and 230 million gallons in 2016.<sup>202</sup> Cellulosic fuels offer substantial upside for the future, but the unrealistic expectations of exponential growth for the industry provide evidence that Congress needs to substantially reform the RFS guidelines.

An additional argument against ethanol use is the lower fuel efficiency of ethanol-blended fuel in comparison to gasoline.<sup>203</sup> E10 blends have a negligible impact on fuel efficiency; however, blends with an ethanol content of 51 to 83 percent (considered E85) show a 15 to 30 percent reduction in fuel

<sup>195</sup> U.S. DEP'T OF ENERGY, *Ethanol Vehicle Emissions*, *supra* note 171.

<sup>196</sup> *Id.*

<sup>197</sup> *See id.*

<sup>198</sup> U.S. Dep't of Energy: Vehicle Technologies Office, ETHANOL BASICS 3 (Jan. 2015), [<https://perma.cc/XE32-TE7W>]

[http://www.afdc.energy.gov/uploaup/publication/ethanol\\_basics.pdf](http://www.afdc.energy.gov/uploaup/publication/ethanol_basics.pdf).

<sup>199</sup> Doering, *supra* note 9.

<sup>200</sup> *See Fill Up On Facts*, *supra* note 10, at 2, 4.

<sup>201</sup> *Id.* at 4.

<sup>202</sup> *See supra* note 7.

<sup>203</sup> *See Rick Newman, More Evidence That It's Time to Dump Ethanol*, U.S. NEWS (July 31, 2012, 5:10 PM), [<https://perma.cc/U658-CAGX>]

<http://www.usnews.com/news/blogs/rick-newman/2012/07/31/more-evidence-that-its-time-to-dump-ethanol>.

efficiency.<sup>204</sup> Depending on the market, the price of E85 is also generally lower than regular gasoline.<sup>205</sup> Unfortunately, a major fallback is that the cost per mile of E85 is still greater than gasoline.<sup>206</sup> However, reducing environmental impact should be weighed more heavily than miles per gallon ratings.

Congress's original goals in establishing the RFS are still viable with the increased use of renewable fuels, but the guidance and expectations of Congress in the 2007 legislation are outdated and need revision. Total independence from foreign oil is attainable for the U.S., and could be reached in the future.<sup>207</sup> However, it is unlikely that ethanol will be a substantial contributing factor in that achievement.<sup>208</sup> Even under perfect circumstances, ethanol is only expected to be able to contribute to 30 percent of the U.S. fuel demands.<sup>209</sup> The revised legislation should support increased ethanol consumption to reach the goal of reducing greenhouse gas emissions. The continued development and expansion of cellulosic fuel will greatly reduce the impact of vehicle emissions, but realistic, attainable production goals should be established in correlation with feasibility.

## V. CONCLUSION

In conclusion, the United States is a viable market for ethanol-blended fuels. However, the current RFS legislation is inadequate in providing appropriate guidance about how to mitigate the effects of breaching the blend wall caused by government-mandated ethanol blending standards that are continuing to rise. Congress must take action to adapt the 2007 RFS or repeal the legislation in favor of a new economically reasonable RFS.

---

<sup>204</sup> U.S. DEP'T OF ENERGY, *Ethanol*, *supra* note 15.

<sup>205</sup> *Id.*

<sup>206</sup> *Id.*

<sup>207</sup> See Isidore, *supra* note 178.

<sup>208</sup> See *Bioenergy Frequently Asked Questions*, U.S. DEP'T OF ENERGY (last visited Sept. 28, 2016), [<https://perma.cc/2H22-K5HM>]  
<http://www.energy.gov/eere/bioenergy/bioenergy-frequently-asked-questions>.

<sup>209</sup> *Id.*

The new law set forth should provide clear guidance for the EPA and all other affected parties. Currently, it is impossible for the fuel producers to predict the standards adopted by the EPA in a given year. The new legislation should include a clear formula based on market demand and set a fuel percentage below the blend wall limitation. The market percentage approach will provide a clear, calculable, and attainable goal for ethanol blending.

Congress has relied too much on the EPA's authority to adapt the RFS legislation, and this has led to inconsistency in the execution of the RFS. For the most part, the inconsistency is due to a lack of guidance from the RFS legislation and changed circumstances that occurred since the creation of the RFS. The legislation should focus less on establishing minimum blending requirements and focus more on creating demand for ethanol-blended fuels. In turn, the blend wall will be increased, similar to the ethanol market in Brazil. A demand-based approach will allow for increasing levels of blended ethanol in the U.S. market. Overall, Congress can still achieve the original goals of the RFS, but the current system must be removed.

There is an impending need for congressional action in relation to the RFS. Failure to act could cause major economic disruptions and greater uncertainty in the fuel market. The original estimations from the 2007 legislation are outdated. An updated RFS, following some of the principles discussed above, would likely accelerate ethanol adoption in the United States in a more effective manner than the current legislative scheme.