Written Testimony of:

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Senate Committee on Environment and Public Works
United States Senate

Legislative Hearing on S. 517, the Consumer and Fuel Retailer Choice Act

June 14, 2017

Good morning Chairman Barrasso, Ranking Member Carper, and members of the committee. My name is Brooke Coleman and I am the Executive Director of the Advanced Biofuels Business Council (ABBC).

The Advanced Biofuels Business Council represents worldwide leaders in the effort to develop and commercialize next generation, advanced and cellulosic biofuels, ranging from cellulosic ethanol made from switchgrass, wood chips and agricultural waste to advanced biofuels made from sustainable energy crops, municipal solid waste and algae. Our members include those operating production facilities, those augmenting conventional biofuel plants with "bolt on" or efficiency technologies, and those developing and deploying the technologies necessary to make advanced biofuel production a commercial reality.

We are honored to be here today to review S. 517, the Consumer and Fuel Retailer Choice Act. The Council strongly supports passage of S. 517, which will have the immediate effect of opening the U.S. motor fuel marketplace to the increased use of American-made, advanced biofuels.

1. **S. 517 provides a simple and long-overdue regulatory fix to Reid Vapor Pressure (RVP) allowances that does not represent a shift in U.S. motor fuel policy with regard to ethanol**

The U.S. Environmental Protection Agency (EPA) sets a maximum allowable Reid Vapor Pressure (RVP) for gasoline and gasoline/ethanol blends in the summer months to control fuel evaporation from vehicles (and storage and transfer equipment). Higher RVP fuels evaporate more readily, and fuel evaporation contributes to the formation of smog (ground-level ozone) together with other tailpipe and industrial pollutants.

The addition of ethanol to gasoline increases the RVP of the overall blend by about 1 pound per square inch (psi). The RVP increase is ascribed to the addition of ethanol to gasoline notwithstanding the fact that the RVP of pure ethanol is much lower than the RVP of pure gasoline.[1] Starting in the early 1990s, the 10 percent ethanol/gasoline blends becoming more prevalent across

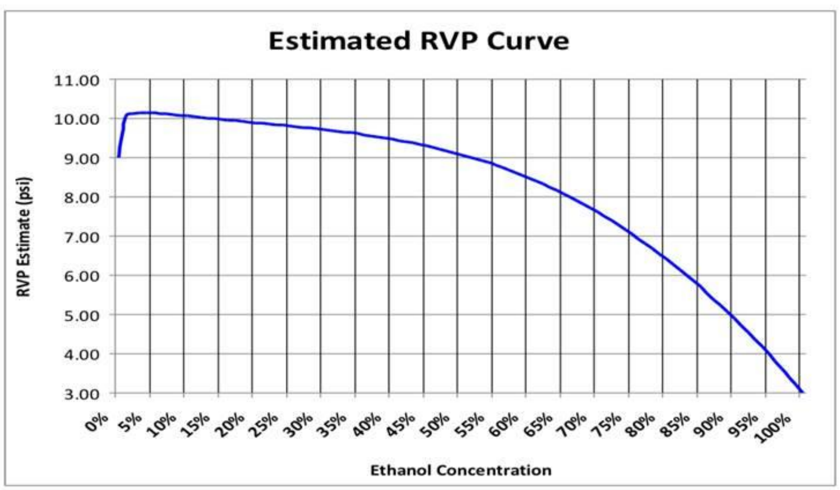
[1] See NREL memo posted: http://www.ethanolrfa.org/wp-content/uploads/2015/09/RVP-Effects-Memo_03_26_12_Final.pdf.

the country were (explicitly) granted a “1 pound” RVP waiver to: (a) recognize that adding ethanol to gasoline reduces other ozone precursors that offset the RVP increase; and, (b) ensure that ethanol could be blended into standard gasoline blend stock without exceeding the RVP cap (i.e. ethanol blending would not require gasoline refiners to make a special “sub-RVP” blend stock to facilitate downstream ethanol blending).

Unfortunately, summer month RVP controls are now inadvertently curtailing the use of a motor fuel with higher levels of renewable content that is at least as clean as E10. Because U.S. EPA has not granted the same RVP waiver to E15 that it grants to E10, the use of E15 in the summer would require gasoline refiners to provide a sub-RVP gasoline blend stock. This has not happened. As such, E15 is essentially a 3-season fuel unavailable to mainstream consumers during the peak driving.

This is illogical for several consumer, air quality and public policy reasons:

- **E15 has lower evaporative emissions than E10.** As discussed, adding 10 percent ethanol to gasoline results in an RVP increase of ~1 psi. However, because pure ethanol has a lower RVP than gasoline, adding more than 10 percent ethanol starts to reduce the RVP of the overall gasoline/ethanol blend. As such, holding everything else constant, E15 is a cleaner (lower evaporation) fuel than E10.

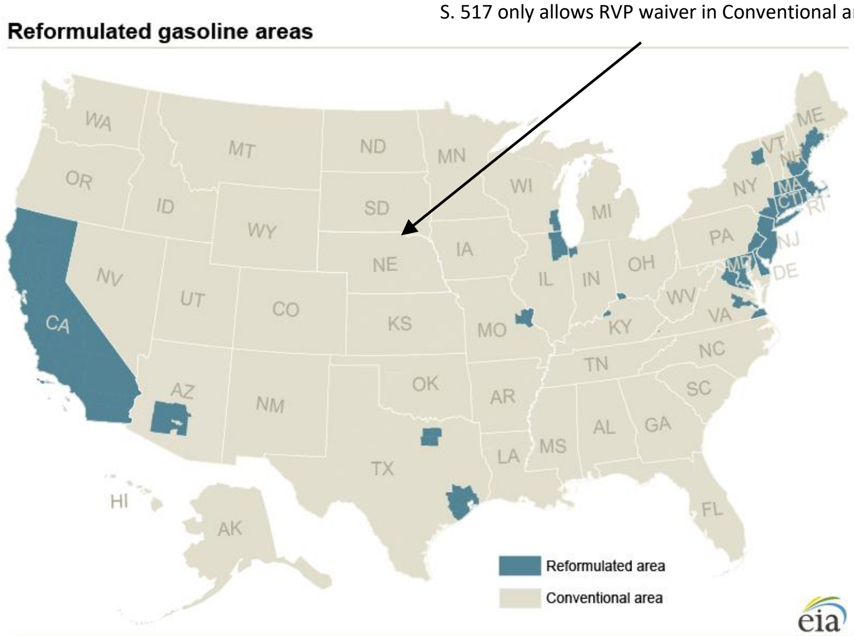


- **Increasing ethanol content from 10 percent to 15 percent does not result in higher emissions of other (i.e. non-evaporative) ozone precursors.** As discussed, E10 receives a 1-pound RVP waiver because its use reduces emissions of non-evaporative ozone precursors (e.g. total hydrocarbon, carbon monoxide) as an offset to increased RVP. E15 has essentially the same effect on tailpipe emissions as E10. The most extensive analysis was conducted by the National Renewable Energy Laboratory (NREL), which tested 14 vehicles running E0, E15 and E20. The study found that “blends of 15% to 20% ethanol into certification gasoline either produced no change or lowered NMHC and CO emissions for each vehicle tested, relative to the same vehicle tested on ethanol-free certification gasoline. NOx emissions were not statistically different for each vehicle tested on ethanol-containing certification fuels, compared to the same vehicle tested on ethanol-free certification gasoline."[2] In addition, NREL conducted a research review of 43 studies on E15 emissions and engine compatibility and found "no meaningful differences between E15 and E10 in any performance category."[3] One of the only studies alleging harm from the use of E15 was a 2012 oil-funded analysis under an industry-funded umbrella group called the Coordinating Research Council (CRC). According to the U.S. Department of Energy, the CRC failed to establish a proper control group, used a test cycle designed specifically to stress engine valve trains in cars with known valve train issues and came up with its own (rather than approved) "leak down" test to determine engine failure.[4] In critiquing the CRC study, U.S. DOE reiterated that its own 86 vehicle test – in which each vehicle was operated up to 120,000 miles under normal driving conditions – showed "no statistically significant loss of vehicle performance (emissions, fuel economy, and maintenance issues) attributable to the use of E15 fuel compared to straight gasoline."

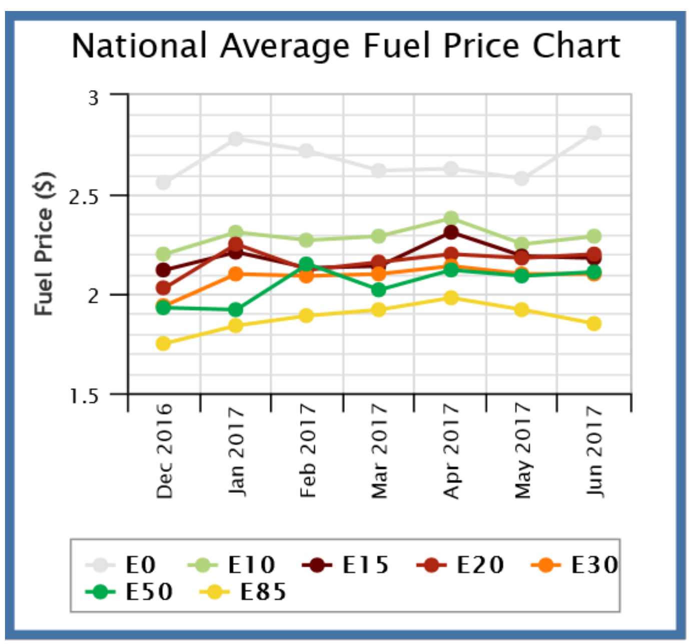
- **The 1-pound RVP waiver offered to E10 (but not E15) only applies in conventional gasoline regions, not federal Reformulated Gasoline (RFG) areas where gasoline blends must meet stricter limits due to ozone and other air quality issues.** RVP waivers are not offered for E10 or any other blend in (usually urban) RFG areas, where gasoline is regulated more tightly. S. 517 would only allow RVP waivers where RVP waivers are already allowed for E10 (i.e. in conventional gasoline areas). As such, S.517 would have no effect on gasoline regulations in most coastal urban areas/states, where ground-level ozone (smog) formation is a problem. It would also have no effect on the State of California's unique authority to regulate its own gasoline statewide.

[2] See http://www.nrel.gov/docs/fy12osti/55778.pdf.
[3] See http://www.greencarcongress.com/2013/10/20131013-nrel.html.
[4] See https://energy.gov/articles/getting-it-right-accurate-testing-and-assessments-critical-deploying-next-generation-auto.

S. 517 only allows RVP waiver in Conventional area



- **The ongoing failure to address the ethanol-related RVP waiver situation discourages the use and availability of cheaper, higher octane fuel during peak gas price months.** More than 800 retailer gasoline stations – in 29 states – now sell E15. It is widely documented that E15 is a lower cost fuel than E10, and much lower cost than E0, selling anywhere from 3 to 15 cents cheaper per gallon than E10 and roughly 50 cents per gallon cheaper than E0.[5] Adding more ethanol – the cheapest source of octane – displaces the need for benzene and other octane enhancers, which are very expensive (and highly toxic).



[5] See https://e85prices.com/.

2. **Immediate passage of S. 517 is critical to the ongoing development of advanced biofuels – particularly cellulosic ethanol, the lowest carbon fuel in the world**

The Council represents companies producing a wide variety of advanced biofuels and chemicals, including cellulosic ethanol, biodiesel, biogas and bio-jet fuel. On the ethanol side, we represent some of the largest cellulosic ethanol – and advanced biofuel enzyme – production facilities in the world. The Council's website (AdvancedBiofuels.org) details roughly two dozen advanced/cellulosic biofuel projects in the United States and abroad.

With the industry just breaking through at commercial scale, it is important to note that the scale of opportunity is enormous. According to the Sandia National Laboratory, the U.S. could produce 75 billion gallons per year of cellulosic biofuels (one subset of the advanced biofuel industry) without displacing food and feed crops.[6] This would be enough cellulosic biofuel alone to displace more than half of gasoline demand. A Bloomberg analysis looked at select regions in the world to assess the potential for next generation ethanol production.[7] The study found that eight regions -- Argentina, Australia, Brazil, China, EU-27, India, Mexico and the United States – could displace up to 50 percent of their demand for gasoline by 2030 making cellulosic ethanol from a very small percentage of its each region's agricultural residue supply alone.

Swift passage of S. 517 is critical to first-movers in commercial cellulosic ethanol production for one primary reason: market opportunity. Project finance in the advanced biofuels sector – or any sector – depends very acutely on being able to demonstrate (to outside or in-house investors) the opportunity for market demand if technological/production benchmarks are hit. The biggest challenge emerging cellulosic biofuel producers have is being able to create and demonstrate consistent year-to-year demand against the headwind of manipulated price (see: OPEC discussion below) and more general oil industry disinterest in using more renewable fuel than required by law. The "lowest hanging fruit" opportunity for cellulosic ethanol is E15 due to the blend's approval for all vehicles manufactured after the year 2001 (which now constitute more than 90 percent of all vehicles miles traveled). E15 adoption – as essentially a 3-season fuel – has helped cellulosic ethanol makers demonstrate growing ethanol demand. However, its unavailability in the summer has dampened retailer interest in making the arrangements to offer the fuel at all. And it has thereby dampened enthusiasm on the project finance side due to uncertain market demand.

Some environmental NGOs have argued that the cellulosic ethanol industry does not need a growing overall ethanol marketplace to succeed since second generation ethanol can theoretically displace first-generation ethanol in a constrained marketplace. This is a well-meaning but illogical argument for two primary reasons.

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[6] See https://share.sandia.gov/news/resources/news_releases/biofuels-can-provide-viable-sustainable-solution-to-reducing-petroleum-dependence-say-sandia-researchers/.

[7] See http://www.novozymes.com/en/sustainability/benefits-for-the-world/biobased-economy/white-papers-on-biofuels/Documents/Next-Generation%20Ethanol%20Economy_Executive%20Summary.pdf

First, as shown in a recent Third Way report, most cellulosic ethanol first movers are also first-generation ethanol producers.[8] As such, any policy that requires second-generation ethanol production to displace first-generation ethanol essentially requires cellulosic ethanol first movers to cannibalize their current business model. Ethanol companies are not going to innovate to undercut their own existing technology any more than solar and wind companies would invest hundreds of millions of dollars in better panel and turbine technology if they were only allowed to displace existing solar panels and wind turbines. Notably, it is the revenue from first generation technology that is often used to develop second generation technology. And project investors – many of which have existing stakes in these companies – are not going to undercut current assets either.

Second, the primary objective of U.S. ethanol policy – embodied in part by the Energy Independence and Security Act of 2007 – is to reduce the use of foreign oil (i.e. energy independence and security rather than independence from U.S. production of first generation biofuels). Many of the proponents of the replacement of first-generation ethanol with second-generation ethanol cite climate change concerns as the basis of the position (i.e. because cellulosic ethanol has a better carbon footprint than corn ethanol). However, it is unclear how it is more prudent climatologically to displace corn ethanol (recently assessed by USDA to be 43 percent better than petroleum on a full lifecycle basis) rather than petroleum derived from tar sands (~20 percent more carbon intensive than average petroleum) or other increasingly carbon-intensive methods with cellulosic ethanol.[9]

It is important to note that – notwithstanding claims to the contrary by a small number of loud (often oil-funded) voices – independent analysis confirms that most types of first and second-generation biofuels reduce climate change emissions, in many cases by very large amounts. This includes analysis conducted by U.S. EPA, the California Air Resources Board (CARB), the U.S. Department of Energy, the U.S. Department of Agriculture and top energy labs such as Argonne and Oak Ridge National Laboratories.

For example, the latest peer-reviewed analysis coming out of the U.S. Argonne National Laboratory shows that all types of ethanol – the type of renewable fuel usually scrutinized for its GHG emissions – have significantly lower lifecycle greenhouse gas emissions than petroleum, even with penalty for indirect land use change. It is worth highlighting that the Argonne National Laboratory developed the GREET model, which remains the gold standard for modeling carbon lifecycle emissions from fuels (e.g. and is the analytical basis for the California Air Resources Board Low Carbon Fuel Standard as "CA-GREET"). In particular (as S. 517 allows for more ethanol use), all five types of biofuels shown below are ethanol. Many of these biofuels are significantly more carbon reductive than technologies often regarded to be the most innovative (electric drive, hydrogen).

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8 See http://www.thirdway.org/report/cellulosic-ethanol-is-getting-a-big-boost-from-corn-for-now

9 See https://www.usda.gov/oce/climate_change/mitigation_technologies/USDAEthanolReport_20170107.pdf; http://www.businessinsider.com/canadas-oil-sands-produce-20-more-greenhouse-gases-2015-6; and, http://www.ibtimes.com/us-shale-oil-boom-when-it-comes-co2-emissions-not-all-crude-oil-created-equal-1843616.

Latest Well-to-Wheels Greenhouse Gas Emissions Reduction
Relative to Average Petroleum Gasoline

WTW GHG emission reductions	Corn	Sugarcane	Corn stover	Switchgrass	Miscanthus
Including LUC emissions	19–48% (34%)	40–62% (51%)	90–103% (96%)	77–97% (88%)	101–115% (108%)
Excluding LUC emissions	29–57% (44%)	66–71% (68%)	89–102% (94%)	79–98% (89%)	88–102% (95%)

Source: Argonne National Laboratory[10]

The carbon benefits of increasing the use of renewable fuels are even greater when you consider real world conditions – i.e. the fact that renewable fuels replace marginal (rather than average) gallons of petroleum. To illustrate, Petrobras chief Jose Sergio Gabrielli has declared that "the era of cheap oil is over." This means that oil companies are shifting very quickly to an increasing reliance on more expensive and riskier "unconventional" fuels – including tight oil (e.g. the Bakken), deep water (e.g. Gulf of Mexico, Deep Water Horizon) and Canadian tar sands (e.g. Keystone) – to meet the global demand for fuel energy.[11]

Unconventional oil is harder to find and can result in serious ecological problems (earthquakes, drinking water contamination, ecosystem destruction in the case of the Gulf). But these fuels are also more carbon intensive than the "average petroleum" often used to compare the carbon value of renewable fuels. There are many recent studies that have looked at the real world "marginal" impact of increasing the use of renewable fuels. One of the more extensive is a 2014 analysis conducted by Life Cycle Associates in California, which concluded that today's first-generation ethanol – assessed by EPA in 2010 to be 21 percent better than 2005 petroleum with regard to lifecycle GHG emissions – is 32 percent better than 2012 average petroleum and 37-40 percent better than petroleum derived from tar sands and fracking. The report notes that using less renewable fuel will increase the use of these "marginal" or unconventional types of oil:

> The majority of unconventional fuel sources emit significantly more GHG emissions than both biofuels and conventional fossil fuel sources … [t]he biggest future impacts on the U.S. oil slate are expected to come from oil sands and fracking production … significant quantities of marginal oil would be fed into U.S. refineries, generating corresponding emissions penalties <u>that would be further aggravated in the absence of renewable fuel alternatives.</u>" *Source: Life Cycle Associates, January 2014*

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[10] See http://iopscience.iop.org/1748-9326/7/4/045905/pdf/1748-9326_7_4_045905.pdf
[11] See http://www.eia.gov/forecasts/aeo/MT_liquidfuels.cfm#crude_oil

These findings are consistent with recent (lower resolution) assessments by federal agencies. For example, a recent report released by the Congressional Research Service (CRS) found that Canadian oil sands are 14-20 percent more carbon intensive than the 2005 EPA baseline.[12] As such, it is an inescapable reality that any proposal to increase renewable fuel blending is a proposal to reduce U.S. consumption of high carbon intensity, unconventional oil. If the high-carbon-intensity marginal gallon of oil is displaced by cellulosic ethanol, the carbon benefits are enormous.

3. **The allegations made about the "unintended consequences" of expanded ethanol use are overblown and in some cases factually incorrect**

Ethanol use as a percentage of gasoline demand has risen from roughly 1 percent by volume to just over 10 percent by volume over the last twenty years or so. Some groups allege that the increase in ethanol use comes with unintended consequences. However, we are now at the point in ethanol industry development in which we have the benefit of hindsight. In other words, we can test forecasted theories about ethanol against what has happened in the real world.

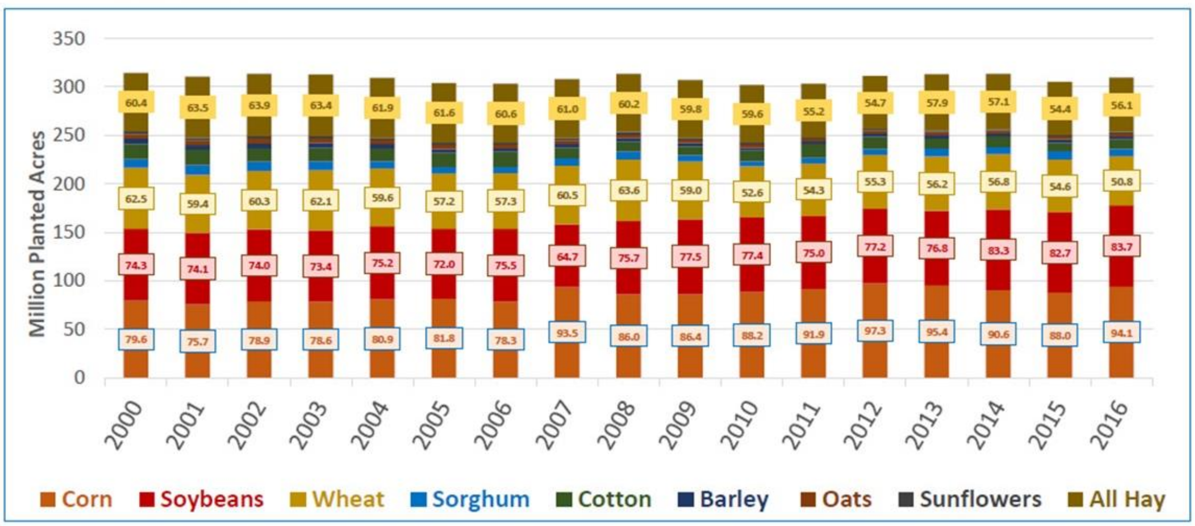
While each one of the issues discussed below should be analyzed in greater depth, it makes sense in the context of this hearing to highlight a few issues very briefly:

- **Land use change.** Some groups alleged that the increased demand for agricultural commodities (i.e. corn) would result in land use intensification which would expand the U.S. and global agricultural footprint into pristine lands. However, with the benefit of hindsight, we now know that the increase in ethanol production has occurred without expanding the U.S. agricultural footprint. If you look at data reported mandatorily by farmers, it strongly suggests that the increasing demand for corn was met with higher efficiency and some level of crop switching (as opposed to forays into pristine lands; as shown below). More recent analysis from a few NGOs suggests that there is nonetheless more localized and problematic land conversion, even if the national agricultural footprint continues to decline. For example, using satellite data, one study suggested that pristine lands were being plowed in a 5-state region (MN, IA, SD, ND and NE) while another alleged that lands in the immediate vicinity of ethanol plants is being converted from grassland/prairie to corn. However, a closer analysis of actual USDA reported data conducted by Geoff Cooper of the RFA shows that both claims are false. In the case of the 5-state study, Mr. Cooper found that total planted acres were falling in the period analyzed.[13] So while in some cases more acres were planted to corn due to higher (fetched) corn prices, these acres replaced other crops in a standard crop-switching cycle rather than pristine land. In the case of the "ethanol plant study," Mr. Cooper examined historical trends for all 180 individual counties where at least one grain ethanol plant was

[12] See http://www.fas.org/sgp/crs/misc/R42537.pdf
[13] See http://www.ethanolrfa.org/2013/02/response-to-recent-land-use-change-in-the-western-corn-belt-threatens-grasslands-and-wetlands/.

located in 2016. He found that "[c]onsistent with the national trend, cropland in counties surrounding ethanol plants generally fell between 1997 and 2012."[14] A closer look at the data by county breaks even more sharply from the NGO report: "on an individual county basis, 2012 cropland levels were below the levels recorded in 1997, 2002, or 2007 in the overwhelming majority (84 percent) of the counties with ethanol plants … [t]he reduction in cropland for these 151 counties averaged 11.8 percent when compared to the highest level of cropland from 1997, 2002, or 2007." As noted, even the authors of the two "anti-ethanol" NGO studies acknowledge the limitations of using satellite data to make claims about pristine land conversion: "[n]otably, the NLCD [method used] does not distinguish undisturbed grassland (native prairie) ineligible for feedstock production under EISA from eligible grassland types including introduced grass pasture, introduced grass hay, and idle cropland planted to grasses under the Conservation Reserve Program (CRP)." USDA agrees: "[u]nfortunately, the grassland-related categories have traditionally had very low classification accuracy in the CDL."[15] Essentially, national and region-specific reported USDA data show crop-switching and a shrinking agricultural footprint in the face of low-differentiation satellite data that by its own admission could be mistaking hay planting for grassland.

U.S. Ag Footprint Not Expanding: Sum of U.S. Planted Acres, Major Crops 2000-2016 (USDA)



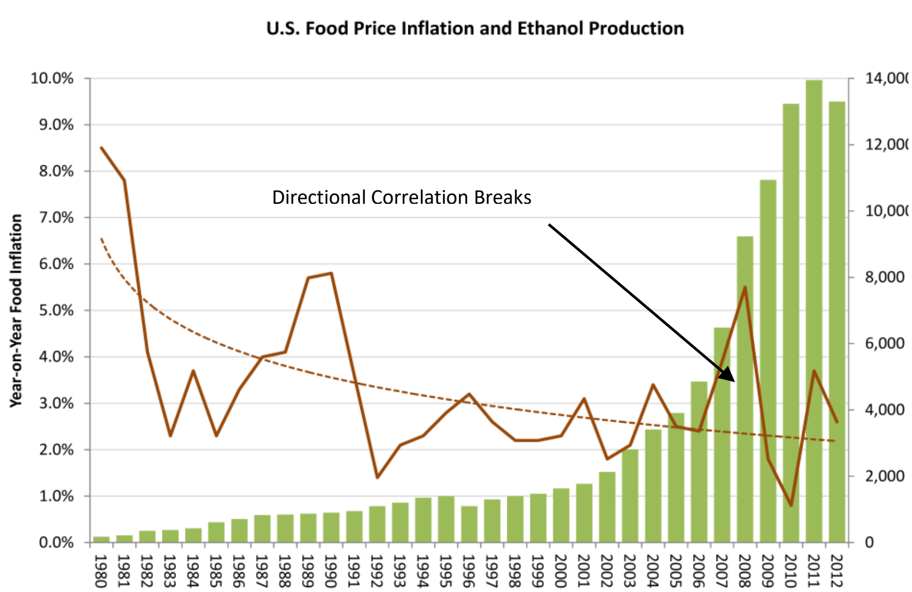
Recent *global* retrospective land use studies show similar effects. A recent analysis by Bruce Babcock (who contracts with U.S. EPA on land use analysis) and others examined actual observed global land use changes in the period spanning from 2004 to 2012 and

[14] See http://www.ethanolrfa.org/wp-content/uploads/2017/04/USDA-Data-Show-Cropland-Reductions-in-Counties-with-Ethanol-Plants-from-1997-2012.pdf.
[15] See U.S. Department of Agriculture, National Agricultural Statistics Service, CropScape and Cropland Data Layers, FAQ's. [Online] Available at https://www.nass.usda.gov/Research_and_Science/Cropland/sarsfaqs2.php.

compared the observations to predictions from the economic models used by the California Air Resources Board (CARB) and U.S. EPA to develop land use penalty factors for biofuels. The report concluded that farmers around the world have responded to higher crop prices in the past decade predominantly by using available land resources more efficiently rather than expanding the amount of land brought into production.[16]

- **Ethanol and small engines.** E15 and other higher ethanol blends are additional choices at the pump, as opposed to the new baseline ethanol-blended fuel that everyone must use. Small engines and boats are not approved to use E15. E15 is marked with a large orange decal specifically prohibiting use in small engines. Boaters and small engine users can simply fill up their machines with E10 or other approved fuel – while perhaps filling up their vehicle with the cheaper, clean high ethanol blends – to avoid small engine issues.

- **Food prices.** Some groups alleged that the increased demand for agricultural commodities (i.e. corn) would increase corn prices and thereby food prices domestically and globally. The oil and agricultural price spikes between 2008-2013 fueled concern that ethanol was to blame because there was correlation between increased ethanol use and increasing agricultural commodity prices. However, the correlation between ethanol use and corn prices is now broken. Corn prices are lower today than they were when RFS2 was passed by Congress in 2007. In 2013, the World Bank concluded that almost two-thirds of the post-2004 food price increase was attributable to the price of crude oil, reinforcing the near-perfect correlation of oil price and food prices that has occurred since 2000. Even when there was food price inflation in recent years, there was no correlation to ethanol production increases (see below).



[16] http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1000&context=card_staffreports

4. **CONCLUSION: The ethanol industry is growing and innovating, but motor fuel markets are regulated, largely non-competitive markets; therefore, the trajectory of our success remains tied to key decision-making among regulators and legislators.**

The U.S. ethanol industry is little more than a quarter century old. And yet, it is now the one of the largest employers in the U.S. renewable *energy* sector by some estimates. For example, the International Renewable Energy Agency estimates that of the ~ 806,000 Americans employed by the renewable energy sector in the United States, more than 283,000 of them are employed by the liquid biofuels industry (more than any other renewable energy sector including solar and wind).[17] Other analysis shows higher U.S. renewable fuel employment numbers,[18] but the point is the same: the U.S. renewable fuel industry is a vital part of the U.S. manufacturing sector with the potential to do even more to reduce foreign oil dependence, create jobs and commercialize cleaner fuels.

While the first-generation liquid biofuels industry is established, the unfortunate reality is that global oil and domestic oil markets are still not diverse or open enough to operate as price-driven, free markets. Instead, they continue to be price-controlled by openly collusive foreign oil cartels exerting their market position to dampen innovation and hurt competition.

Recent behavior by the Organization of the Petroleum Exporting Countries (OPEC) offers case in point. Certain members of OPEC decided in late 2014 to allow global crude oil prices to slip in part to stop competition from emerging U.S. domestic tight oil production and reclaim market control. In simple terms, colluding to lower the price of oil changes the economics on U.S. oil (and other fuel) production, which struggled to compete with collusively depressed oil prices in the 2014-16 timeframe.

A recent Bloomberg report entitled "OPEC Is About to Crush the U.S. Oil Boom" notes that the strategy worked during that period.[19] And an OPEC September 2015 report openly acknowledged the effort and its effects: "In North America there are signs that US production has started to respond to reduced investment and activity. Indeed, all eyes are on how quickly US production falls."[20] As U.S. domestic oil production slowed, dependence on OPEC oil turned directionally and increased again through 2016. The figure below shows how quickly Saudi Arabia recovered market share in the wake of artificially depressed oil prices.

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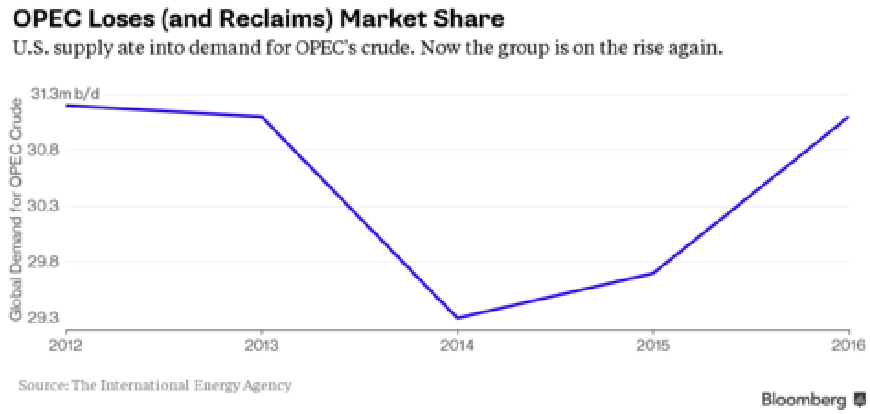
[17] See http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Jobs_Annual_Review_2017.pdf and http://m.dailykos.com/story/2017/5/31/1667650/-U-S-needs-to-accelerate-growth-in-green-jobs-by-treating-climate-change-like-the-crisis-of-WWII.

[18] See https://fuelsamerica.org/resources/fuels-america-releases-new-footprint-analysis/.

[19] See: http://www.bloomberg.com/news/articles/2015-10-20/after-year-of-pain-opec-close-to-halting-u-s-oil-in-its-tracks.

[20] See: http://www.opec.org/opec_web/static_files_project/media/downloads/publications/MOMR_September_2015.pdf



Fortunately, Congress has already put in place a mechanism to promote renewable alternatives to foreign oil and protect the renewable fuel industry (to a degree) and the U.S. economy from predatory oil pricing – called the Renewable Fuel Standard (RFS). The RFS has worked very effectively over the last decade to provide stable renewable fuel demand in the face of manipulated global oil prices.

However, ongoing biofuel industry growth – particularly in advanced biofuels – will depend on increased synchronization between the broader policy goal of increased biofuel use and the gasoline/motor fuel regulations that restrict or facilitate those outcomes. S. 517 targets and fixes a critical regulatory glitch that is constraining growth and innovation in the ethanol industry. We strongly urge the committee to pass S. 517.

It is both an exciting and challenging time for the cellulosic biofuels industry and the advanced biofuel industry. The technology is commercial ready and the industry is deploying at commercial scale. We are embarking on the process of securing efficiencies that can only be achieved via commercialization (i.e. the "commercial learning curve") and economies of scale. And yet, we face as much market demand uncertainty as we ever have before, almost always generated or protected by fabricated claims about renewable fuels. It is important to understand that this is happening because of the effectiveness, rather than ineffectiveness, of our industry to develop petroleum alternatives and drive consumer choice at the pump.

Thank you for the privilege of speaking before you today. I look forward to your questions.