

# Renewable Fuel Standard

Fill Up On Facts



America's Oil and Natural Gas Industry

November 2017

For the latest report, please visit [www.api.org/policy-and-issues/fuels](http://www.api.org/policy-and-issues/fuels) and [www.filluponfacts.com](http://www.filluponfacts.com)

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# The RFS Needs Reform

## [Video: API's Frank Macchiarola](#) Testimony on EPA's proposal to reduce the RFS volumes



At the very top of [EPA's Renewable Fuel Standard website](#), you'll find this description of the program devised by Congress in 2005 and expanded in 2007:

Congress created the renewable fuel standard (RFS) program to reduce greenhouse gas emissions and expand the nation's renewable fuels sector while reducing reliance on imported oil.

No question, the RFS was well-intentioned. But more than a decade later, here's what we know about those top-line objectives set out by Congress:

- First, while the United States is [less reliant on imported crude oil](#) – it's mostly because of [surging domestic crude production](#), not creation of the RFS.
- Greenhouse gas emissions have declined – [primarily because increased use of cleaner-burning natural gas](#), not RFS mandates requiring ever-increasing levels of ethanol in the nation's gasoline supply.

With EPA receiving public input on its proposed ethanol-use volumes for 2018, it's important to see that America's energy renaissance in natural gas and oil production is the biggest reason for the progress the U.S. has made toward those RFS objectives.

## [Video: API's Jack Gerard](#) EPA should focus on potential economic harm to consumers



As for emissions, levels of [carbon dioxide associated with electricity generation are near 30-year lows](#), primarily because of increased use of cleaner-burning natural gas.

"Congress can put in place common-sense, bipartisan reforms that advance sustainable fuels the right way – solutions that work for family farmers while protecting our water, wildlife, and economy." Collin O'Mara, president and CEO of the National Wildlife Federation

While the United States has made important climate progress and increased its energy security largely apart from RFS contributions, the RFS itself continues to have difficulties that could impact consumers and the overall economy. Frank Macchiarola, API downstream group director (pictured above), described some of these in [remarks at EPA's public hearing in Washington](#).

EPA's latest ethanol volume proposal – reducing volumes from unattainable levels set out by Congress a decade ago – is the right move, but more is needed.



Since the inception of the ethanol mandate a decade ago, the United States has undergone an energy transformation from a nation of energy dependence and scarcity to one of energy security and abundance. America has significantly increased domestic crude oil production and transitioned from a net importer of refined petroleum products to a net exporter. It is well past time to reform outdated energy policies to reflect the energy realities of today and tomorrow.

Today, most gasoline contains 10 percent ethanol by volume. However, if the Renewable Fuel Standard (RFS) requirements continue to be implemented, our nation could exceed this level of ethanol in the fuel mix. Extensive testing by the automotive and oil industries shows higher ethanol blends may result in damaged engines and fuel systems for owners of the overwhelming majority of cars. Automakers have warned these increased blends of ethanol could void car warranties. Increased RFS volumes could also cost

consumers money and choice, and threaten far higher costs in the form of engine damage.

Furthermore, as stated by the EPA “Biofuels also tend to require subsidies and other market interventions to compete economically with fossil fuels, which creates deadweight losses in the economy.”<sup>1</sup>

Simply stated, the RFS mandate creates potential harm to the American consumer. And it must be fixed. Surveys show that the American people agree, with nearly three-quarters of voters concerned about the potential harms created by the increasing prevalence of ethanol blends to over 10 percent of the fuel mix. The RFS has proven to be an unworkable program.

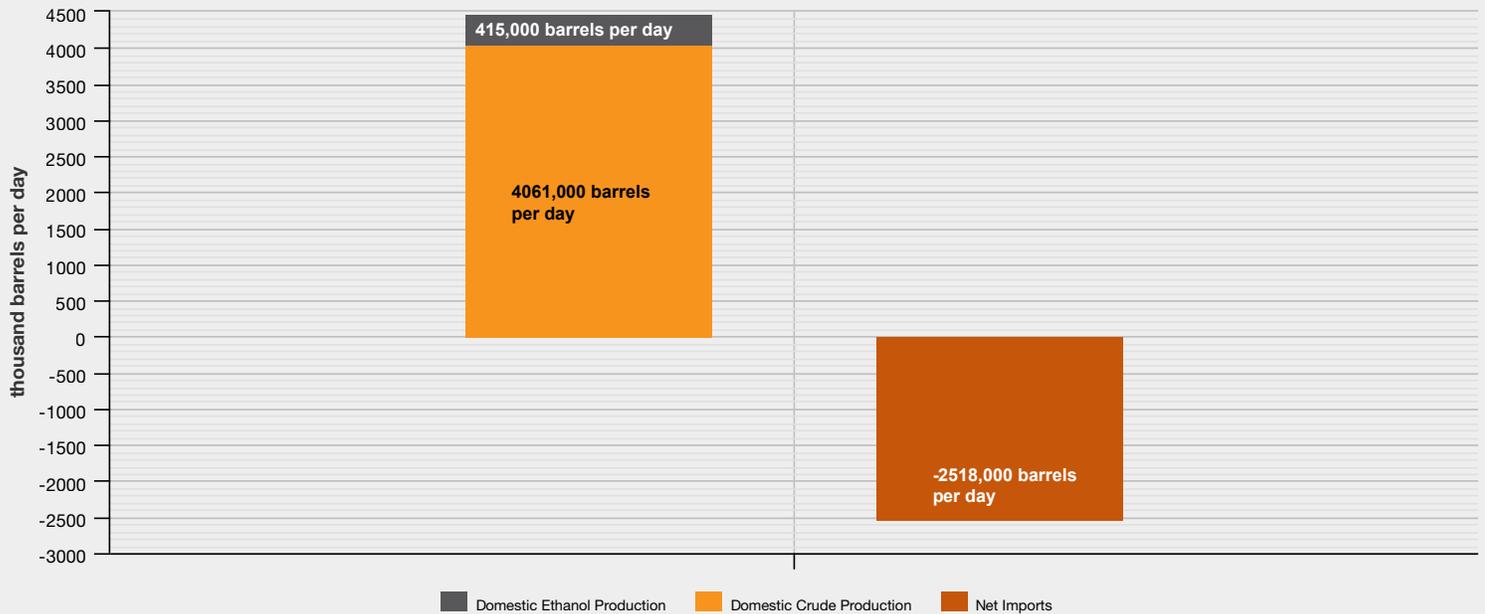
Congress must repeal or significantly reform the Renewable Fuel Standard to protect American consumers.

1. EPA, Economics of Biofuels, September 26, 2017, <https://www.epa.gov/environmental-economics/economics-biofuels>

# The Reality of America's Energy Revolution

## Increased U.S. Crude Oil Production: Primary Factor in Declining Crude Import

(change in fuel source: 2008 to 2017)



Source: EIA Monthly Energy Review. Accessed April 23, 2013

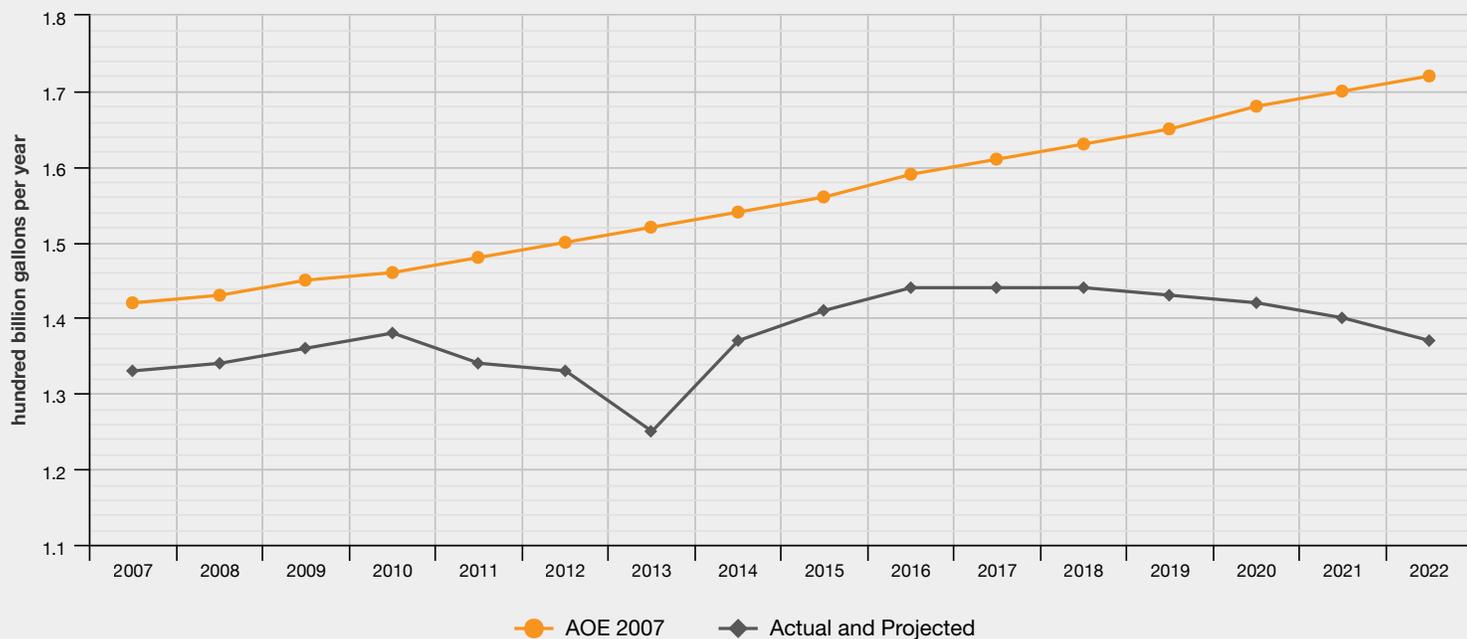
When Congress created the Renewable Fuel Standard (RFS) more than a decade ago, lawmakers hoped the federal fuels program would spur development of a domestic biofuels industry that would help reduce oil imports with millions and millions of gallons of homegrown ethanol – with a particular focus on increasing volumes of cellulosic biofuel made from corn stover, wood chips, miscanthus or other cellulosic feedstocks. By 2022, it was expected that 16 billion gallons of cellulosic biofuel would be produced, but a couple of other things happened instead.

First, the U.S. energy revolution happened. Our crude oil imports fell mostly because of surging domestic oil production, not the RFS. Through safe hydraulic fracturing and horizontal drilling, American output grew from less than 6 million barrels per day to more than 9 million barrels per day – the growth in domestic production more than accounting for the reduction in net imports.

Second, a viable domestic cellulosic biofuels industry has not taken hold, with only a tiny fraction of the fuel mandated by the RFS actually being produced.

The fact is, Congressional mandates have failed to produce cellulosic biofuel and expand the domestic biofuels industry as envisioned, and our new energy realities have made the RFS obsolete. It is a broken and outdated policy. Americans are not consuming as much gasoline as Congress estimated they would when the mandate was passed in 2007. That means RFS mandates could push higher ethanol concentrations into gasoline than today's vehicles or refueling infrastructure were designed to accommodate.

## Motor Gasoline Consumption



Source: U.S. Energy Information Administration (EIA)

The Energy Independence and Security Act of 2007 (EISA) was legislation enacted under the assumptions of declining domestic production of crude oil and far greater crude oil imports. Both of these assumptions have been completely reversed by the shale oil revolution, dramatically increasing North American energy production and increasing crude oil exports. The U.S. is now a global oil and natural gas superpower—not because of biofuels, but through investment in the oil and gas industry and increases in domestic production. Our domestic oil and natural gas industry is achieving the EISA goals of greater energy independence and security. As further endorsement that the United States has achieved desired energy security, Congress enacted legislation in 2015 to allow broader export of crude oil.

In addition EISA07 was based on significantly greater gasoline demand projections in 2007 than current projections. The Energy Information Administration's 2017 Annual Energy Outlook projected 20 percent lower demand in 2022 than was projected in 2007, when EISA07 was enacted. Furthermore, liquid cellulosic biofuel technologies were expected to develop within a few years of EISA07, but by the end of 2017, only one

tenth of one percent of the volume congress had hoped for was actually produced.

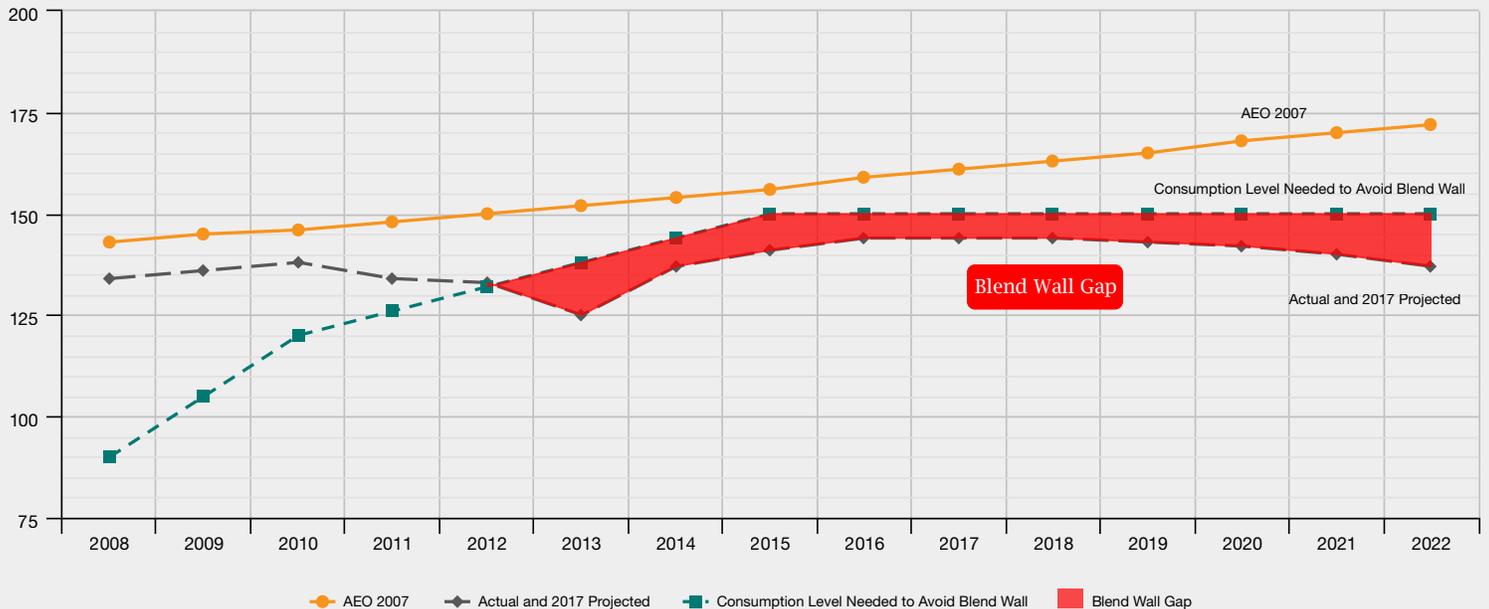
Declining gasoline demand, combined with increasing mandates, means we are at the limit of blending ethanol into gasoline (10 percent ethanol or E10) for widespread use. The EPA rushed through approval in allowing a blended fuel with up to 15 percent ethanol (E15) without adequate testing. In addition to compatibility problems with E15, expanded use of another alternative fuel (E85) has not occurred due to poor consumer acceptance and significant infrastructure and cost challenges.

The RFS was based on economics and security perspectives that are much different from the reality of today's energy landscape.

# Disconnect Between EPA Mandate and Technology

## Market Reality Vs. RFS Mandates

(billions of gallons)



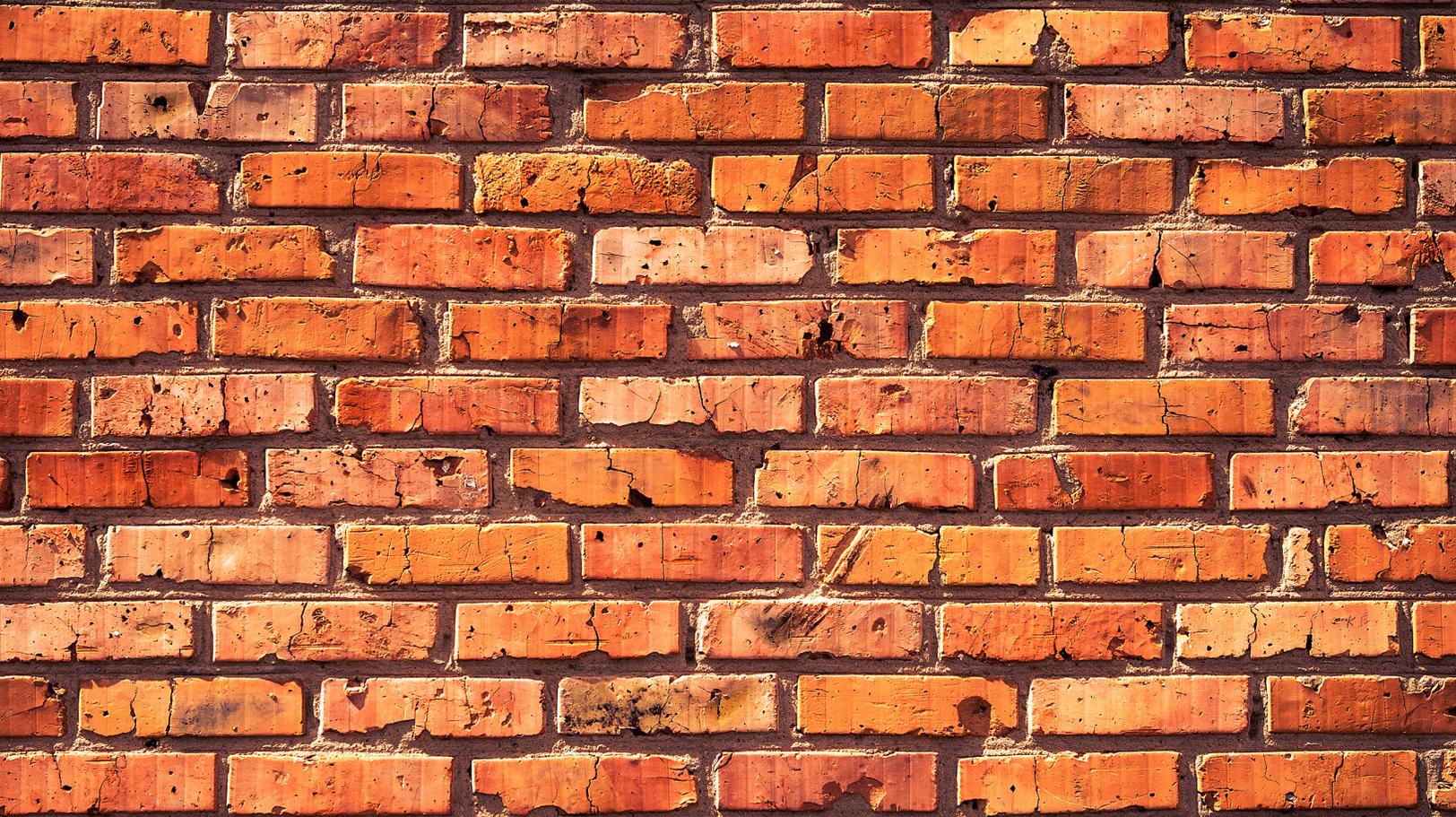
Source: EIA

Gasoline demand projected in 2017 is 10% lower than 2007 projections.  
Gasoline demand projected in 2022 is 20% lower than 2007 projections.

The statutory mandate for increased use of cellulosic biofuels is disconnected from reality. Though there was no commercial cellulosic production in 2010, 2011, or 2012, EPA set the required volume from 5 to 8.65 million gallons over the period, forcing companies to purchase credits to comply. The courts even ordered the EPA to adjust its overly optimistic projections by directing the agency to “aim at accuracy” when projecting cellulosic biofuel availability. And yet for 2017, EPA projected 311 million ethanol equivalent gallons would be available, and three quarters of the way through the year, only 158 million gallons were produced.

Clearly, the domestic cellulosic biofuel industry has struggled and indeed could be seen as losing ground. Actual production continue to diverge further and further from EPA’s old targets, creating expensive uncertainty for refineries busy meeting American fuel needs.

# What is the “Blend Wall?”



As biofuel mandates increase, the ethanol volume required for blending into gasoline will exceed 10 percent – known as the “E10 Blend Wall.” The Blend Wall is the maximum amount of ethanol that can be blended into gasoline, based on the limitations of the vehicle fleet and refueling infrastructure.

The demand for unblended gasoline (E0) is significant. The EIA estimated E0 consumption of 5.3 billion gallons per day in 2015.<sup>1</sup> Blending limitations, refueling infrastructure, and consumer demand reinforce the ethanol blend wall.

The blend wall problem could constrain domestic fuel supply and result in severe economic harm, according to a study by NERA Economic Consulting. NERA found<sup>2</sup> that:

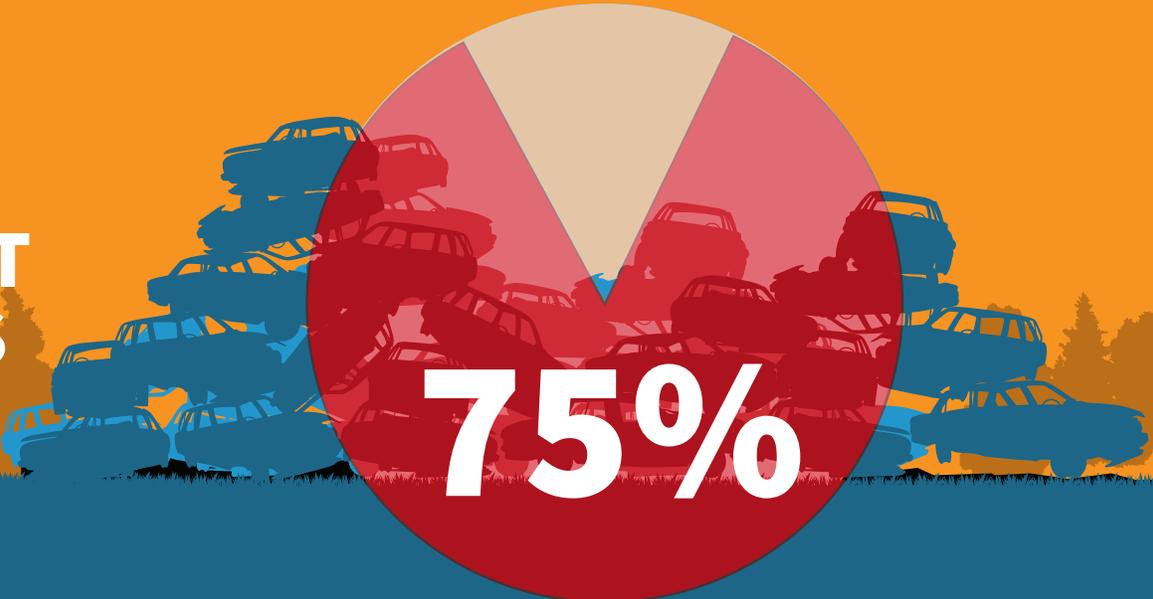
1. It is not feasible to achieve the volume of total renewable fuels required by the RFS statute.
2. A 30% reduction in gasoline and diesel supply would be required to reach the required blending percentage.
3. Severe rationing of diesel fuel would cause an extreme disruption in the commercial transportation sector.

High ethanol blended fuels, like E85, are not viable solutions for reaching renewable fuel consumption targets of the RFS, even if cellulosic standards are waived.

1. EIA, US Ethanol-free Motor Gasoline, May 4, 2016 <https://www.eia.gov/todayinenergy/detail.php?id=26092>

2. NERA [http://www.nera.com/content/dam/nera/publications/2015/NERA\\_FINAL\\_API\\_RFS2\\_July27.pdf](http://www.nera.com/content/dam/nera/publications/2015/NERA_FINAL_API_RFS2_July27.pdf)

# E15 NOT BUILT FOR CARS



75%

About **75%** of cars which equals about **155 million vehicles** on the road were not built for E15

Most vehicles on the road today aren't recommended for operating on E15 by manufacturers.

In response to lower gasoline demand, EPA is trying to force increased use of E15 gasoline, fuel that contains up to 15 percent ethanol (compared to the standard grade used in the U.S. that contains up to 10 percent ethanol). Many groups are concerned about this effort, including automakers, AAA, the California Air Resources Board (CARB), and environmental non-profits. The stakes are high for consumers who could be left stranded on the roadside and/or stuck with potentially expensive repair bills.

Testing by the Coordinating Research Council (CRC), which has been the gold standard in fuels and vehicle

research for the better part of a century, determined that millions of vehicles on the road today could suffer engine damage from using fuels containing higher levels of ethanol than for which they were designed. Likewise, a separate CRC study found that fuel pump systems could seize up or otherwise be damaged by E15 fuel.

# E15 and Your Car

## WAS YOUR VEHICLE DESIGNED AND WARRANTED TO OPERATE ON E15?

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>BMW</b>	No	No	No	No													
<b>Chrysler</b>	No	No	Most <sup>6</sup>	Most <sup>6</sup>													
<b>Ford</b>	No	Yes	Yes	Yes	Yes	Yes											
<b>GM</b>	No	Yes	Yes	Yes	Most <sup>4</sup>	Most <sup>4</sup>	Most <sup>4</sup>										
<b>Honda/Acura</b>	No	Some <sup>1</sup>	Yes	Yes	Yes												
<b>Hyundai/Kia</b>	No	No	No	Most <sup>7</sup>													
<b>Jaguar/Land Rover</b>	No	Yes	Yes	Yes	Yes												
<b>Mazda</b>	No	No	No	No													
<b>Mercedes</b>	No	No <sup>2</sup>	No <sup>2</sup>	No	No												
<b>Mitsubishi</b>	No	No	No	No													
<b>Nissan/Infiniti</b>	No	No	No	No													
<b>Subaru</b>	No	No	No	No													
<b>Toyota/Lexus</b>	No	Some <sup>3</sup>	Most <sup>5</sup>	Most <sup>5</sup>	Yes												
<b>VW/Audi/Porsche</b>	No	Yes	Yes	Yes	Yes												
<b>Volvo</b>	No	No	No	No													

E15 Chart Sources: <http://www.edmunds.com/ownership/howto/articles/120189/article.html> and auto company contacts

<sup>1</sup> Accord, Civic, Crosstour, CR-V, CR-Z, Insight, Odyssey, Pilot; Acura: ILX, MDX, RDX, RLX, but not TL, TSX, TSX Wagon

<sup>2</sup> Some owner manuals for 2014 and 2015 incorrectly stated that E15 was allowed.

<sup>3</sup> Avalon, Camry, Corolla, Highlander, iQ, Prius, RAV-4, Scion tC, Sienna, Venza; Lexus: CT200H, ES350, GS300/350, GS450H, IS250, IS350, LS460, RX350, RX450H, but not 4Runner, FJ Cruiser, Land Cruiser,

Sequoia, Tacoma, Tundra, Yaris; Lexus: IS250C, IS350C, IS F, GX460, LX570

<sup>4</sup> Not Chevrolet City Express

<sup>5</sup> Not FR-S, xB (model discontinued after 2015).

<sup>6</sup> Not Dodge Viper

<sup>7</sup> Not Hyundai Santa Fe, Kia Optima

Most vehicles on the road today aren't recommended for operation on E15. Here's what some automakers have to say about E15:



**High potential for consumers to inadvertently mis-fuel their vehicles thereby voiding the vehicle's warranty.<sup>1</sup>**



**We are not confident that our vehicles will not be damaged by E15.<sup>2</sup>**



**Ford does not support the introduction of E15 into the marketplace for the legacy fleet.<sup>2</sup>**



**We are not confident that our cars and trucks from model year 2001 and later will be undamaged by the use of E15.<sup>3</sup>**



**The EPA tests failed to conclusively show that the vehicles will not be subject to damage or increased wear.<sup>2</sup>**



**Any ethanol blend above E10, including E15, will harm emission control systems in M-B engines.<sup>2</sup>**

Mercedes-Benz



**Toyota cannot recommend the use of fuel with greater than E10 for Toyota vehicles.<sup>2</sup>**

TOYOTA

Auto manufacturers and models recommendations for E15 in non-flex fuel vehicles as of 2017.

<sup>1</sup> Comments to RFS Proposed Rule (EPA-HQ-OAR-2015-0111-2037) July 27, 2015.

<sup>2</sup> [http://www.api.org/~media/Files/Policy/Fuels-and-Renewables/What-others-are-saying/E15\\_Auto\\_Responses.pdf](http://www.api.org/~media/Files/Policy/Fuels-and-Renewables/What-others-are-saying/E15_Auto_Responses.pdf), July 5, 2011.

<sup>3</sup> Robert E. Ferguson, Vice President, General Motors Company to the Honorable F James Sensenbrenner, Jr., Representative, Fifth District Wisconsin, July 1, 2011.

**E85 NOT A SOLUTION TO BLEND WALL**

Annual Gasoline Demand

**ACCORDING TO THE EIA THE ANNUAL AMOUNT OF E85 SOLD IN 2017 IS LESS THAN ONE PERCENT OF ANNUAL GASOLINE DEMAND.**

**LESS THAN 1 PERCENT OF GASOLINE DEMAND**



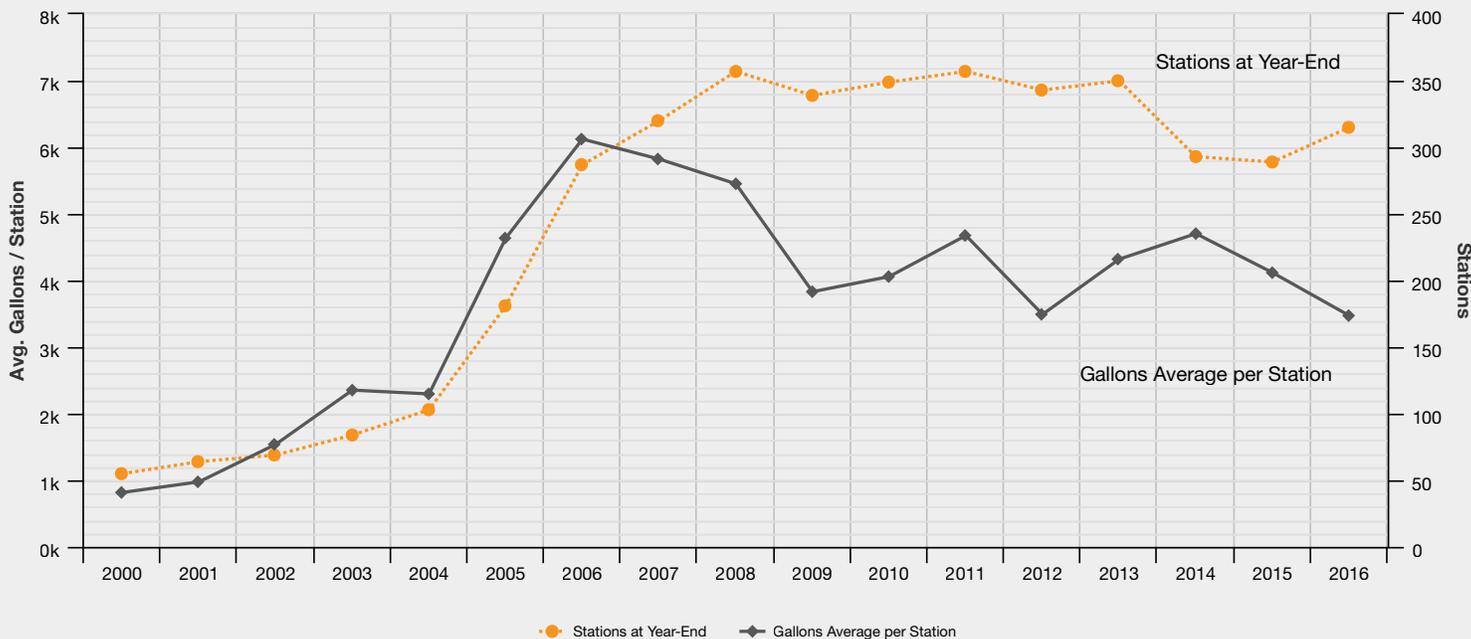
Source: U.S. Department of Energy.

Some have suggested that requiring more production of higher ethanol-blend fuels like E15 and E85 can satisfy RFS mandates but these measures are expensive, temporary at best, and could have serious impacts on consumers and the broader economy.

E85 has several limitations. For starters, only flex-fuel vehicles (FFVs) can use it, which becomes a logistical issue because there is a lack of E85 pumps across the country – only about 3,000 retail stations out of more than 150,000 offer it. It is clear that there is a lack of customer demand for this fuel (see chart). Second, there is a mismatch between pump locations and FFVs, illustrated by a recent Department of Energy (DOE) Inspector General’s report that found DOE has been fueling its FFVs with regular gasoline instead of E85. This eliminates any supposed benefits of having a fleet of cars that can use fuel containing up to 83 percent ethanol. And finally, E85 has not been cost-competitive – according to AAA’s website that tracks retail E85 prices.

A lot of these problems simply come down to the amount of energy in E85. According to the Energy Information Administration, the energy content of ethanol is about 33% less than pure gasoline, and E85 contains 51-83% ethanol, lowering gas mileage and forcing consumers to fill up more frequently. That is why there is so little demand for the product.

### E85 Volume in Gallons and Number of Stations in Minnesota



Source: Stations and Average E85 Gallons. Visit: <http://mn.gov>

Ethanol supporters suggest, to avoid the blendwall, E85 be heavily discounted to reach maximum sales, but the numbers do not add up: actual sales of E85 have never come close to the annual rate which would be needed to avoid the blend wall, and E85 is more costly on an energy-equivalent basis. Such arguments ignore ethanol market dynamics. Ethanol production has expanded and the U.S. has been a net exporter of ethanol since 2010. Trade flows of ethanol are responding to market signals, which appear to be placing a higher value on ethanol for its use as a low-level blend gasoline blendstock for export rather than as a high-level blend as a gasoline replacement (such as E85).

Devising unrealistic solutions to justify bad policies is just another distraction from the real problem: The RFS is fundamentally flawed, and its renewable fuel volume mandates are broken. Rather than trying to push higher ethanol-blend fuels into the market, which the consumer is not even demanding (E85) or which could harm engines (E15), we need Congress to address the RFS with long-term and meaningful action.

# The RFS is Bad Policy: National and Multi-Industry Consensus



The RFS is a broken policy, and its continued implementation could result in dire consequences for the broader economy, as well as negative impacts on consumers. Action is needed to protect the property and interests of everyday Americans, as well as the economy. We believe the RFS should be repealed or significantly modified, and most Americans and many other industries agree.

In testimony before the Senate Environment and Public Works Committee, Lucian Pugliaresi, President of the Energy Policy Research Foundation, Inc. (EPRINC), shared EPRINC's conclusion that continuing to administer the RFS as written "would increase gasoline prices from approximately 30 cents to 50 cents a gallon" and cautioned Congress to address "the risk to economic recovery" this poses.<sup>1</sup>

According to the USDA, nearly forty percent of the 2017 U.S. corn crop will be diverted to ethanol production, and just over 1/3 of the oil produced from soybeans,

the leading source of vegetable oil in the U.S., will be diverted to biodiesel production in 2017/18. In fact, since the RFS expanded renewable fuel volumes in 2007, over 1/3 of corn production and nearly 1/4 of the oil produced from soybeans have been diverted to biofuels.<sup>2</sup> As the EPA points out, "because many biofuel feedstocks require land, water, and other resources, research suggests that biofuel production may give rise to several undesirable effects."<sup>3</sup>

"Lower gasoline prices are yielding annual savings for the U.S. economy of \$129 billion, or an estimated \$1000 per year per household. These savings to consumers are essential for expanding economic growth, particularly in light of the enormous losses we are seeing from rapid cuts in capital investment in domestic oil and gas development. ... Great care should be taken to ensure that these savings are not lost through a regulatory program that increases gasoline prices." – Lucian Pugliaresi, EPRINC President

1. Lucian Pugliaresi, Testimony to U.S. Senate Committee on Environment and Public Works on "Oversight of the Renewable Fuel Standard", February 24, 2016, <http://eprinc.org/wp-content/uploads/2016/03/Testimony-before-EPW-on-RFS-Feb-24-2016.pdf>.

2. USDA Office of the Chief Economist, World Agricultural Supply and Demand Estimates Report (WASDE).

3. EPA, Economics of Biofuels, September 26, 2017, <https://www.epa.gov/environmental-economics/economics-biofuels>

# A Bumpy Ride for Motorcyclists



The American Motorcyclist Association is well aware of the dangers of fuels with higher ethanol blends, like E15. Engine damage, engine failure and misfueling are just a few of the consequences of the RFS ethanol mandates.

“Thanks to the U.S. Environmental Protection Agency, there’s a new threat facing motorcyclists nationwide, and possibly all Americans. The danger is posed by a certain blend of motor vehicle fuel called E15, which may damage the engines of motorcycles, all-terrain vehicles, boats and powered equipment.”

– **Wayne Allard**, AMA vice president for government relations

“... E15 could lower fuel efficiency and possibly cause premature engine failure for motorcycles and ATVs.”

– AMA

“... the U.S. Environmental Protection Agency’s decision to allow E15 into the marketplace would impact every American who owns motorcycles and ATVs, not to mention cars, lawnmowers, boats and snowmobiles.”

– AMA

“... the U.S. Department of Agriculture was subsidizing ethanol production from the start by providing grants to purchase special ethanol blender pumps. ... Agriculture Secretary Tom Vilsack announced in 2011 that the USDA intends to install

10,000 blender pumps by 2016. [Rural Energy for America Program] REAP will be a key component to achieve the secretary’s goal and, thus, help grow the availability of E15 fuel. These special ethanol blender pumps will further limit access to E10-or-less fuel in rural areas. This will be a problem because rural areas tend to have an older “legacy” vehicle fleet than other parts of the country. Moreover, rural areas are the most vulnerable places for motorcyclists and users of small engine devices because options for regular gasoline may be few or even non-existent. The REAP will help one segment of the rural economy at the cost of other segments. Ultimately, the higher costs will have a negative impact on small rural economies.”

– AMA

“Automobile and motorcycle manufacturers must certify that the on-highway vehicles they produce will meet applicable U.S. EPA and National Highway Traffic Safety Administration emissions, fuel economy and safety requirements prior to selling the vehicles. The fuel that the vehicles must use for this requirement is called the “certification fuel.” Changing the certification fuel to E15 or E30 is at odds with the 22 million motorcycles and all-terrain vehicles currently in use, not to mention the legacy fleet of cars, boats, lawnmowers, generators and hundreds of millions of small engines in commerce today. None of these vehicles and engines is designed to operate on fuel with more than 10 percent ethanol.”

– AMA

# Rising Ethanol Blends Don't Float All Boats



The National Marine Manufacturers Association (NMMA) has similar concerns about the RFS, since ethanol mandates also have the potential to cause engine damage for marine vessels.

“With nearly 13 million registered boats (and nearly 16 million boats in the field) and 70 million boaters nationwide, the recreational marine industry is a major consumer goods and services industry that contributed \$30.5 billion in new retail sales and services to the U.S. economy in 2009 and generates nearly 340,000 jobs nationwide. ... NMMA strongly opposed – and continues to oppose – the granting of a “partial” or “conditional” waiver for E15 or any other ethanol blend level over ten percent ethanol (“E10”) because it will substantially increase public confusion and lead to persistent misfueling and consequent engine performance failures, emissions control failures, and consumer safety concerns.”

– NMMA Comments to the U.S. Environmental Protection Agency

“The Department of Energy’s National Renewable Energy Laboratory has tested the effects of E15 gasoline on some standard marine engines, and the majority of these engines suffered significant damage or exhibited poor engine runability, performance, and difficult starting – none of which is acceptable on a boat at sea.”

– NMMA Letter

“... we have determined that e15 blends of ethanol would cause considerable damage to the 7.5 million

outboard engines in use in this country today. This damage is unnecessary and can be avoided by freezing the ethanol content of gasoline at 10% by volume. NMMA has never been anti-ethanol. We are simply opposed to fuel blends that will ruin our engines and place lives at risk.”

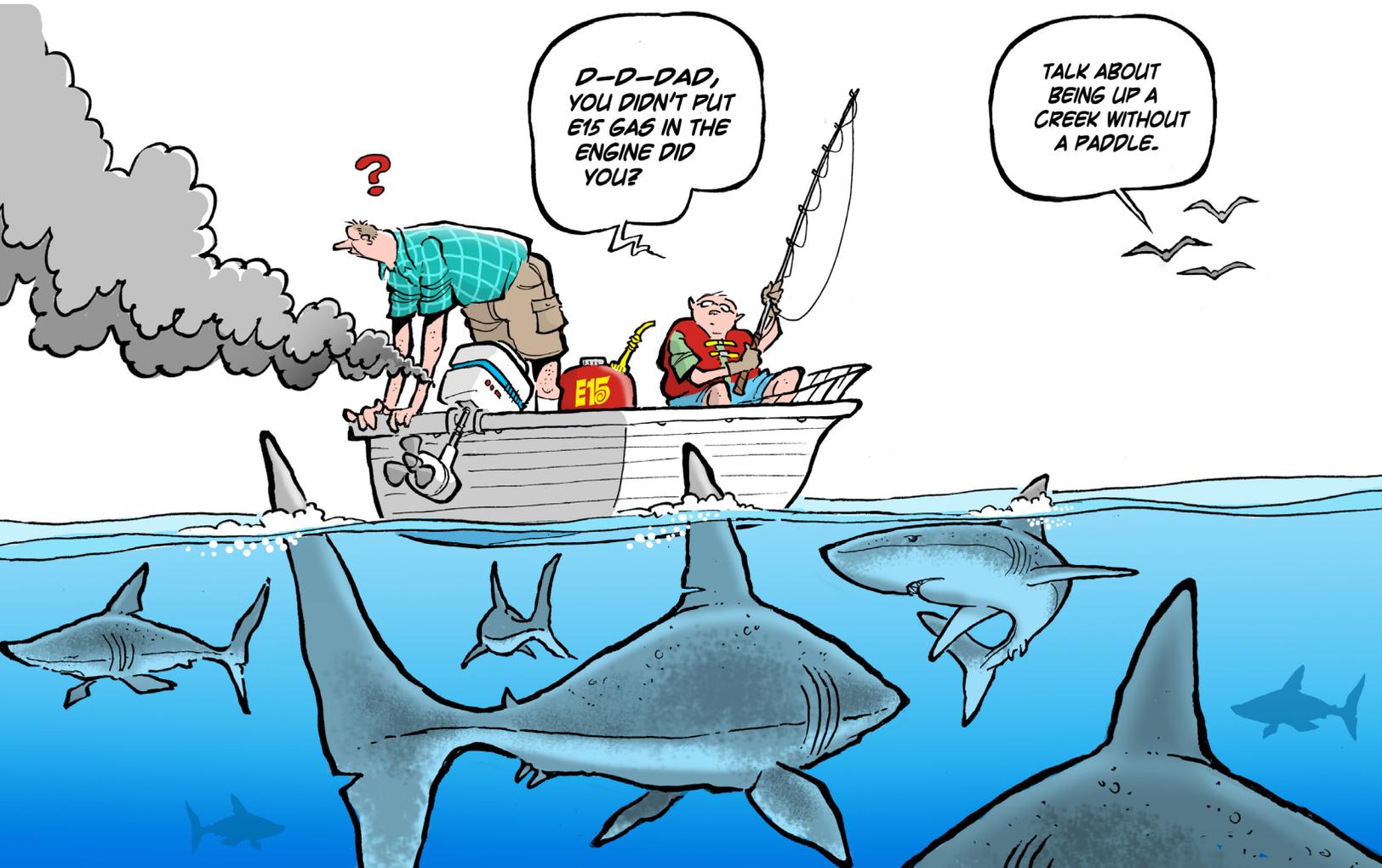
– Thomas J. Dammrich, President NMMA

“There is a significant amount of technical and anecdotal information that concludes that the introduction of E10 into the gasoline supply has caused significant damage and failure to boats. Although boat and engine manufacturers have adjusted and now design equipment to run on E10, the introduction of E15 will result in:

- Damage to rubber parts;
- Water contamination in the fuel system due to ethanol’s hygroscopic properties;
- Increased water absorption and phase-separation of gasoline and water while in tank;
- Corrosion of fuel system components and fuel tanks;
- Higher exhaust gas temperature due to enleanment; performance issues, such as drivability (i.e. starting, stalling, fuel vapor lock);
- Damage to valves, push rods, rubber fuel lines and gaskets.”

– Minnesota Testimony, NMMA

# Rising Ethanol Blends Don't Float All Boats



“Currently, there are nearly 13 million registered recreational boats in operation in the U.S. No gasoline marine engine – or any other marine equipment including gasoline generators – currently in the field was designed, calibrated, certified or is warranted to run on anything over 10 percent ethanol.

EPA's own “engineering judgment,” as well as all available data (supported by these two new studies), strongly suggests that all of the 12.8 million registered boats on the water today (with the exception of approximately 260,000 diesel-powered boats and the roughly 430,000 registered non-motorized craft) may be negatively impacted by any gasoline with more than a 10 percent ethanol blend.”

– NMMA Petition to EPA

“The Renewable Fuels Standard must be revised to prevent the damage that ethanol blends above the 10% level will cause to engines of all types. ... Unless the renewable fuels mandate is changed, it is likely that EPA would require 35%-40% ethanol in gasoline by the year 2022. Every time EPA changes the percentage of ethanol in gasoline, engines have to be recalibrated and engine designs changed.”

– NMMA Policy Brief

## Outdoor Power Equipment and the RFS



The RFS is dangerous for outdoor power equipment just as much as it is for automobiles and other vehicle engines.

“Our interest is to protect the consumer; we’re trying to prevent the harm from happening in the first place. ... EPA has acknowledged there will be mis-fueling with E15; there will be engine and product failure. This is the reason the outdoor power equipment, boating, UTV, snowmobile, auto, and motorcycle industries, as well as the American Automobile Association (AAA) and the Coast Guard, oppose this higher ethanol fuel. Our interest is in protecting our customers.”

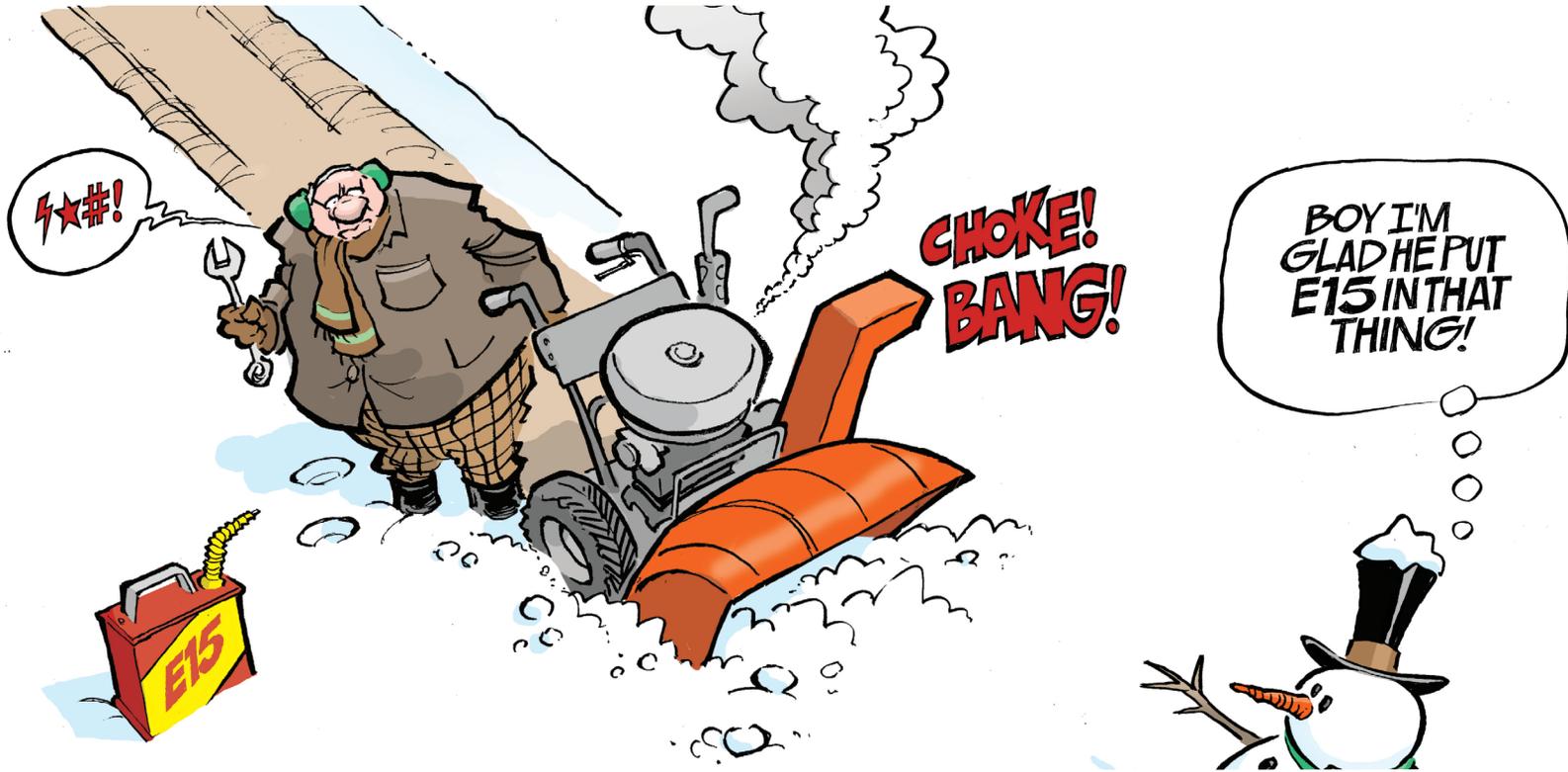
– Kris Kiser, OPEI President and CEO

**Will this damage my lawnmower, boat, jet ski, snowmobile, or four-wheeler?**

“

It sure will if you don't pay attention. Generally, small engines are not designed to deal with the more corrosive E15 blend. And, as we mentioned in 2010, ethanol forms a brown goo when left in a fuel tank too long, which can clog fuel-system components. Two-stroke engines run hotter with an ethanol blend, which accelerates the potential damage. And ethanol can wreak havoc on fiberglass fuel tanks in older boats. Groups like the National Marine Manufacturers Association and Outdoor Power Equipment Institute have issued strong warnings to consumers to pay attention to their fuels or risk severe engine damage. Use a fuel stabilizer if the engine will sit for more than a few weeks without use; this will reduce the ethanol-water separation and potential gumming issues. Be careful to avoid using E15 in uncertified engines like these, at least until the subject is studied more thoroughly, and the engineering catches up to the fuel.”

# Outdoor Power Equipment and the RFS



## Are higher ethanol blends really that harmful to outdoor power equipment?

“Yes. You might be tempted to use a higher ethanol blended fuel since it may be less expensive. However, greater than 10 percent ethanol in outdoor power equipment can corrode metals and rubber and cause engines to break down more quickly. Most outdoor power equipment was not built, designed or warranted to run on fuel greater than E10, and using higher ethanol blends can damage or destroy it. In fact, using any fuel that contains more than 10 percent ethanol is illegal to use in outdoor power equipment.

Also, the higher the ethanol blend, the lower the fuel economy. Ethanol contains 33 percent less energy per gallon than gasoline, so engines fueled with higher ethanol blended gas will attain fewer miles per gallon than those running on conventional gasoline (E10). This means you must fill your gas tank more frequently when using higher ethanol blended fuel.”

– OPEI

“Manufacturers of outdoor power equipment and their engines say they will not honor the warranty of a product someone has been running with E15. The reason? Besides the above effects of ethanol, engines running even E10 gasoline run hotter. And with E15, the results can be dangerous, considering reports of “unintentional clutch engagement”—such as a powered-up chain saw that suddenly decides, because it’s running so hot, that you’ve pressed the button to start the chain. Manufacturers see a train wreck coming because their customers will ultimately blame them for problems.”

– Consumer Reports.org

“E15 is universally opposed by our entire industry because of the problems it causes. ... Research has shown that using E15 can have harmful and costly consequences on small engines and outdoor power equipment. Most engines would have great difficulty in meeting both emissions and performance expectations with this type of alcohol range. ... Most gas stations have tanks where the supplier puts the mixed gasoline into the storage tank and the pump pumps it up. Because alcohol separates from gasoline, consumers can get a higher mix of alcohol in their fuel. If you increase to 15%, the effect gets multiplied, so you might end up with double the alcohol you expected. That’s a problem.”

– Brad Murphy, of OPEI member Subaru Industrial Power Products

Do you want to engage in the debate on the Renewable Fuel Standard?  
We're here to get you up to speed.

## BLEND WALL

The maximum amount of ethanol that can be blended into gasoline based on the limitations of the vehicle fleet and refueling infrastructure.

## RFS

The Renewable Fuel Standard program created under the Energy Policy Act of 2005 (EPAAct), which amended the Clean Air Act (CAA)

## E0

Gasoline **without** ethanol

## E15

Gasoline with **15%** ethanol

## EIA

U.S. Energy Information Administration

## RFS2

The current RFS program, expanded under the Energy Independence and Security Act of 2007 to create four nested biofuel categories

## E10

Gasoline with **10%** ethanol

## E85

**51-83%** ethanol with gasoline

## EISA

Energy Independence and Security Act of 2007

## RIN

Renewable Identification Numbers are credits used for compliance and are the "currency" of the RFS program

# Resources

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- 1 NERA Economic Consulting, “Economic Impacts Resulting from Implementation of RFS2 Program” <http://bit.ly/12dJD2j>
- 2 Coordinating Research Council, “Intermediate-Level Ethanol Blends Engine Durability Study” <http://bit.ly/12dCjS0>
- 3 Coordinating Research Council, “Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15” <http://bit.ly/12dCHju>
- 4 Letter to Lisa Jackson, July 5, 2011 [http://www.api.org/~media/Files/Policy/Fuels-and-Renewables/What-others-are-saying/E15\\_Auto\\_Responses.pdf](http://www.api.org/~media/Files/Policy/Fuels-and-Renewables/What-others-are-saying/E15_Auto_Responses.pdf)
- 5 AAA, “New E15 Gasoline May Damage Vehicles and Cause Consumer Confusion” <http://bit.ly/12dCZqw>
- 6 Environmental Working Group, “Senators Seek to Block Higher Ethanol Blend” <http://bit.ly/12dD5yw>
- 7 National Academy of Sciences, “Potential Economic and Environmental Effects of U.S. Biofuel Policy” <http://bit.ly/12dF0TL>
- 8 Stanford University, Center for Food Security and the Environment <http://stanford.io/12dFfOO>
- 9 Food and Agriculture Organization of the United Nations, “OECD-FAO Agricultural Outlook 2012-2021” <http://bit.ly/12dFk51>
- 10 World Bank Policy Research <http://go.worldbank.org/QPII43RIJ0>
- 11 Schornagela, Niele, Worrell, and Böggemann, “Resources, Conservation and Recycling; Water accounting for (agro) industrial operations and its application to energy pathways”, December 2011. [www.elsevier.com/locate/resconrec](http://www.elsevier.com/locate/resconrec)
- 12 Energy and Power Subcommittee, House Committee on Energy and Commerce, “Overview of the Renewable Fuel Standard: Government Perspectives,” June 2013 <http://1.usa.gov/1e3OKIU>
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