



**Senate Bill 454: Creating Fuel Blend Requirements for New Gas Stations,
Providing Grants for Fuel Blend Compatibility Improvements
Senate Committee on Transportation and Local Government
Testimony of Senator Joan Ballweg
October 24, 2023**

Good afternoon, Chair Tomczyk and members of the committee, and thank you for hearing this important legislation.

Ethanol fuel has been in use for almost 200 years. Oil-based fuel became more cost-effective over the years, but ethanol had a renewal in the mid-1970s, eliminating lead and resulting in cleaner emissions. Today, the Wisconsin biofuels industry is at a competitive disadvantage because of massive subsidies given to promote electric vehicles and charging stations. Wind and solar as power alternatives are not ready to meet the state's needs. Wisconsin has to import the coal and natural gas that powers electric vehicles from other states and Canada.

According to the U.S. Energy Information Administration, Wisconsin ranks ninth in the country for fuel ethanol production capacity and produces almost 600 million gallons per year. This is more than twice the amount consumed in the state. Senate Bill 454 supports Wisconsin's farmers and the state's biofuels industry by creating an \$8 million grant program under the Department of Agriculture, Trade and Consumer Protection to provide matching grants to fuel retailers to upgrade their equipment so it is compatible with higher blends of ethanol and biodiesel.

Existing and new locations are eligible to receive grants, except those that received any federal funds for the same project. The bill also requires that new gas stations built on vacant land have equipment capable of storing and dispensing ethanol-blended fuel, but it does not prohibit the use of other fuel types. Nothing in this bill eliminates the ability of a gas station to provide or for a consumer to purchase non-blended fuel.

Wisconsin farmers will benefit from this legislation, since ethanol provides additional value to their crop. According to the Renewable Fuels Association, a typical ethanol plant adds about 40% of additional value to every bushel of corn processed. Wisconsin fuel retailers benefit with the assistance to upgrade their equipment, and Wisconsin consumers will also benefit by seeing cheaper prices at the pump when using ethanol-blended gas.

This bill is supported by the Wisconsin BioFuels Association, Wisconsin Farm Bureau Federation, Wisconsin Biomass Energy Coalition, Wisconsin Soybean Association, and the Wisconsin Fuel & Retail Association. Thank you for your consideration, and I am happy to answer any questions.



TODD NOVAK

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Rep.Novak@legis.wi.gov

STATE REPRESENTATIVE • 51ST ASSEMBLY DISTRICT

P.O. Box 8953

Madison, WI 53708-8953

DATE: Tuesday, October 24th, 2023

RE: Testimony on Senate Bill 454

TO: Senate Committee on Transportation and Local Government

FROM: State Representative Todd Novak

Thank you Chairman Tomczyk and members of the Senate Committee on Transportation and Local Government for holding a public hearing on Senate Bill 454 (SB 454).

I co-authored SB 454 with Senator Ballweg after being approached by both biofuel industry stakeholders and members of the agriculture community throughout the state. SB 454 will allow for higher ethanol blends at Wisconsin gas stations, while also allowing DATCP to administer grants to existing stations to retrofit their equipment to make these improvements.

The Wisconsin biofuels industry is being put at a competitive disadvantage because of the massive subsidies flowing to electric vehicles (EVs) and electric vehicle charging stations. EVs are mostly powered by coal and natural gas imported from other states and countries.

Wisconsin's biofuels and biodiesel are produced in Wisconsin from corn grown by Wisconsin farmers. Biofuels provide a significant reduction in carbon without causing the complete replacement of our entire transportation fueling network and still generally sell at a discount to gasoline.

I am proud to represent both the most Ag reliant assembly district and the district home to the largest ethanol plant in the state of Wisconsin. I am certain that SB 454 will support both our farmers as well as consumers who will have access to more fuel options and cheaper fuel costs.

SB 454 supports Wisconsin's farmers and the state's biofuels industry by creating a program under the Department of Agriculture, Trade and Consumer Protection to provide matching grants to fuel retailers to upgrade their equipment so it is compatible with higher blends of ethanol and biodiesel. Existing and new locations are eligible to receive grants, except those that received any federal funds for the same project.

Wisconsin farmers will benefit, since ethanol provides additional value to their crop. According to the Renewable Fuels Association, a typical ethanol plant adds about 40% to every bushel of corn processed. Ultimately, Wisconsin consumers will also benefit by seeing cheaper prices at the pump when using ethanol-blended gas.

Thank you for your consideration of SB 454.

Testimony on 2023 Senate Bill 454
Senate Committee on Transportation and Local Government
October 24th, 2023

Thank you Chair Tomczyk and Committee Members for the opportunity to testify on 2023 Senate Bill 454. On behalf of the Wisconsin Farm Bureau Federation, we would like to express our support for this important legislation. We want express our thanks to the bill's authors, Senator Ballweg and Representative Novak for bringing this important legislation forward.

Senate Bill 454 would require that new retail or wholesale fueling facilities have the capacity to offer higher ethanol-blended motor fuels. For gasoline-ethanol fuel blends containing at least 25 percent ethanol by volume and for diesel fuel blends, at least 20 percent biodiesel by volume.

The bill outlines that grants are intended to facilitate these necessary upgrades which would foster a more sustainable and environmentally responsible future for gasoline and diesel emissions, while also providing the agriculture industry assurances that ethanol will remain a key element in motor fuel blends for the foreseeable future.

Senate Bill 454 provides grants to facilities for the necessary equipment upgrades, and therefore will not be a financial burden to businesses looking to make these investments to offer such higher ethanol blends.

As an advocate for farmers, I believe that this legislation is a significant step towards addressing several crucial issues that impact our community, our environment, and our nation's security, which is why the funding provided in this legislation is so necessary.

Fostering a greater transition towards cleaner and more sustainable American-grown fuels will create greater market opportunities for farmers in Wisconsin and throughout the Midwest. The increased demand for ethanol and biodiesel feedstocks, such as corn, soybeans, and other commodities will help further reduce market volatility. This is particularly important in a time when many agricultural communities are facing economic challenges on several fronts.

By requiring fueling facilities to offer greater ethanol and biodiesel blends, Senate Bill 454 fosters greater adoption of renewable fuels, grown by American farmers while reducing our dependence on fossil fuels but also providing a sustainable alternative to foreign sourced materials finding their way into electric vehicles. Additionally, domestically produced ethanol and biodiesel reduces the potential to need to rely on imported fossil fuels and enhances our energy security.

In conclusion, Senate Bill 454 represents a win-win solution for Wisconsin. It not only fosters several potential benefits to the environment but also supports our farmers, local economies, and our energy security. I urge you to consider the positive impact this legislation can have on our state and its residents, particularly those in the agricultural sector.



MEMORANDUM

TO: Members of the Senate Transportation and Local Government Committee

FROM: Jordan Lamb, Legislative Counsel for the Wisconsin Soybean Association

DATE: October 24, 2023

RE: **Support for SB 454 – Biofuel Blends**

On behalf of the members of the Wisconsin Soybean Association, I ask you to support Senate Bill 454. This legislation would create a program at DATCP that would provide \$8 million in matching grants to Wisconsin fuel retailers to upgrade their equipment to make it compatible with higher blends of ethanol and biodiesel.

Under the bill, grants can be used to fund up to 50% of the costs to upgrade equipment. Retailers would be eligible for grants up to \$1,000 per dispenser with a maximum of \$15,000 in total grants to a single facility.

Under the bill, a facility that receives a grant must provide a gasoline-ethanol fuel blend that contains at least 15 percent ethanol by volume or a biodiesel fuel blend that contains at least 20 percent biodiesel by volume from each dispenser funded by the grant.

Biodiesel is the nation's first domestically produced, commercially available advanced biofuel.

For farmers, biodiesel adds value to a bushel of soybeans. B20, or 20 percent biodiesel blended with 80 percent petroleum diesel, is estimated to add 63 cents to the value of a bushel of soybeans, or \$31.82 per acre, based on the average yield of 50.5 bu/acre with the average farmer using 6 gallons of diesel per acre.

In addition, according to the Clean Fuels Alliance America, using renewable diesel instead of petroleum-based fuels reduces greenhouse gas emissions by more than 70% on average.

Wisconsin produces 25 million gallons of biodiesel at two plants, REG Madison in DeForest and Walsh BioFuels in Mauston.

We believe that this legislation will further support and encourage the production and use of biodiesel and ethanol in Wisconsin.

Senate Bill 454: Biofuels Higher Blends Infrastructure Program

Good afternoon, my name is Micah Jensen, I'm here today representing Didion Ethanol where I currently serve as Director of Trading. I greatly appreciate the opportunity to address the Transportation and Local Government Committee and thank you for your time and interest as it pertains to SB 454.

- Didion is located in Cambria, WI, a village just an hour north of here in Columbia County. Currently we employ approximately 250 team members and are celebrating our 50th year in business. Our mission during this time has not changed, to create new and competitive markets for Wisconsin farmers. At Didion we are currently producing value added food, fuel, and feed products from Wisconsin raised corn and soybeans. Demand for ethanol as a low carbon intensity fuel has greatly benefited rural communities, such as Cambria, where a production facility creates high value jobs, increases demand for local goods and services, and bolsters the local tax base. This is in addition to the economic impacts from the demand for corn and from establishing local feed supply for Wisconsin corn, dairy, and beef producers.
- We support SB 454 for the opportunity it would provide an increasing number of Wisconsin consumers to choose lower carbon intensity fuel blends while also providing cost savings when it's time to fill up at the pump. We strongly believe that the result of these one-time matching grant funds will be lower green house gas emissions, reduced dependence on imported fossil fuel-based energy, and greater demand for local goods and services across Wisconsin. Additionally, the potential for increased demand of ethanol would be a signal to our industry supporting the continued investment in higher efficiency, lower energy, technologies which in turn supports higher demands for corn. As an industry we are committed to reaching a zero-carbon intensity score in the production of ethanol, and it is legislation such as this that will help deliver against that commitment.

The need for low carbon fuels is abundant and the role Wisconsin can play in answering the global call to decarbonize is great. Providing the ability for Wisconsinites to make an impact to their communities, their environment, and their pocketbook is what this legislation offers. Again, I thank you for your time and interest today and ask for your support of SB 454.

To: All Legislators
From: Wisconsin BioFuels Association
Date: Tuesday, September 19, 2023
RE: LRB 4240/1 – Higher Ethanol Blends

Your office may recently have received a motorcyclist constituent email asking you to not support LRB 4240/1 which creates a grant program for retailers selling higher blends of biofuels.

Unfortunately, the author of this email has not read the bill correctly. They say they are worried about the loss of fuels authorized for use in their engines, but this bill does nothing to ban or reduce the availability of E10 or E0 fuels at the pump.

The bill is 100% voluntary when it comes to what fuels must be offered by retailers.

If a retailer does not accept a grant, they would have NO obligation to sell any higher blended fuels.

If a retailer accepts a grant, they would only be required to offer E15 as an option at any pump for which a grant was accepted. Those pumps could also offer E10 AND E0 on the same pump as the E15; similar to what many stations that offer E15 already do.

They also complain about the use of a single hose to dispense both E10 and E15 (current law). But this law has not led to a single complaint about misfuelling in the four years since it was enacted.

Under the current law every station that offers E15 on a single hose MUST maintain at least one pump at which E10 and E0 are offered without any E15 option.

The goal of the bill is to offer retailers incentives to sell biofuels that are at least somewhat competitive to the huge incentives being offered to those that install electric vehicle charging stations.

A far bigger threat to the motorcycling enthusiast is the total rejection of the internal combustion engine. LRB 4240/1, by encouraging fuels with a smaller carbon footprint, helps to reject the “electric only” argument.

Biofuel produced from corn grown on Wisconsin farms reduces carbon by about 50% compared to fossil fuels.

And biofuels have generally sold at a significant discount to regular gasoline.

LRB is pro consumer, pro retailer, pro-environment, and pro Wisconsin farmer.

Please support LRB 4240/1.

For more information, please contact our representative: Bob Welch 608-819-0150.

ABATE of Wisconsin Inc.

The Motorcycle Issue Experts

How is this piece of Legislation helping motorcyclists? How this piece of legislation helping landscape companies, boaters, ATV/UTV riders? How is this piece of legislation helping consumers in the state of Wisconsin?

EPA Policy states that the use of Ethanol Blends higher than E10 is illegal to use in motorcycles, vehicles manufactured before 2001, chainsaws, boats, snowmobiles, lawnmowers, and many other small engines. SB 454 will make it difficult, if not impossible, for consumers in the State of Wisconsin to purchase the only gas that is legal for them to use. Not only will it make it more difficult, but it incentivizes business to prepare for a switch from a product that they want to sell to a product that may someday be forced to sell.

ABATE of Wisconsin, representing the over 525,000 people in the state with a motorcycle license in the State, is not opposed to the expansion of ethanol, but this move needs to be done responsibly to protect all consumers. Requiring all stations to install dispensing equipment to handle E25 is the start to push for eliminating fuels with a lower ethanol level, the only fuel legal to use in our motorcycles.

The push to encourage, even incentivize, Wisconsin businesses to sell a product that may force a resident of this state to violate Federal Law goes against capitalism. Who is protecting the consumer? Why does a business have to install dispensing equipment rated higher for a product that they do not want, or in some cases cannot, sell?

We are asking you to vote against SB 454 and allow a business to install equipment that they feel meets the needs for their customers.

Thank you,



Wisconsin Corn Program
N77W24707 Century Court
Lisbon, WI 53089
262-372-3289

October 24, 2023

Senate Committee on Transportation and Local Government
411S Main St.
Madison, WI 53703

Dear Chairman Tomczyk and Members of the Senate Committee on Transportation and Local Government,

My name is Luke Goessling. I am from Whitewater Wisconsin. I currently serve as the Vice President of the Wisconsin Corn Growers Association, and I am testifying on behalf of our members from across the state. The Wisconsin Corn Growers Association is a grassroots organization committed to increasing the profitability of corn production through sound policies, continued market development and strong involvement in the political process. In 2022, Wisconsin's 15,000 corn growers harvested over 545 million bushels on over 3 million acres. Most growers are currently in the field harvesting a projected 512 million bushel crop.

The Wisconsin Corn Growers Association is here today in support of SB 454 which seeks to market higher blends of ethanol and biodiesel by sharing the costs to build and retrofit biofuel-related infrastructure such as pumps, dispensers and storage tanks.

Wisconsin farmers send approximately 30% of our corn production to plants that produce 670M gallons of ethanol per year. This provides about \$2.6B to Wisconsin's economy.

Consumers also save money at the pump with blended fuels. Choosing a blended fuel has saved Wisconsinites over \$672M in gasoline purchases. Just down the road at a Madison Kwik Trip, the cost of Unleaded 88 is \$3.08, compared to \$3.29 for regular gas. That's a savings \$0.21 per gallon! Unleaded 88 is 15% ethanol and safe for all cars manufactured since 2001.

Home grown blended fuels increase American energy independence. We support the expanded options at the pump to bring cleaner, more affordable options to Wisconsin drivers.

SB454 will increase consumer choices at the pump and save Wisconsin consumers money at the pump. Wisconsin Corn Growers support SB 454.



September 11, 2023

RE: Support for a Biofuels Higher Blends Infrastructure Program

The Wisconsin farmers and those in the biofuels supply chain support SB 454: Creating Fuel Blend Requirements for new gas stations, providing \$8 million for fuel blend compatibility improvements. This legislation benefits both Wisconsin’s agricultural industry and consumers by providing matching grants to fuel retailers to upgrade their equipment (tanks and pumps) to be compatible with higher blends of ethanol and biodiesel.

The Wisconsin biofuels industry is at a competitive disadvantage because of the massive subsidies flowing to electric vehicles (EVs) and electric vehicle charging stations. EVs are mostly powered by coal and natural gas imported from other states and countries. However, Wisconsin's biofuels and biodiesel are produced in Wisconsin from corn and soybeans grown by Wisconsin farmers. Biofuels provide a significant reduction in carbon without causing the complete replacement of our entire transportation fueling network – and still generally sell at a discount to gasoline.

Under this bill, retailers would be eligible for grants that could fund up to 50% of the costs to upgrade their equipment if they agree to offer E15 at each location for 5 years. The same match would be made to upgrade infrastructure for the sale of higher biodiesel blends. Retailers would not be eligible if they have received any Federal funds for the same project.

Also “greenfield” sites would be eligible for grants of up to \$1000 per dispenser, with a cap at \$15,000.

Please support Wisconsin corn growers and our home grown biofuels/biodiesel industry by cosponsoring SB 454 which includes an \$8 million one time ask for fuel retailers.

Thanks,

Wisconsin BioFuels Association
Wisconsin Corn Growers Association
Wisconsin Farm Bureau Federation
Wisconsin Agribusiness Association
Wisconsin Grocers Association

Wisconsin Fuel and Retail Association
Wisconsin Soybean Association
Cooperative Network
Clean Fuels Alliance America



Everything You Need to Know About E15

March 2023

What is E15?

E15 is a fuel blend containing 15% ethanol and 85% gasoline. It contains slightly more ethanol than the regular E10 gasoline blend (which contains 10% ethanol) that is ubiquitous in the market today.

Can I use E15 in my vehicle?

E15 is fully approved for use in cars, SUVs, pickups, vans, or other light-duty vehicles that were manufactured **after the year 2000**. That means more than **96%** of the vehicles on the road today are legally approved to use E15. If you do not know what year your vehicle was made, check your owner's manual or the sticker on the driver's side door jamb.

Do auto manufacturers approve the use of E15?

Yes, the overwhelming majority of auto manufacturers explicitly approve the use of E15 in modern vehicles. For example, roughly **95%** of the model year 2021, 2022 and 2023 vehicles sold carry the manufacturer's unequivocal approval to use E15.

Where can I find E15?

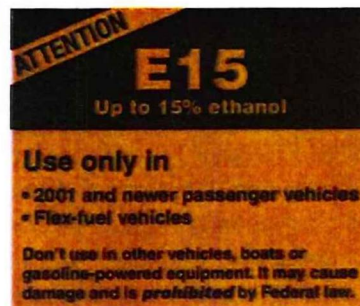
E15 is available today at nearly **2,800 retail stations in 30 states**. To find a station near you, go to this [web site](#) and click the red "Show E15" button above the map, then zoom in on your area. E15 is available at one out of every five gas stations in Iowa and Minnesota, and one out of every 10 stations in Kansas, Nebraska, and Wisconsin. It is also commonly available in states like Florida, Ohio, North Carolina, Pennsylvania, Texas, Virginia, and West Virginia. E15 is offered by leading retail chains like Sheetz, Casey's, Kwik Trip/Kwik Star, Kum & Go, RaceTrac, Family Express, Cenex, Royal Farms, and others. If E15 isn't offered near you today, encourage your local retail station to begin selling the fuel. For most retailers, making the switch to E15 is quick and does not cost much.

Is E15 a new fuel?

No, the U.S. Environmental Protection Agency (EPA) legally **approved E15 in 2011** and it was first sold at a retail station in Kansas in July 2012. Thus, E15 has been in the marketplace for more than a decade. We estimate that more than **3 billion gallons** of E15 have been sold since 2012, with a new record volume being sold in 2022. That means consumers have driven more than **60 billion miles** on E15 since 2012 without any legitimate reports of performance issues or engine problems.

Does E15 go by other names at the pump?

Yes, retail stations that sell E15 often give the fuel a marketing name like Unleaded 88, Regular 88, Clean 88, eBlend, Unleaded15, and others. But regardless of what it is called, every pump offering E15 will have the same Federally required label affixed to the pump (usually near the hose and nozzle that dispense the fuel).





How much will E15 cost me?

In recent years, E15 has typically sold at a **10-40 cent per gallon discount** to regular gasoline that contains 10% ethanol. In some cases, the discount has been as much as **60-80 cents per gallon**. E15's price is often 5-10% lower than the price for E10 (and 13-17% below the price of E0). In the case of [Sheetz's Independence Day promotion](#) in 2022, the savings for E15 (marketed by Sheetz as "Unleaded 88") was typically 60 cents to \$1 per gallon! Each day, drivers report E15 and E85 prices from their local stations on this [web site](#). Click the red "Show E15" button under the map to see the latest reported E15 prices.

Will E15 reduce my fuel economy?

While a gallon of E15 contains 1.5% less energy than a gallon of regular gasoline (E10), drivers rarely notice any impact on fuel economy (miles per gallon). If fuel economy was perfectly correlated with energy density, then a vehicle that gets 30 miles per gallon when operating on regular gasoline would be expected to get 29.6 miles per gallon when operating on E15. However, many variables can impact fuel economy in the real world, and a recent study conducted by the University of California showed some vehicles experienced slightly **better fuel economy** when using E15 instead of E10. Also, even if fuel economy dropped by 1.5% when operating on E15, the fuel is typically sold at a **5-10% discount** to E10. That means E15 would still provide a **lower cost per mile** traveled.

Has E15 been tested well enough?

E15 is the **most thoroughly tested fuel in history**. Before approving the fuel in 2011, EPA and the U.S. Department of Energy rigorously tested the use of E15 in **80 vehicles**, accumulating more than **6 million miles** while operating on the fuel. Scientists carefully analyzed the impact of E15 on drivability, catalyst durability, fuel pumps, seals, diagnostic systems, fuel system components, fuel economy, and exhaust emissions. They definitively concluded that E15 is safe for use in all vehicles built after 2000.

Does E15 have more octane?

In most cases, E15 offers slightly **higher octane** (88 AKI) than regular E10 gasoline (87 AKI). That's why many retailers choose to include "88" in the marketing names they give to E15. The higher octane rating means E15 offers greater **horsepower** and increased combustion efficiency (i.e., resistance to premature fuel ignition). Be aware, however, that E15 is not offered at 88 octane in every case. While 88 octane is most common, E15 has also been sold at 86, 87, 89, 91 and even 94 octane.

What are the emissions impacts of E15?

Because ethanol is a renewable fuel that burns cleaner and reduces carbon, the use of E15 results in **lower emissions** than regular E10 gasoline. Using E15 in place of E10 [reduces greenhouse gas emissions](#) by about **3%**, while also reducing pollutants that cause [ground-level ozone and smog](#).



Can I use E15 in my boat, motorcycle, mower, or other non-road equipment?

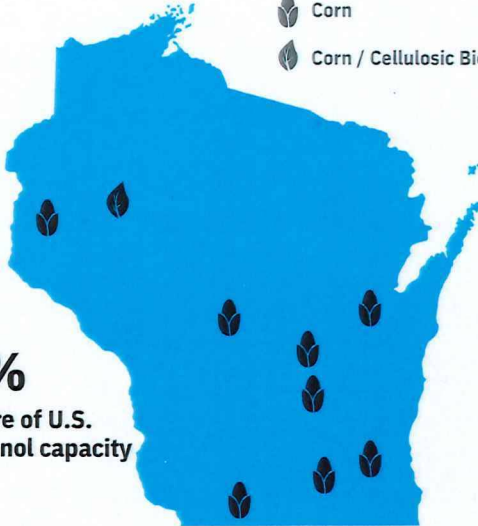
No, E15 is [not approved](#) by EPA for use in motorcycles, boats, snowmobiles, lawnmowers, chainsaws, and other non-road equipment. However, E10, which is available at virtually every gas station in the country today is generally approved for use in this equipment and ethanol-free gasoline (E0) remains broadly available for those consumers who wish to use it. Drivers should note, however, that E0 is the most expensive and highest-emitting grade of gasoline sold today.

WISCONSIN

LOCATIONS

FEEDSTOCKS

-  Corn
-  Corn / Cellulosic Biomass



4%
Share of U.S.
ethanol capacity

ETHANOL FACILITIES

	Congressional District	Capacity (MGY*)
1. Ace Ethanol LLC	WI-7	60
2. Aztalan Bio LLC	WI-5	110
3. Badger State Ethanol LLC	WI-2	90
4. Big River Resources Boyceville LLC	WI-3	64
5. Didion Ethanol LLC	WI-6	50
6. Fox River Valley Ethanol LLC	WI-6	65
7. Marquis Energy-Wisconsin LLC	WI-7	110
8. United Ethanol LLC	WI-1	62
9. United Wisconsin Grain Producers LLC	WI-6	60

*Million Gallons Per Year

ANNUAL PRODUCTION

670 million
Gallons of ethanol

2.10 million
Tons of distillers grains

CORN USE



32,820
Farms growing corn



545 million
Bushels of annual
corn production



\$3.50 billion
Value of corn production



32%
Corn processed
by ethanol plants

ECONOMIC IMPACT

\$2.60 Billion
Value of ethanol and
distillers grains
production

19,000 Jobs
Full-time employees
supported by ethanol
production

\$4.2 Billion
Ethanol's contribution
to GDP

42% Reduction
in greenhouse gas
emissions compared
to gasoline

FUEL USE

FUEL CONSUMPTION (GALLONS)



2.60 billion
Gasoline

271 million
Ethanol

ETHANOL BLENDING BENEFITS



10.4%
Ethanol blend rate

\$672 million
Gasoline savings

1 million
Metric tons of avoided CO2
emissions

STATIONS OFFERING HIGHER BLENDS



407 E85
383 E15



E15 APPROVAL STATUS FOR U.S. LIGHT-DUTY VEHICLES

AUTOMAKERS / MODELS	MODEL YEAR											MARKET SHARE *
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
BMW Group **												
BMW												2.2%
Mini												0.2%
Daimler Group (Mercedes-Benz)												2.2%
Ford Motor Co. (Ford & Lincoln)												12.4%
GM (Buick, Cadillac, Chevrolet & GMC)												16.7%
Honda Motor Co. (Honda & Acura)												9.9%
Hyundai Motor Co. (Hyundai, Genesis & Kia)												9.5%
Mazda												2.2%
Mitsubishi Motors Corp.												0.6%
Nissan Motor Co. †												
Infiniti												0.4%
Nissan												6.1%
Stellantis (Alfa Romeo, Chrysler, Dodge, Fiat, Jeep, RAM & Wagoneer)												11.8%
Subaru †												4.2%
Tata Motors (Jaguar & Land Rover)												0.7%
Toyota Motor Corp.												
Lexus												2.3%
Toyota												13.4%
Volkswagen Group §												
Audi												1.4%
Porsche												0.4%
Volkswagen												2.4%
Volvo Car Group												0.8%

* Internal combustion engine (ICE) models only.

** Approves the use of up to 25% ethanol blends.

† Approves the use of E10 in QX80, Armada, NV & Sentra.

‡ Approves the use of E10 in 2.5L engines.

§ Approves the use of E10 in Golf.

E15 approved by automaker in ALL models
 E15 approved by automaker in SOME models
 E15 approved by EPA only; NOT approved by automaker

Sources: Auto manufacturers' owner's manuals, GoodCarBadCar.net

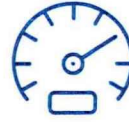
ENGINE PERFORMANCE 101: WHY ETHANOL IS A CAR'S BEST FRIEND



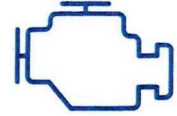
Burns cleaner and reduces emissions



Delivers more miles per dollar



Boosts octane for greater efficiency and horsepower



Improves engine performance

Ethanol is a low-cost, high-octane biofuel that is added to nearly every gallon of gasoline sold in the U.S. The boost from ethanol's octane enhances engine performance and allows for more efficient engine designs. Ethanol delivers greater power, less pollution and more miles per dollar – a winning combination for American drivers.



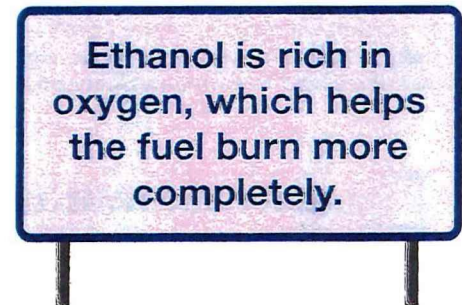
A CLEANER-BURNING FUEL

Both air and fuel are required to power the combustion in an automotive engine. One will not burn without the other, and ethanol makes it easier to create a cleaner-burning mix, resulting in fewer unburned, unhealthy chemicals leaving the tailpipe.

When the mix of air and fuel is correct, a cleaner burn will generate maximum power from every drop of fuel, and tailpipe exhaust will contain less carbon monoxide and hydrocarbons – harmful toxins and greenhouse gas emissions.

All gasoline is made from petroleum, but most fuels sold today are blended with some amount of ethanol, a biofuel made from plants. Ethanol is rich in oxygen, which helps fuel burn more completely. During combustion, oxygen from ethanol and air binds to the hydrogen and carbon in fuels to create water and carbon dioxide. With the addition of oxygen from ethanol, harmful tailpipe emissions such as unburned hydrocarbons and carbon monoxide are significantly reduced.

Modern vehicles are equipped with emissions sensors and computer control systems that automatically adjust the fuel and air mixture for maximum performance. This allows nearly any vehicle to operate on a fuel blend containing the standard 10 percent ethanol (E10) or 15 percent ethanol (E15). Fuel systems in Flex Fuel vehicles allow operation on an even wider spectrum of fuel blends.

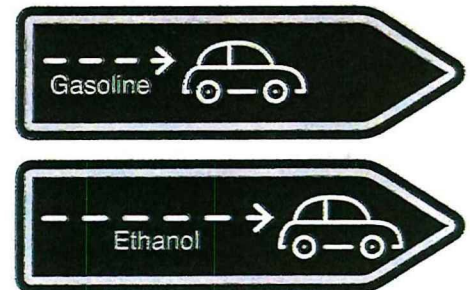


A GREATER MILEAGE VALUE

Ethanol blends deliver more miles per dollar, even when accounting for the change in energy content between ethanol and conventional gasoline.

Burning a drop of ethanol will generate less heat than burning a drop of gasoline, but the difference in energy content has little or no impact on mileage. For example, E15 typically costs 3 to 5 percent less than standard E10 blends and contains only 1.5 percent less energy. Therefore, consumers can drive farther for less money when fueling up with a high ethanol blend.

Ethanol's high octane rating will also allow the design of more fuel-efficient engines, which will deliver even greater savings per mile by preserving fuel economy.



Ethanol blends deliver more miles per dollar.



MORE OCTANE FOR MORE POWER

High-octane fuels, like ethanol, help engines deliver more horsepower and speed.

Most cars require fuel with a minimum octane rating of 87. Ethanol's octane rating is 113 and is added to petroleum-based fuels to create a blend with at least 87 octane for use in modern vehicles. In the past, chemicals like lead and MTBE were added to increase the octane of motor fuels, but those substances are highly toxic. Since ethanol is clean, renewable, abundant and inexpensive, it provides the needed boost and is mixed in 97 percent of U.S. motor fuels.



Ethanol provides a high-octane boost to basic gasoline.



MORE OCTANE FOR GREATER EFFICIENCY

Smaller engines use less fuel, and the octane boost provided by ethanol makes it possible to reduce size without sacrificing performance.

Forcing more fuel and air into a smaller volume increases pressure (turbocharging). This compression can cause low-octane fuels to ignite at the wrong time, reducing efficiency and potentially damaging the engine.

High-octane fuels, like ethanol, are necessary for smaller, higher-compression, "turbocharged" or "supercharged" engines, which force more air into the mix, yielding more power.

Future fuel efficiency standards in the United States will prompt automakers to produce engines that require a more highly compressed fuel mix. As a result, our standard fuel mix will require higher octane. This can readily be provided by ethanol at a much lower cost than other octane boosters.

"Ethanol has an inherently high octane number and would be an ideal octane booster for lower-octane petroleum blendstocks. ... In this way, high octane fuel can simultaneously help improve fuel economy while expanding the ethanol market in the United States via a growing market for an ethanol blend higher than E10."

Oak Ridge National Laboratory, July 2016



LESS WEAR AND LESS MOISTURE

Alcohols, including ethanol, help to remove oil-based grime from surfaces, not unlike dish detergents. That helps prevent the build-up of residues on key engine components.

Extensive testing by the Department of Energy has shown that all vehicles since 2001 are built with modern materials, allowing them to run on fuels containing up to 15 percent ethanol. This represents 9 out of 10 cars on the road today. Engines in Flex Fuel vehicles can operate on blends of up to 85 percent ethanol.

Ethanol also reduces the likelihood of moisture build-up in an engine.

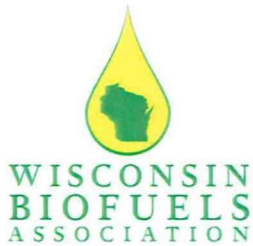
On a cold night following a humid day, moisture in the air could condense on the inner chamber of a fuel tank. Water doesn't mix with pure gasoline, so it accumulates at the bottom of the tank. If that unmixed water gets into the engine, the engine will stall. It could also freeze in the fuel lines. Ethanol-blended fuels can absorb some water before they become saturated and experience "phase separation," the point at which enough water accumulates to harm engine performance. In essence, ethanol keeps the fuel dry.



About Richard Childress Racing (RCR): Richard Childress Racing is a renowned, performance-driven racing, marketing and manufacturing organization. RCR has earned more than 200 victories and 15 championships, including six in the NASCAR Sprint Cup Series with the legendary Dale Earnhardt. RCR was the first organization to win championships in the Sprint Cup Series, NASCAR XFINITY Series and NASCAR Camping World Truck Series.



About ECR Engines: ECR Engines is a high-performance research and development and engine production company at the Richard Childress Racing facility in Welcome, N.C. ECR provides engines for NASCAR teams including Richard Childress Racing, JTG Racing, Germain Racing, Circle Sport-Leavine Family Racing, Kaulig Racing, among others. ECR also produces engines used in all of the Cadillac DPi-V.R Prototype cars competing in the IMSA WeatherTech Series, as well as for teams in SCCA, dirt and asphalt short tracks, and sprint car racing.



THE TRUTH ABOUT ETHANOL FROM AN AUTO EXPERT

"If you could fault ethanol fuels for anything, it's that they are too efficient at cleaning the residue and deposits. But that's like complaining that your toothpaste whitens too much."



- Mark Rauch, EVP
The Auto Channel

"An ethanol optimized internal combustion engine will power a vehicle to go faster and farther per gallon of fuel than a comparable gasoline powered vehicle."

The gunk in your engine is **NOT** because of ethanol.

The carbon debris that builds up (gunk/goo/crud/gum/sludge) to foul engines is caused by gasoline. When left for an extended time the gunk hardens into a hard varnish-like substance. This problem has existed for all the years before the use of ethanol-gasoline blends in America, and in internal combustion engines of all sizes and purposes. The solution was to regularly replace or clean parts, and oil companies added detergent (a solvent) to their gasoline to keep gunk from building up. Gasoline and aromatics are solvents, but they muck up the works more than they clean the muck. Ethanol is a better engine cleaning solvent because it doesn't leave debris, it just combusts and cleans.

Ethanol blended fuel does **NOT** introduce moisture into an engine.

Ethanol does not "attract" water, it absorbs some of the water that it comes in contact with. As Mercury Marine, the world's largest manufacturer of boat motors stated "There is no active transfer mechanism for ethanol molecules to reach out and 'grab' water molecules out of the air...The primary cause of water collecting in fuel tanks is condensation from humid air." Condensation is naturally occurring, and it occurs just as naturally when there is no ethanol or no other liquids present. The traditional solution to engine problems that are caused by condensation is to add a product like DRY GAS or HEET to the fuel. The active ingredient in these products is alcohol (ethanol).



Additional Facts

- It's thermal efficiency is higher than non-ethanol gasoline (BTUs are irrelevant)
- Less carbon is produced, ethanol actually removes carbon deposits
- Ethanol contributes to a better engine performance and better mileage
- Engines run cooler and cleaner
- Ethanol has long been used to prevent icing in aircraft and car engines
- Amazing acceleration and smoother running
- Highest anti-knock value