TAXPAYERS for COMMON SENSE

FACT SHEET

August 2025

Renewable Fuel Standard (RFS) Fact Sheet:

Biofuels Mandate Fails Taxpayers & Consumers

A corn field ready for harvest in Nebraska

For the past twenty years, federal law has required gasoline and diesel to be blended with increasing volumes of renewable fuels, also known as biofuels. Under the Renewable Fuel Standard (RFS), tens of billions of gallons of corn ethanol, soy-based biodiesel, and other biofuels are added to U.S. transportation fuel each year.

Despite this mandate—and decades of lucrative subsidies—the biofuels industry has failed to deliver meaningful benefits for American taxpayers or consumers. Instead, continued federal support distorts markets, drives up food and fuel prices, wastes taxpayer dollars, and encourages the conversion of carbon-rich land into cropland. The industry has yet to prove that producing and consuming biofuels yields long-term, tangible public value. Yet taxpayers still spend billions each year subsidizing biofuel producers, agricultural operations, oil refiners, and fueling infrastructure through an array of federal programs.

In 2022, biofuels accounted for six percent of total U.S. transportation sector energy use, most of which were blended with petroleum fuels.

Biofuel is an energy source derived from biological raw materials. Most U.S. biofuels are made from corn starch (ethanol) or soybean oil (biodiesel and renewable diesel). These fuels are primarily used as transportation fuels blended with gasoline and diesel, but the RFS also awards compliance credits for renewable natural gas and certain electricity generation.

The industry has marketed biofuels as tools for achieving energy independence, reducing emissions, and boosting rural economies. But the RFS has instead burdened taxpayers with long-term liabilities while failing to deliver on its climate promises.

What is the Renewable Fuel Standard?

The RFS mandates that transportation fuel sold in the U.S. contain minimum volumes of ethanol, biodiesel, and other qualifying biofuels.[1] Fuel suppliers—refiners and importers—can comply either by blending the required volumes or by purchasing tradable credits (called RINs) from other parties who exceed their blending targets. The Environmental Protection Agency (EPA) oversees the program.

The RFS nominally requires that qualifying biofuels reduce greenhouse gas (GHG) emissions compared to petroleum-based fuels. But much of the industry—especially corn ethanol production—was grandfathered in and is exempt from meeting these emissions targets.[2]

The RFS, established by the Energy Policy Act of 2005, originally required 7.5 billion gallons (BG) of renewable fuels to be blended into U.S. transportation fuel by 2012.[3] The 2007 Energy Independence and Security Act (EISA) dramatically expanded the mandate—setting a 9 BG target

RFS Qualifying Fuels

Cellulosic Biofuel: Produced from cellulose, hemicellulose, or lignin and must meet a 60% lifecycle GHG reduction.

Biomass-Based Diesel: Produced from qualifying renewable biomass and must meet a 50% lifecycle GHG reduction. Primarily filled with soy biodiesel.

Advanced Biofuel: produced from qualifying renewable biomass (except corn starch) and must meet a 50% lifecycle GHG reduction. Primarily filled with biodiesel and renewable diesel but can also be filled with cellulosic & other biofuels.

Conventional Biofuel: Primarily refers to corn starch ethanol. Supposed to meet a 20% lifecycle GHG reduction but has not met in practice.

[1] Congressional Research Service (CRS), "Renewable Fuel Standard (RFS): Overview and Issues," March 14, 2013. http://www.fas.org/sgp/crs/misc/R40155.pdf
[2] Environmental Protection Agency (EPA), "What Is Meant by "Grandfathered Fuel"?," August 2, 2024. https://www.epa.gov/fuels-registration-reporting-and-compliance-help/what-meant-grandfathered-fuel
[3] The RFS is measured in Renewable Identification Numbers (RINs), which are associated with each gallon of biofuel produced in the U.S. or imported into the country. Source: Department of Energy (DOE), "Renewable Identification Numbers," accessed June 23, 2025. https://afdc.energy.gov/laws/RIN.html#:~:text=A%20RIN%20is%20a%2038,guidelines%20on%20a%20quarterly%20basis.

for 2008 and ramping up to 36 BG by 2022. To qualify under the RFS, fuels must be made from "renewable biomass," which excludes old-growth forests and crops grown on native grasslands. But EPA's enforcement of these restrictions has been weak, and in practice, native grasslands have been plowed under to plant corn—the dominant feedstock for ethanol.[4]

Feedstocks Eligible in RFS as "Renewable Biomass"

- Planted crops, trees, and associated residue harvested from agricultural land or actively managed tree plantations on non-federal land prior to December 19, 2007
- Animal waste material and animal byproducts
- Slash and pre-commercial thinnings that are from certain, non-federal forestlands.
- Separated yard waste or food waste, including recycled cooking and trap grease

Starting in 2023, EPA assumed full authority for setting annual RFS volume targets, as the statutory schedule set by Congress ended in 2022. The agency's finalized volume requirements for 2023, 2024, and 2025 are 20.94 BG, 21.54 BG, and 22.33 BG, respectively.[5]

Biodiesel Fuel Gas Pump for Cars | Robert Couse-Baker via Wikimedia

[4] Lark, Tyler, *et al*, "Cropland Expansion Outpaces Agricultural and Biofuel Policies in the United States," *Environmental Research Letters (10)4*, April 2, 2015. https://iopscience.iop.org/article/10.1088/1748-9326/10/4/044003
[5] EPA, "Final Renewable Fuels Standards Rule for 2023, 2024, and 2025," July 24, 2024. https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuels-standards-rule-2023-2024-and-2025

Continued Failure to Meet Required Volumes

The biofuels industry has consistently failed to meet the levels envisioned by Congress. Due to persistent shortfalls in production and consumption, EPA has regularly reduced the targets through waivers, setting lower final Renewable Volume Obligations (RVOs). Since 2014, these downward revisions have widened the gap between actual blending requirements and the statutory goals. EPA's 2025 target is 38 percent below the 36 BG Congress originally set for 2022.[6]

Table 1: Total Gallons of Renewable Fuel that Must be Blended with U.S. Motor Fuel in the RFS			
Year	**Initial Congressional Mandate (Billions of Gallons)**	**Final Renewable Volume Obligations (Billions of Gallons)**	**% Change from Mandate**
2010	12.95	12.95	0%
2011	13.95	13.95	0%
2012	15.2	15.2	0%
2013	16.55	16.55	0%
2014	18.15	16.28	10%
2015	20.50	16.93	17%
2016	22.25	18.11	19%
2017	24	19.28	20%
2018	26	19.29	26%
2019	28	19.92	29%
2020	30	17.13	43%
2021	33	18.84	43%
2022	36	20.63	43%
2023	-	20.94	-
2024	-	21.54	-
2025	-	22.33	-

Source: Congressional Research Service & EPA[7]

[6] EPA, "Final Renewable Fuels Standards Rule for 2023, 2024, and 2025," July 24, 2024. https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuels-standards-rule-2023-2024-and-2025

[7] EPA, "Final Renewable Fuels Standards Rule for 2023, 2024, and 2025," July 24, 2024. https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuels-standards-rule-2023-2024-and-2025; CRS, "The Renewable Fuel Standard (RFS): An Overview," July 31, 2023. https://crsreports.congress.gov/product/pdf/R/R43325/40; CRS, "The Renewable Fuel Standard (RFS): Waiver Authority and Modification of Volumes," August 22, 2022. https://crsreports.congress.gov/product/pdf/R/R44045.

Lack of Cellulosic and Advanced Biofuel Production

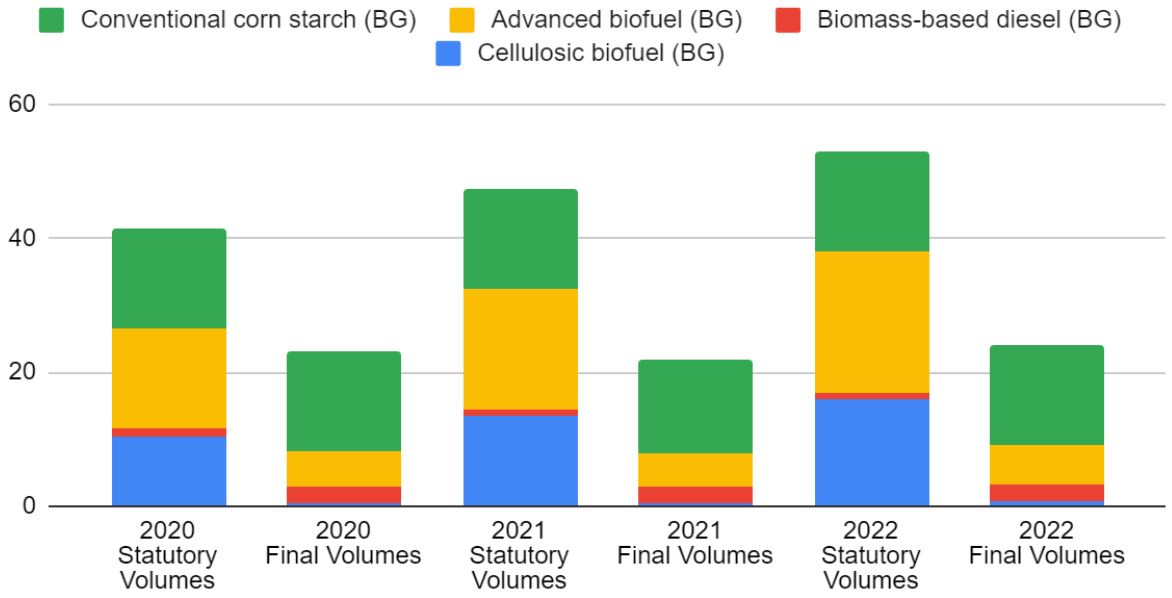
The consistent failure to meet RFS targets—and EPA's repeated downward revisions of RVOs—stems largely from the shortfall in cellulosic and advanced biofuel production. Congress envisioned that by 2022, a growing share of the mandate would be met with next-generation, non-food-based fuels. These included cellulosic biofuels made from sources like perennial grasses, corn stover (stalks, cobs, and other non-food parts of the corn plant), and wood-based feedstocks. That vision never materialized. The industry has failed to produce cellulosic fuels at commercial scale. While Congress expected cellulosic biofuels to comprise 44 percent of the RFS mandate by 2022, they accounted for just 3.7 percent of actual consumption.[8]

Instead, the RFS has been dominated by first-generation, food-based biofuels—primarily corn ethanol, which satisfies the bulk of the conventional renewable fuel requirement. Soy-based biodiesel accounted for 6 percent of total biofuel consumption in 2022 (995 million gallons), filling most of the biomass-based diesel category.[9] Renewable diesel production has increased, but it too is largely derived from food crops like soybeans and canola.

Together, these food-based fuels make up the overwhelming majority of RFS compliance. The gap between Congressional intent and actual implementation is most glaring in the case of cellulosic and advanced biofuels. As shown in Figure 1, cellulosic biofuel production has fallen 95 percent short of the statutory targets.[10] Meanwhile, corn ethanol has reliably hit its 15 BG mandate, and soy-based diesel volumes have steadily climbed to meet both the biomass-based diesel and advanced biofuel requirements.[11]

[8] EPA, "Regulatory Impact Analysis - RFS Program Standards for 2023-2025 and Other Changes," Table 2.2-2, July 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2021-0427-1113
[9] EPA, "Regulatory Impact Analysis - RFS Program Standards for 2023-2025 and Other Changes," Table 2.2-2, July 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2021-0427-1113
[10] EPA, "Final Renewable Fuels Standards for 2020, and the Biomass-Based Diesel Volume for 2021," April 18, 2025. https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuel-standards-2020-and-biomass-based-diesel-volume; EPA, "Final Volume Standards for 2020, 2021, and 2022," August 15, 2024. https://www.epa.gov/renewable-fuel-standard-program/final-volume-standards-2020-2021-and-2022
[11] EPA, "Final Renewable Fuels Standards for 2017, and the Biomass-Based Diesel Volume for 2018," May 16, 2024, https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuel-standards-2017-and-biomass-based-diesel-volume; EPA, "Final Renewable Fuels Standards for 2020, and the Biomass-Based Diesel Volume for 2021," April 18, 2025. https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuel-standards-2020-and-biomass-based-diesel-volume; EPA, "Final Renewable Fuels Standards for 2019, and the Biomass-Based Diesel Volume for 2020," May 16, 2024. https://www.epa.gov/renewable-fuel-standard-program/final-renewable-fuel-standards-2019-and-biomass-based-diesel-volume

Figure 1: RFS Congressional Mandates vs. Actual Volumes Finalized by EPA, in billions of gallons (BG)



Note: Congress mandated at least 1 BG of biomass-based diesel consumption annually through 2022. Figure 2 includes this minimum 1 BG figure for RFS Congressional mandates each year.

Consumer and Taxpayer Costs of the RFS

First-generation biofuels like corn ethanol and soy biodiesel were once sold as a "bridge" to cleaner, more sustainable alternatives. But instead of ushering in a new generation of non-food-based fuels, the RFS has entrenched a market dominated by food-based biofuels—bringing with it a range of costs for both consumers and taxpayers.

Higher Food and Feed Costs

The RFS has driven up prices for food and livestock feed. A large share of the mandate is met with fuels made from food crops—namely corn and soybeans. Today, 33% of U.S. corn and 44% of soybeans are diverted to biofuel production.[12] That shift inflates commodity prices, especially in years with supply shocks.[13] During the 2012 drought, for example, corn prices hit record highs.

The EPA anticipates annual food costs will be $2.4 billion higher in 2026 and 2027 due to the RFS mandate.

[12] Reflects the percentage of total U.S. supply of corn and soybean oil, including imports and existing stock, in 2023/24 used for domestic biofuels production. Corn-based ethanol production includes processing by-products such as distillers' grain, corn gluten feed/meal, and corn oil. Source: U.S. Department of Agriculture, "World Agricultural Supply and Demand Estimates," July 2025. https://www.usda.gov/oce/commodity/wasde/wasde0725.pdf

[13] Alexander, Corinne and Chris Hurt. "Biofuels and Their Impact on Food Prices." Purdue University. September 2007. https://www.extension.purdue.edu/extmedia/id/id-346-w.pdf

Multiple studies have found that the RFS raises crop prices.[14] Even EPA's conservative estimates show the mandate increases corn prices by $0.12–$0.14 per bushel and soybean oil prices by $0.31–$0.32 per pound.[15] Other crops like sorghum, barley, and oats—grown on competing farmland—also see price bumps. These cost hikes hit livestock producers especially hard, since corn and soy make up more than half the cost of raising many animals.[16]

EPA has noted that higher crop prices "have a ripple impact on food prices and the many other products produced from these commodities."[17]

Higher Fuel Costs for Consumers

The RFS also affects fuel prices. Fuel suppliers are responsible for meeting the mandate, but biofuels are often more expensive than gasoline or diesel. That cost gets passed to consumers.[18]

While the RFS alone doesn't "dramatically" alter retail prices—since crude oil remains the biggest driver of gas prices—EPA and independent experts acknowledge its upward pressure.[19]
In 2023, EPA projected that continuing the RFS at existing levels would raise prices for gasoline, diesel, and natural gas by an average of 4 cents per gallon. That translates to $24.5 billion in additional consumer costs from 2023 to 2025.[20] A 2019 Government Accountability Office report found that the RFS likely caused "modest gasoline price increases," particularly in regions lacking biofuel infrastructure.[21] Ethanol's lower energy content compared to gasoline also means consumers get fewer miles per gallon, further increasing effective fuel costs.

And even the biofuels the RFS is supposed to promote can become more expensive under the program. As corn and soy prices rise, so do the costs of producing ethanol and biodiesel. In 2014, the Congressional Budget Office estimated that if RFS targets were met without EPA waivers,[22] the price of E10 (10% ethanol-blended gasoline) would rise 13–26 cents per gallon, while petroleum-based diesel could climb 30–51 cents per gallon.[23]

---

[14] International Food Policy Research Institute (IFPRI), "Food versus Fuel v2.0: Biofuel Policies and the Current Food Crisis," April 11, 2023. https://www.ifpri.org/blog/food-versus-fuel-v20-biofuel-policies-and-current-food-crisis/
[15] EPA, "Regulatory Impact Analysis - RFS Program Standards for 2023-2025 and Other Changes," July 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2021-0427-1113
[16] National Research Council, "Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy," *National Academies Press*, 2011. https://doi.org/10.17226/13105
[17] EPA, "Regulatory Impact Analysis - RFS Program Standards for 2023-2025 and Other Changes," July 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2021-0427-1113
[18] Environmental Protection Agency, "Renewable Fuel Standard (RFS) Program-Standards for 2026 and 2027: Draft Regulatory Impact Analysis," June 2025. https://www.epa.gov/system/files/documents/2025-06/420d25001.pdf
[19] Christensen, Adam and Sauleh Siddiqui, "Fuel price impacts and compliance costs associated with the Renewable Fuel Standard (RFS)," *Energy Policy* (86), 2015. https://systems.jhu.edu/wp-content/uploads/2018/07/2015ChristensenSiddiquiEnergyPolicy.pdf
[20] EPA, "Regulatory Impact Analysis - RFS Program Standards for 2023-2025 and Other Changes," Table 10.4.2.2-4, July 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2021-0427-1113
[21] Government Accountability Office (GAO), "Renewable Fuel Standard (RFS): Information on Likely Program Effects on Gasoline Prices and Greenhouse Gas Emissions," May 2019. https://www.gao.gov/assets/gao-19-47.pdf
[22] Scenario assumes fuel suppliers would not have to meet the requirement for cellulosic biofuels "because the capacity to produce enough of those fuels is unlikely to exist by 2017."
[23] Congressional Budget Office (CBO), "The Renewable Fuel Standard: Issues for 2014 and Beyond," June 26, 2014. https://www.cbo.gov/publication/45477

Taxpayer Subsidies for Biofuels

In addition to mandating biofuel consumption, the federal government subsidizes biofuel production and infrastructure through a wide range of programs. The combination of mandates and subsidies creates overlapping supports that waste taxpayer dollars.

Because ethanol is more corrosive than gasoline, it can't be used in older fueling infrastructure without costly upgrades. To address this, taxpayers underwrite biofuels infrastructure through both tax incentives and direct spending.

The Alternative Fuel Vehicle Refueling Property Credit (Section 30C) provides a 30% tax break for installing "clean fuel" refueling equipment. Before the FY2025 reconciliation bill accelerated its expiration to June 30, 2026, the Joint Committee on Taxation estimated the credit would cost taxpayers $11.3 billion from FY2024 to FY2033.[24]

The USDA's Biofuel Infrastructure Partnership (BIP) and Higher Blends Infrastructure Incentive Program (HBIIP) have awarded more than $800 million in grants for fuel dispensers, storage tanks, and related equipment. From 2011 to 2014, the USDA also used the Rural Energy for America Program (REAP)—originally intended to support wind, solar, and hydropower—to fund ethanol blender pumps. The Inflation Reduction Act (IRA) added another $500 million for a new Biofuel Infrastructure and Agriculture Product Market Expansion program.[25]

The FY2025 reconciliation bill, enacted in July 2025, also expanded the 45Z Clean Fuel Production Credit, originally created in the IRA. The expansion extends the credit through 2029 and eliminates consideration of indirect land use change (ILUC), effectively reopening eligibility for corn ethanol and soy biodiesel—despite Congress having voted to exclude them in 2011 and again in 2022. The Joint Committee on Taxation estimates this expansion will cost taxpayers an additional $25.7 billion from FY2025 to FY2034, including $10.5 billion in FY2029 aloe.[26]

The 45Z tax credit could be the next boon for biofuels. With the latest expansion, taxpayers are projected to spend $42.3 billion over the next decade, FY2025-2034 [27]

Additional federal subsidies flow to the biofuels industry through the Department of Energy, USDA, Department of Transportation, and the tax code. But with the RFS mandate already guaranteeing a market, the newly expanded 45Z credit is poised to become the single most expensive taxpayer subsidy in the sector.

---

[24] Taxpayers for Common Sense (TCS), "TCS Comments on Alternative Fuel Vehicle Refueling Property Credit," November 2024. https://www.taxpayer.net/energy-natural-resources/tcs-comments-on-alternative-fuel-vehicle-refueling-propertycredit/

[25] TCS, "Biofuel Infrastructure Subsidies," August 2022. https://www.taxpayer.net/agriculture/biofuel-infrastructure-subsidies/

[26] Joint Committee on Taxation (JCT), "Estimated Revenue Effects Relative to the Present Law Baseline of the Tax Provisions in "Title VII - Finance" of the Substitute Legislation as Passed by the Senate to Provide for Reconciliation of the Fiscal Year 2025 Budget," July 1, 2025. https://www.jct.gov/publications/2025/jcx-35-25/

[27] Prior to OBBBA, the U.S. Treasury estimated the 45Z tax credit would cost $16.57 billion FY2025-2034. Combined with the JCT estimated cost of the OBBBA expansion, taxpayers may spend $42.3 billion over the next decade. Source: U.S. Treasury, "Tax Expenditures FY2026," accessed August 2025. https://home.treasury.gov/policy-issues/tax-policy/tax-expenditures

Impacts on Soil, Water, Wildlife Habitat & GHG Emissions

The RFS has contributed to increased GHG emissions and the conversion of ecologically valuable land into intensive row crop production—damaging wildlife habitat, degrading soil, and polluting water. EPA's own analysis found that recent RFS volume mandates, including those for 2023–2025, will increase net GHG emissions.[28] This is largely due to the production of corn ethanol and soy-based biodiesel.[29] The National Academy of Sciences has reached the same conclusion: the RFS is not achieving its emissions-reduction goals.[30] Federal biofuel mandates and subsidies have encouraged farmers to plow up millions of acres of wetlands, grasslands, and other sensitive lands—many of which had been protected for their soil quality, biodiversity, or recreational value.[31] This land-use change releases stored carbon, increases soil erosion and nitrogen loss, and undermines both water quality and wildlife habitat.[32]

Corn combine harvest with grain cart| *Public*

[28] EPA, "Regulatory Impact Analysis - RFS Program Standards for 2023-2025 and Other Changes," Table 4.2.3-9 and Table 4.2.3-13, July 2023. https://www.regulations.gov/document/EPA-HQ-OAR-2021-0427- 1113
[29] GAO, "Renewable Fuel Standard (RFS): Program Unlikely to Meet Its Targets for Reducing Greenhouse Gas Emissions," November 2016. http://www.gao.gov/assets/690/681252.pdf
[30] National Research Council, "Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy," *National Academies Press*, 2011. https://doi.org/10.17226/13105
[31] Lark, Tyler, *et al*, "Cropland Expansion Outpaces Agricultural and Biofuel Policies in the United States," *Environmental Research Letters (10)4*, April 2, 2015. https://iopscience.iop.org/article/10.1088/1748-9326/10/4/044003; Wright, Christopher K., *et al*. *Environmental Research Letters* (12)4, March 21, 2017. https://iopscience.iop.org/article/10.1088/1748-9326/aa6446
[32] EPA, "Biofuels and the Environment: Third Triennial Report to Congress (Final Report, 2025)," January 2025. https://assessments.epa.gov/biofuels/document/&deid=363940

Undermining Other Federal Programs

The RFS directly undercuts other federal investments in environmental protection. While USDA conservation programs pay farmers to retire or restore carbon-rich and erosion-prone lands, the RFS drives conversion of that very same land for corn and soy production. These conflicting policies waste taxpayer dollars and increase long-term environmental liabilities.

Future of the RFS

After 20 years of biofuel mandates and nearly a half century of federal subsidies, the U.S. has little to show for taxpayers' multibillion-dollar investment. The RFS has failed to foster a viable cellulosic or advanced biofuels industry that delivers climate or consumer benefits. Instead, it has locked in production of first-generation, food-based fuels like corn ethanol and soy biodiesel—fuels that bring well-documented costs for consumers, taxpayers, and the environment.

In a letter to the EPA, groups representing truck stops, travel centers, fuel marketers, and convenience stores wrote that "setting unrealistic mandates, particularly when they are not paired with the relief that the BTC (biodiesel tax credit) could help provide, would be destructive of the market and impose palpable inflationary pressures that will hit American consumers directly in their wallets every time they buy virtually any good in the nation."

Looking ahead, the next wave of biofuels—such as those proposed for aviation—may rely on the same food-based feedstocks.[33] Cellulosic ethanol, once envisioned as the future of biofuels, never gained a foothold in a market dominated by cheaper, heavily subsidized alternatives. The so-called "blend wall"—the 10% ethanol limit (E10) that most vehicles can tolerate—has constrained demand. The rise of electric vehicles and falling gasoline use further shrinks the market for ethanol.

Even fuel industry groups now admit that higher RFS mandates will raise costs for American consumers. Yet instead of stepping back, Congress and the administration have doubled down—layering new subsidies on top of a deeply flawed system.

Recommendations

The RFS has done more harm than good. It has failed to reduce climate risks, raised food and fuel prices, distorted agricultural markets, and created lasting environmental liabilities. At the same time, a wide range of federal supports—tax credits, subsidies, loan guarantees—have funneled billions to mature industries like corn ethanol and soy biodiesel with little public benefit.

[33] The authorizing statute for the 45Z tax credit created within the Inflation Reduction Act of 2022 leaves open the opportunity for the IRS to allow RFS guidance to determine eligibility for the tax credit.

With statutory RFS volume targets now expired, the EPA has full authority to set annual biofuel mandates—unless Congress intervenes. It should.

Instead of continuing to pick winners through mandates and subsidies, federal policy should allow biofuels to compete on a level playing field. After nearly half a century of taxpayer handouts, it's time to end duplicative and costly supports. Congress should repeal the RFS and let the biofuels market stand on its own.

Appendix:

Types of Biofuels Mandated in the RFS				
Type of Biofuel	**Annual Production Mandate in 2022**	**Definition of Biofuel**	**Examples**	**Minimum Reduction in Greenhouse Gas Emissions**
Conventional biofuels	15 billion gallons/yr	Ethanol derived from corn starch	- Corn starch ethanol	20%, but due to a grandfathering clause, nearly every ethanol facility was able to circumvent this minimal requirement
Cellulosic ethanol	16 billion gallons/yr	Renewable fuel derived from any cellulose, hemicellulose, or lignin	- Ethanol produced from agricultural residues (corn stover, for instance), forest residues, food or municipal solid waste, perennial grasses, etc. Corn kernel fiber cellulosic ethanol was also approved by EPA. In practice, however, has only primarily been met with manure- and landfill-biogas to generate renewable natural gas.	60%
Biomass-based diesel	At least 1 billion gallons/yr, set annually by EPA	Biodiesel produced from vegetable oil or "a diesel fuel substitute produced from nonpetroleum renewable resources [including] animal wastes, including poultry fats and poultry	- Biodiesel produced from soybeans, corn oil, other vegetable oils, animal fats, used cooking oil, etc. - Other diesel fuel substitutes like renewable diesel produced from soybean oil, used cooking oil, animal fats & canola oil.	50%

		wastes, and other waste materials, or municipal solid waste and sludges and oils derived from wastewater”		
“Other” advanced biofuels	4 billion gallons/yr	Any other fuel that meets the definition of an “advanced biofuel”	- Ethanol from non-corn feedstocks such as sugar - Butanol from renewable biomass (including butanol derived from corn, which was approved by EPA for a certain facility – Gevo) - May also include biomass-based diesel (see above)	50%