



November 29, 2023

The Honorable John Kerry  
U.S. Special Presidential Envoy for Climate  
The White House  
1600 Pennsylvania Avenue, N.W.  
Washington, D.C. 20500

Dear Secretary Kerry,

As you lead the U.S. delegation to Dubai to participate in the 28th Session of the Conference of the Parties to the U.N. Framework Convention of Climate Change (COP28), we encourage you to prominently highlight the U.S. biofuels industry's remarkable contributions to the fight against global climate change. We also ask that you ensure renewable biofuels like ethanol are explicitly included in our nation's plans to meet future greenhouse gas (GHG) emissions reduction commitments.

As amended in 2007, the Renewable Fuel Standard (RFS) was the first policy in the world to require GHG emissions reductions from transportation fuels. The RFS program has been a phenomenal success, with cumulative GHG savings of more than 1.2 billion metric tons since implementation began. As detailed in the attached report, today's corn-based ethanol already reduces GHG emissions by roughly 50 percent compared to petroleum, and the industry is on a path to achieve net zero carbon emissions in the decades ahead. In fact, our association's biofuel producer members have pledged to achieve net zero emissions by 2050 or sooner.

These GHG reductions are largely attributable to the fact that bioenergy feedstocks effectively recycle atmospheric carbon through a relatively rapid process. Plant-based biofuel feedstocks absorb carbon dioxide from the atmosphere as they grow, and that carbon dioxide is re-released to the atmosphere when the biofuel is converted to energy in a motor vehicle. The carbon dioxide is then re-absorbed by the next crop of biofuel feedstocks, and the cycle continues.

Under the RFS, domestic renewable fuels production has increased five-fold since 2005, resulting in substantial climate and air quality benefits while simultaneously enhancing U.S. energy security. Indeed, U.S. petroleum imports from OPEC nations are down nearly 80 percent since the RFS was expanded in 2007. The growth in renewable fuels production

has occurred in a manner that is socially, economically, and environmentally sustainable. While the benefits of biofuels are often misunderstood or purposely mischaracterized, farmers and ethanol producers have adopted practices and principles that not only make our nation more energy secure, but also enhance food security; improve air, soil and water quality; enrich social welfare; and advance economic well-being.

Because biofuels have proven to be an effective strategy for combating climate change, more than 30 countries included ethanol and other biofuels as a means of achieving GHG reductions in their Intended Nationally Determined Contributions (INDCs) submitted for COP21 in Paris in 2015. These countries recognize that biofuels are an important tool that is available today to assist in significantly decarbonizing transportation.

While the United States did not mention the important role of biofuels in its 2015 INDC submission, the Biden administration has appropriately recognized that biofuels must be a critical component of any national strategy to reduce GHG emissions from the transportation sector. The administration clearly understands that biofuels are needed not only to continue reducing emissions from light-duty passenger vehicles, but also to decarbonize the heavy-duty, marine, and aviation sectors as well. In fact, President Biden has stated “You simply can’t get to net zero by 2050 without biofuels.” And U.S. Environmental Protection Agency Administrator Michael Regan noted that his agency is “...committed to the growth of renewable fuels that play a critical role in diversifying our country’s energy mix and combatting climate change, all while providing good paying jobs and economic benefits to communities across the country.”

While biofuels like ethanol have already made extraordinary contributions in the fight against climate change, America’s farmers and biofuel producers have even more to offer. A strong endorsement of biofuels by the U.S. delegation in Dubai would not only send a powerful signal to the global community, but it would also serve to unleash further innovation and investment in the U.S. biofuels sector. COP28 is a pivotal forum to outline the U.S. vision for low-carbon biofuels, and we look forward to continuing our work with you and the entire Biden administration to make that vision a reality.

Sincerely,

A handwritten signature in black ink that reads "Geoff Cooper". The signature is written in a cursive, flowing style.

Geoff Cooper  
President and CEO



## ETHANOL: A low-cost solution available today to help countries meet their COP climate commitments

### Introduction

The 2015 Paris Agreement on climate change was hailed as historic. Adopted by 194 countries and the European Union, it sought to limit the **global temperature increase** to well below 2 degrees Celsius this century compared to pre-industrial levels, and more specifically the signatories endeavored to **keep the increase to no more than 1.5°C**.

However, as the 28th session of the Conference of the Parties (COP28) to the UN Framework Convention on Climate Change is being convened, the UN Climate Change secretariat issued a report concluding that “**national climate action plans remain insufficient**” to meet the 1.5°C target.<sup>1</sup> It went on to say, “The latest science ... indicates that greenhouse gas emissions need to be cut 43% by 2030, compared to 2019 levels. This is critical to ... avoid the worst impacts of climate change.”

The United States government simultaneously released its Fifth National Climate Assessment, which found that annual U.S. GHG “emissions fell 12% between 2005 and 2019.”<sup>2</sup> Still, this represented a reduction of less than 1% per year on average, and the report concluded that “**the current rate of decline is not sufficient to meet national and international climate commitments and goals**. US net greenhouse gas emissions remain substantial and would have to decline by more than 6% per year on average, reaching net-zero emissions around midcentury.”

Achieving the 1.5°C target will require a multifaceted approach and a stronger commitment from the global community. Action will need to be taken sooner rather than later. **One energy source—ethanol—is already cutting GHG emissions** in the U.S. and many other countries. **But with the right policies and commitments, ethanol and**

---

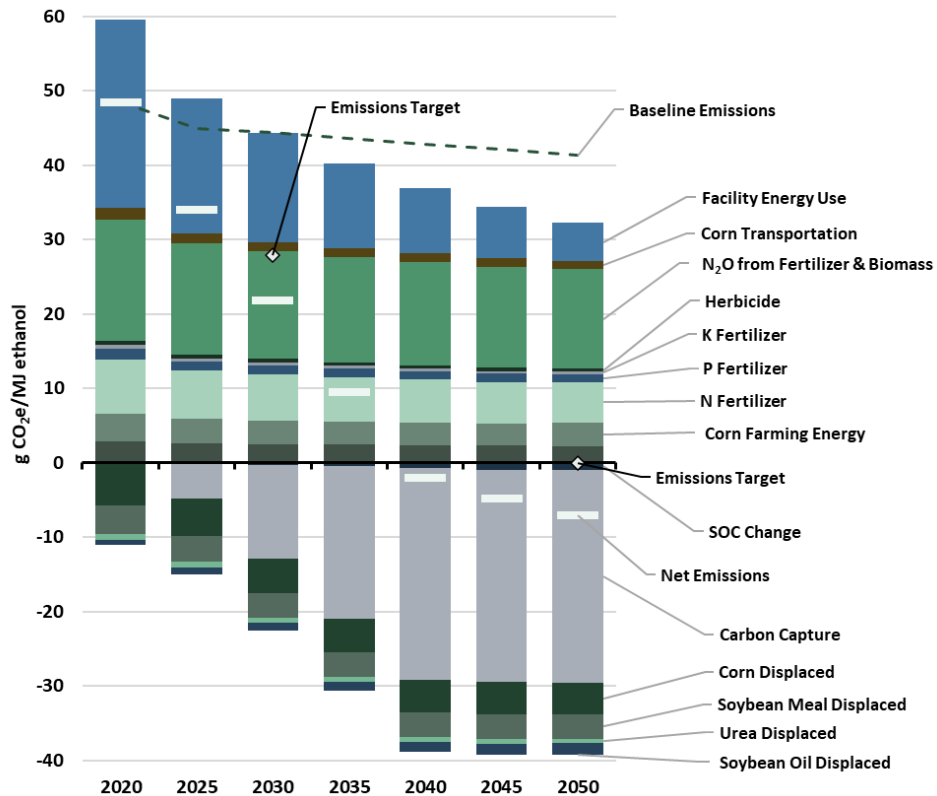
<sup>1</sup> <https://unfccc.int/news/new-analysis-of-national-climate-plans-insufficient-progress-made-cop28-must-set-stage-for-immediate>

<sup>2</sup> <https://nca2023.globalchange.gov/>

other renewable fuels can play a much larger role in future emissions reductions by the global transportation sector.

Corn-based ethanol produced in the U.S. already reduces GHG emissions 44-52% compared to gasoline.<sup>3</sup> Importantly, there are pathways by which fuel ethanol can achieve net-zero emissions as soon as 2040 (Figure 1).<sup>4</sup>

**Figure 1: Carbon Intensity of Ethanol Under Core Pathway to Net-zero Emissions**



Source: Informed Sustainability Consulting

This white paper reviews the role that ethanol is already playing in the U.S. and demonstrates the steps that the industry is taking to decarbonize further. It concludes by exploring emerging applications for ethanol in transportation.

<sup>3</sup> <https://onlinelibrary.wiley.com/doi/10.1002/bbb.2225>

<sup>4</sup> <https://ethanolrfa.org/media-and-news/category/news-releases/article/2022/02/new-study-corn-ethanol-can-achieve-net-zero-carbon-emissions-well-before-2050>

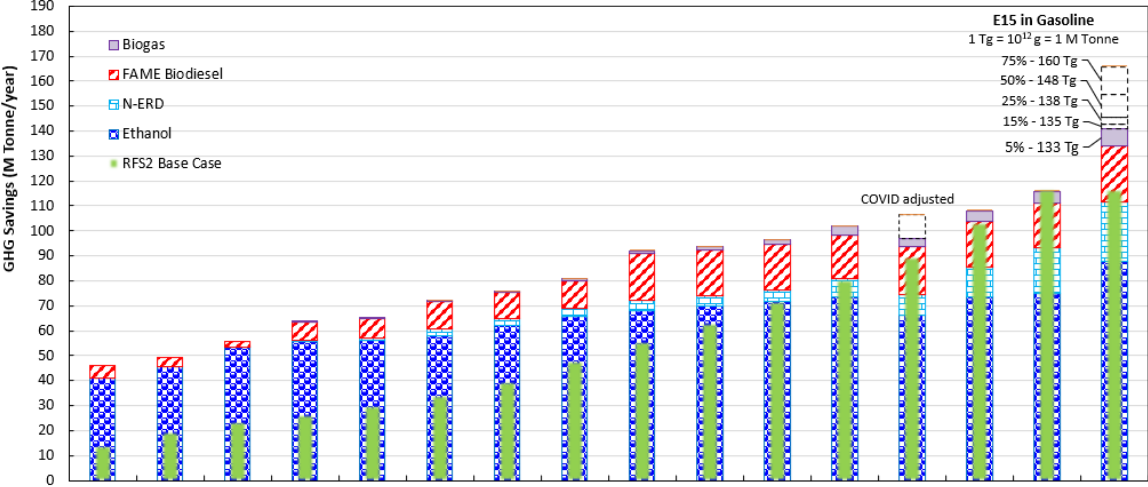
# Ethanol Is Cutting U.S. Greenhouse Gas Emissions

The **Renewable Fuel Standard** is the **primary federal program** that has promoted the **usage of biofuels** in the U.S. over the last two decades. The original RFS was signed into law in 2005, and in 2007 the program was expanded substantially, and consumption requirements were allocated among several categories of renewable fuels. Spurred in part by the RFS, **U.S. ethanol consumption grew to 14.0 billion gallons (53 billion liters) in 2022 – four times the 2004 volume.**

The use of renewable fuels under the program has resulted in **cumulative savings of more than 1.2 billion metric tons of carbon dioxide-equivalent GHG emissions** in the 15 years since the RFS was expanded, with **corn ethanol providing the largest share** of GHG reductions, according to a study by Life Cycle Associates (Figure 2).<sup>5</sup>

These results were achieved through the consumption of E10, a blend of 10% ethanol in gasoline that has become ubiquitous over the last decade. E15, a 15% blend, is approved for use in almost all light-duty vehicles that are currently on the road, and consumption has expanded rapidly in recent years.<sup>6</sup> **Full adoption of E15 would provide additional GHG savings of roughly 35 million metric tons annually.**

**Figure 2: GHG Emissions Reductions Since the RFS Was Expanded in 2007**



Source: Life Cycle Associates

<sup>5</sup> <https://ethanolrfa.org/media-and-news/category/news-releases/article/2023/03/study-rfs-slashed-ghg-emissions-by-1-2-billion-metric-tons-since-2008>

<sup>6</sup> <https://ethanolrfa.org/media-and-news/category/blog/article/2023/04/e15-sales-surpassed-1-billion-gallons-in-2022-but-are-at-risk-again-this-summer-due-to-regulatory-uncertainty>

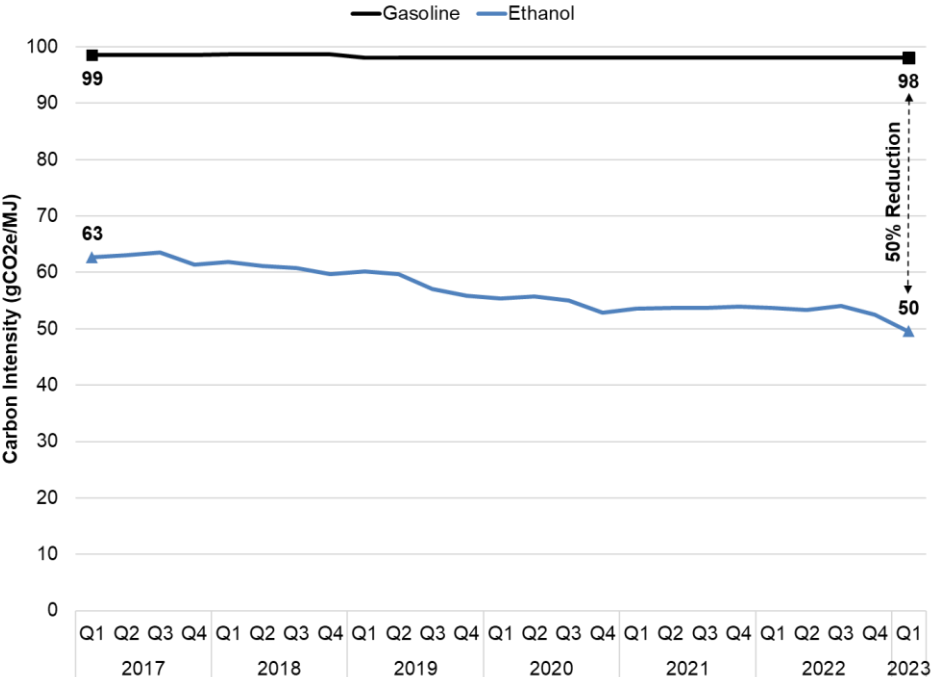
## A Leading Contributor to State-level Clean Fuel Programs

All the states on the U.S. West Coast have implemented clean fuel programs. **California’s Low Carbon Fuel Standard** was the first, and **since 2011 ethanol has cut GHG emissions** from the state’s transportation sector by **36 million metric tons**.<sup>7</sup>

**In Oregon, ethanol has represented 41% of the GHG reductions achieved under the state’s Clean Fuels Program** since 2016, including nearly half of those from liquid biofuels (electricity also has been a significant means of compliance).<sup>8</sup> The life cycle **GHG emissions of ethanol** used toward the state’s CFP are estimated to be **50% less than those of gasoline** (Figure 3).

Washington’s Clean Fuel Standard was implemented at the beginning of 2023. Compliance data are available only for the first quarter of the year, during which ethanol accounted for nearly two-thirds of credits generated.<sup>9</sup>

**Figure 3: Carbon Intensities of Gasoline and Ethanol Under the Oregon CFP**



Source: Oregon Department of Environmental Quality

<sup>7</sup> <https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries>  
<sup>8</sup> <https://www.oregon.gov/deq/ghgp/cfp/Pages/Quarterly-Data-Summaries.aspx>  
<sup>9</sup> <https://ecology.wa.gov/air-climate/reducing-greenhouse-gas-emissions/clean-fuel-standard/data-reports>

## Continuous Improvement in Ethanol’s Carbon Footprint

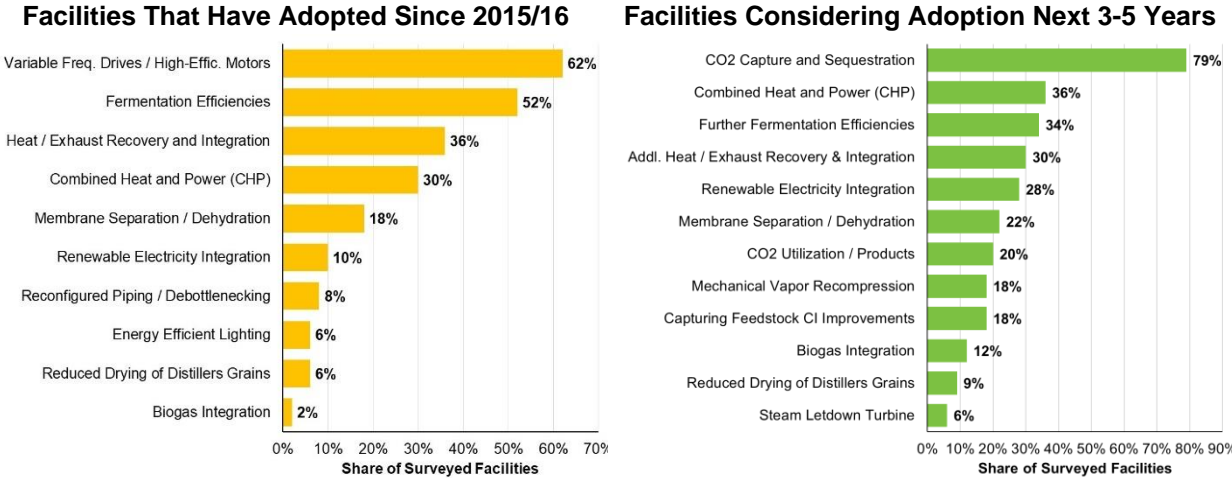
The Department of Energy’s **Argonne National Laboratory**, which developed the “gold standard” life cycle analysis model, estimates that ethanol reduces GHG emissions by 44-52% compared to gasoline. According to Argonne researchers, the **carbon intensity of corn ethanol fell 23% from 2005 to 2019**, mainly as a result of increased corn and ethanol yields and decreased energy usage in ethanol processing.<sup>10</sup>

The industry is dedicated to building on these gains. In July 2021, the producer members of the Renewable Fuels Association unanimously **committed to decarbonization goals**:

- **By 2030**, ensuring that **ethanol reduces average GHG emissions by at least 70%** compared to fossil-based gasoline.
- **By 2050**, ensuring that ethanol achieves average **net-zero** lifecycle GHG emissions.<sup>11</sup>

RFA members are **already making progress** toward this pledge. According to a March 2023 survey, virtually all members currently utilize carbon-reducing technologies, and many are investigating multiple carbon reduction solutions (Figure 4).<sup>12</sup> Technologies and practices that have been commonly adopted and that more facilities plan to adopt over the next 3-5 years include improvements in fermentation efficiency, heat/exhaust recovery and integration, and combined heat and power. Nearly 8 in 10 facilities plan to capture and geologically sequester carbon dioxide from fermentation.

**Figure 4: RFA Survey of Members’ Adoption of Technologies and Practices**



<sup>10</sup> <https://onlinelibrary.wiley.com/doi/10.1002/bbb.2225>

<sup>11</sup> <https://ethanolrfa.org/pledge>

<sup>12</sup> <https://ethanolrfa.org/media-and-news/category/news-releases/article/2023/06/rfa-sees-progress-as-ethanol-industry-advances-toward-net-zero-carbon-emissions>

## Further Innovation Is in Sight

While ethanol continues to deliver carbon reduction in its traditional role as a fuel for light-duty vehicles operating solely on internal combustion engines, ongoing investments and innovation promise to **expand the decarbonization opportunities** for ethanol.

RFA is demonstrating the potential of a **flex-fuel plug-in hybrid electric vehicle**. RFA purchased a new 2022 Ford Escape PHEV and installed a flex-fuel conversion kit, allowing it to run on any ethanol blend up to E85. It offers better refueling times, more refueling locations, longer vehicle range, and a lower purchase price than a battery electric vehicle. And, in some cases, E85 has a lower carbon intensity than pure electric.<sup>13</sup>

Additionally, there are **emerging applications** for ethanol **in hard-to-electrify areas** of the transportation sector, notably **heavy-duty trucking** and **airline travel**. Technology that allows diesel engines to run exclusively on ethanol is now being tested in the field. It offers the potential to reduce fuel costs and emissions of GHGs and pollutants.<sup>14</sup>

Another very promising application is **sustainable aviation fuel** produced from ethanol. The Biden administration has issued a Sustainable Aviation Fuel Grand Challenge, and the Inflation Reduction Act contains substantial incentives for SAF.<sup>15</sup> Both require a minimum 50% reduction in GHG emissions. Since ethanol is available at scale, it has received considerable attention as a feedstock for SAF.



<sup>13</sup> <https://d35t1syewk4d42.cloudfront.net/file/2536/PHEFFV%20Escape%205.25.23.pdf>

<sup>14</sup> <https://clearflame.com/>

<sup>15</sup> <https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/09/fact-sheet-biden-administration-advances-the-future-of-sustainable-fuels-in-american-aviation/>

## Conclusion

Today's corn-based **ethanol already reduces GHG emissions by roughly 50%** compared to gasoline, and the industry is on a **path to achieve net-zero carbon emissions** in the coming years. Moreover, ethanol is **available at scale, can be used in the vast majority of light-duty vehicles** on the road today, and is **cost-competitive**. And, there are **emerging applications** for ethanol **in hard-to-electrify areas** of the transportation sector, including **heavy-duty trucking** and **airline travel**.

As countries gather for **COP28**, they should **embrace ethanol and other renewable fuels as a proven solution** for reducing emissions. With the **right policies and commitments**, biofuels can play a **much larger role in decarbonizing transportation globally**.