



National Biodiesel Board	National Biodiesel Board
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November 22, 2019

U.S. House of Representatives Select Committee on the Climate Crisis
H2-359 Ford Building
Washington, DC 20515

Dear Chairwoman Castor and Ranking Member Graves;

The National Biodiesel Board (NBB) appreciates the opportunity to inform the policies, strategies, and innovations to achieve substantial and permanent reductions in pollution and other activities that contribute to the climate crisis, which will honor our responsibility to be good stewards of the planet for future generations. We look forward to working with the Committee to provide input on how to lead an ambitious transition to clean energy and resilience that puts Americans to work, builds a strong economy, unleashes American ingenuity, and prepares communities for the impacts of climate change.

Biodiesel is a renewable, clean-burning diesel replacement, made from an increasingly diverse mix of resources such as recycled cooking oil, soybean oil, and animal fats. Biodiesel production spans across the U.S. and has grown to more than 125 plants with the capacity to produce 3 billion gallons. In 2018, the U.S. biodiesel industry produced 2.6 billion gallons of biodiesel. Production is not only about gallons produced, but also about the economic benefits to the U.S. The biodiesel industry supports nearly 60,000 jobs and generates billions of dollars in GDP, household income, and tax revenues.

Importantly, biodiesel is the first and only EPA-designated advanced biofuel in commercial-scale production across the country and can be used in existing diesel engines without modification. In fact, 78 percent of the diesel vehicles coming off the production lines today are approved for B20 which is a blend of 20 percent biodiesel and 80 percent petroleum diesel.

According to the Diesel Technology Forum, "diesel-powered trucks, trains, ships and intermodal systems moved approximately 90 percent of the nation's freight tonnage. Diesel technology moves more than 80 percent of all cargo in the U.S. and more than 90 percent throughout the world. As such, diesel is the prime mover of the global economy whether by truck, train, boat or barge".¹ Additionally, diesel power provides two-thirds of the energy for machinery on America's farms. Diesel also powers most of the heavy equipment used in construction.²

¹ Diesel Technology Forum, <https://www.dieselforum.org/policy/powering-the-u-s-economy>

² id.



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Sector-Specific Policies

1. What policies should Congress adopt to decarbonize the following sectors consistent with meeting or exceeding net-zero emissions by mid-century? Where possible, please provide analytical support that demonstrates that the recommended policies achieve the goal.
 - a. Transportation

As the transportation industry continues to evolve, one thing remains the same – work still needs to get done, and multiple studies show that diesel engines will continue to be preferred by industry.

Biodiesel has the capability to reduce carbon and greenhouse gas emissions from the heavy-duty and long-haul diesel and aviation sectors, where electrification is not a near term option. Biodiesel is a renewable, clean-burning diesel replacement, made from an increasingly diverse mix of sources such as recycled cooking oil, soybean oil and animal fats, that can be used in existing diesel engines without modification. Because biodiesel can be used in any diesel engine without modification according to manufacturers' recommendations, it offers an easy and cost-effective way to reduce carbon emissions in existing diesel vehicles.

The biodiesel industry has long highlighted the lower GHG emissions of biodiesel production and use compared to the lifecycle emissions of petroleum. When compared with petroleum-based diesel fuel, biodiesel reduces lifecycle greenhouse gases by 86 percent; lowers particulate matter by 47 percent; and reduces hydrocarbon emissions by 67 percent.³ In other words, it reduces smog and makes our air healthier to breathe. Further, for every unit of fossil energy it takes to produce, biodiesel returns 3.5 units of renewable energy, the best return of any U.S. fuel.⁴

It is important to note that when we quantify the lifecycle emissions of biodiesel, we include all the upstream emissions from extraction and processing and not just the emissions of combustion. Specifically, we account for diesel fuel used in trucks and tractors, and natural gas and electricity used in oilseed crushing and biodiesel processing. If the industry were to use renewable energy in all of those steps, then biodiesel would reduce GHG emissions 100 percent compared to petroleum diesel. Because fossil carbon is currently ubiquitous in our electrical grid and because fossil natural gas is so abundant and affordable, those sources of energy degrade biodiesel's lifecycle benefit to 85 percent better than petroleum diesel.

The Renewable Fuel Standard (RFS) is a key policy in ensuring that consumers have the option of purchasing low-carbon fuels. Without effective policies such as the RFS in place to incentivize petroleum distributors to offer renewable fuels, consumers simply will not have the option to reduce GHG emissions from their liquid transportation fuels.

³ A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions; US Environmental Protection Agency; 2002; <http://www.epa.gov/otaq/models/analysis/biodsl/p02001.pdf>

⁴ Energy Life-Cycle Assessment of Soybean Biodiesel Revisited; Pradhan, Shrestha, et al.; 2011; <https://www.usda.gov/oce/reports/energy/EnergyLifeCycleSoybeanBiodiesel6-11.pdf>



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The benefits of biodiesel for transportation are already being realized by the National Park Service (NPS). From the Desert Southwest, to the Canadian border, to the Mid-Atlantic, biodiesel is already helping a number of parks maintain their pristine natural beauty and reduce their environmental footprint. The Great Smoky Mountains National Park, Shenandoah National Park, Voyageurs National Park, Grand Canyon National Park, Richmond National Battlefield Park, and Assateague Island National Seashore are just some of the parks that power their vehicles with biodiesel.

- b. Electric power. The Select Committee would like policy ideas across the electricity sector but requests specific comment on two areas:
 - i. If you recommend a Clean Energy Standard, how should it be designed?

Biodiesel is valuable for transportation, because it has a high energy density. This same trait also makes it excellent at storing renewable solar energy, as contained in plants, for electrical generation. Biodiesel and renewable diesel can be used in diesel or turbine engines to help produce renewable electricity. The ability for biodiesel to store energy is the perfect complement to wind and solar photovoltaics, as it can be quickly ramped up to meet peak load demands not able to be met by wind and solar.

The U.S. National Park Service (NPS) is one of the leaders in the use of biodiesel to produce renewable electricity. The NPS has deployed biodiesel in standby generators which are burning B20 at Channel Islands, Glacier and other national parks. These standby generators are often located in remote parts of the parks that are beyond the power grid.⁵

c. Industry

The continuation of the RFS is essential for increasing production and use of clean, renewable fuels in the United States. Under the RFS, biomass-based diesel (BBD) must meet a 50 percent lifecycle GHG reduction. The BBD industry has repeatedly surpassed required volumes and currently comprises more than 90 percent of annual advanced biofuel use under the RFS program.

In the United States, three billion gallons of biodiesel would reduce carbon emissions by more than 25 million tons by displacing fossil petroleum. Additionally, the U.S. biodiesel industry is poised to achieve more than 35 million tons of annual GHG reductions by 2022 if federal policy properly incentivizes the use of existing feedstocks and existing installed production capacity. If policy stalls, so will the potential GHG reductions that the biodiesel industry is ready to deliver.

d. Buildings

Biodiesel can also be used as a valuable way to address heating needs. Bioheat® Fuel is a blend of biodiesel and ultra-low-sulfur heating oil.⁶ Bioheat® has the ability to reduce emissions that are harmful to human health and the environment, including particulate matter, sulfur oxides, nitrogen oxides,

⁵ <http://www.biodieselmagazine.com/articles/576/biodiesel-on-backup>

⁶ <https://mybioheat.com/facts/>



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carbon monoxide, aromatic hydrocarbons, and lifecycle reduction for carbon dioxide and equivalent greenhouse gases.

Bioheat® is the only heating and energy source with an established, achievable pathway to a zero-carbon future, and many family-owned fuel retailers in the Northeast are helping that region get there faster by delivering blends of up to 20 percent or higher. At a blend of just seven percent, Bioheat® can achieve emissions reductions equal to natural gas. B20 Bioheat® is by far the cleanest and greenest heating source in widespread use today.

Oil heat is vital in regions such as the Northeastern United States where capacity for distribution of natural gas is limited. The energy density of biodiesel allows it to be delivered by truck and offloaded in a liquid form that is easily pumped into storage tanks that deliver reliable heating all season long. The Northeast heating oil industry delivers renewable liquid heating fuel to more than five million homes and businesses across the region — 80 percent of the national heating oil market. The average retail heating oil company is a multi-generation family-owned and -operated business with a median of 25 employees.

Blends of five percent biofuel are in widespread use throughout the Northeast, with industry-supported mandates requiring their use in Downstate New York and Rhode Island. Specifically, the Northeast's heating oil industry has resolved to achieve net-zero CO2 emissions by 2050. The industry's resolution calls for a 15 percent reduction in CO2 emissions by 2023, a 40 percent reduction by 2030, and net-zero carbon emissions by 2050.

The Northeast is not the only jurisdiction taking advantage of the benefits of biodiesel, the Great Smoky Mountains National Park, a biodiesel user since 2003, is also using Bioheat® fuel to heat the park's headquarters building.⁷

2. What policies should Congress adopt to ensure that the United States is a leader in innovative manufacturing clean technologies; creating new, family-sustaining jobs in these sectors; and supporting workers during the decarbonization transition?

The BBD industry that exists today is the result of innovation that began almost three decades ago. Farmers realized protein demand was increasing and crops such as soybeans could meet the demand. In the process of harvesting the protein demanded for the food supply, the oil harvested exceeded the capacity to consume it as food or livestock feed. As a result, an innovation was needed for the excess oil. That is where biodiesel developed.

The BBD industry currently supports more than 65,600 jobs, \$2.5 billion in wages, and \$17 billion in total economic impact in the United States throughout the supply chain.⁸ Any increases in the BBD volume will add additional jobs and economic impact. LMC International estimates that, assuming the same rate of domestic production, three billion gallons of BBD would generate over 79,000 U.S. jobs, \$3 billion in wages paid, and \$20.4 billion in total domestic economic impact. Moreover, because BBD is a key source of demand for soybean oil, BBD also provides support to U.S. farmers. And because BBD feedstocks are

⁷ <https://ussoy.org/biodiesel-helps-keep-u-s-national-parks-clean/>

⁸ The Economic Impact of the Biodiesel Industry on the US Economy; LMC International; 2019.



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by product of the protein meal portion of crops used for food, the production of BBD lowers input prices for food production by increasing demand for surplus oils. Any increase in the domestic production and use of BBD would enhance each of these benefits to U.S. employment, agriculture, and rural development.

The RFS is essential for increasing production and use of clean, renewable fuels in the United States. The biodiesel tax incentive is another policy that plays a key role in supporting growth of the U.S. biodiesel industry, helping biodiesel and renewable diesel producers create jobs, diversify the fuels market and strengthen U.S. energy security. Renewing the tax incentive is key to support the growth of the U.S. biodiesel industry and remain as a leader in innovative manufacturing and clean technologies.

Policy intervention is necessary to allow biodiesel production to compete in the very mature market for liquid fuels. This is true for biodiesel made from existing byproducts and is even more true for biodiesel created from new innovations.

3. What policies should Congress adopt to ensure that environmental justice is integral to any plan to decarbonize these sectors?

In addition to reducing lifecycle emission of greenhouse gases, biodiesel reduces harmful tailpipe emissions. Tailpipe emissions can have an adverse impact on populations living in congested areas or traffic corridors. Biodiesel offers the added benefit of reducing criteria air pollutants, producing a direct benefit to human health. This includes reducing unburned hydrocarbons by 67 percent, reducing carbon monoxide by 48 percent, reducing polycyclic aromatic hydrocarbons by 80 percent, reducing nitrated PAHs by 90 percent, and reducing ozone potential of speciated hydrocarbons by 50 percent.⁹ EPA found that blends of 20 percent biodiesel reduce particulate matter (PM_{2.5}) by 10.1 percent.¹⁰ More recent engine testing at the University of California Riverside for the California Air Resources Board (CARB) found even greater PM_{2.5} reductions of six percent for B5 and 10-15 percent for B10.¹¹

The impacts of these emissions are significant to human health. Nitrated PAHs have been identified as potential cancer-causing compounds. PM emissions have been associated with 130,000 premature deaths annually in the United States.¹²

Biodiesel has the impact of saving human life by reducing these harmful emissions. The health benefits of reducing particulate matter emissions include reduced mortality of adults and infants, reduced chronic and acute bronchitis, reduced acute myocardial infarctions, reduced cardiovascular hospital admissions, reduce upper and lower respiratory symptoms, reduced exacerbation of asthma, and reduction in lost workdays.¹³ According to EPA, the economic benefits of these health impacts range

⁹ A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions; US Environmental Protection Agency; 2002; <http://www.epa.gov/otaq/models/analysis/biodsl/p02001.pdf>

¹⁰ id.

¹¹ Study of the Emissions Impacts of B5-B10 Blends for California; Durbin, Karavalakis, et al; 2014; https://ww3.arb.ca.gov/fuels/diesel/altdiesel/ucr_presentation.pdf

¹² Report to Congress on Black Carbon; US Environmental Protection Agency; 2012; <https://19january2017snapshot.epa.gov/www3/airquality/blackcarbon/2012report/fullreport.pdf>

¹³ id.



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between \$230,000 and \$880,000 per ton of particulate matter reduced.¹⁴ This brings the range of economic benefits to \$1-5 billion solely from reducing particulate matter in diesel engines using biodiesel. The PM reduction from biodiesel statistically equates to reducing 300 premature deaths from respiratory illness each year. In EPA's 2012 report to Congress on Black Carbon, EPA states that control measures that reduce PM_{2.5} emissions are "virtually certain to achieve health benefits."¹⁵

Cross-Cutting Policies

4. Carbon Pricing:

- a. What role should carbon pricing play in any national climate action plan to meet or exceed net zero by mid-century, while also minimizing impacts to low- and middle-income families, creating family-sustaining jobs, and advancing environmental justice? Where possible, please provide analytical support to show that the recommended policies achieve these goals.

Carbon pricing alone is unlikely to impact the transportation fuel sector. As the petroleum industry maintains vested infrastructure in fossil fuels, they are more likely to pass carbon pricing on to consumers rather than allow their profitable fossil investments to be surpassed by independent renewable fuel alternatives. The RFS remains a key policy in providing consumers with low-carbon transportation fuels.

5. Innovation:

- a. Where should Congress focus an innovation agenda for climate solutions? Please identify specific areas for federal investment and, where possible, recommend the scale of investment needed to achieve results in research, development and deployment.

NBB advocates for sustainable growth of the biodiesel market under the RFS and the Biodiesel Tax Incentive. The RFS requires transportation fuel sold in the United States to include annually set volumes of advanced biofuels such as biomass-based diesel, and the Biodiesel Tax Incentive incentivizes fuel blenders to include biodiesel and renewable diesel in the U.S. transportation fuel market.

If these programs were implemented as intended, it would send market signals to private industry to invest in the development of new renewable fuels. While many new biodiesel technologies are near commercial stage, EPA's reluctance to implement the RFS as originally intended and the uncertainty of the Biodiesel Tax Incentive has reduced the incentive for private investment and development of new fuel alternatives.

¹⁴ id.

¹⁵ id.



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- b. How can Congress incentivize more public-private partnerships and encourage more private investment in clean energy innovation?

Proper implementation of the RFS, renewal of the biodiesel tax credit, and funding for the USDA Biodiesel Fuel Education Program are effective tools for accomplishing growth in the biodiesel industry. The record is clear that when these programs were functioning, private investment, job creation, and displacement of imported fossil fuels grew rapidly. Investment has stalled as these federal policies have languished.

Agriculture

6. What policies should Congress adopt to reduce carbon pollution and other greenhouse gas emissions and maximize carbon storage in agriculture?

As global population and standards of living continue to rise, increasing protein demand will result in an increasing surplus of soybean oil and other byproducts of protein production, such as animal fats and used cooking oil. This is a major reason why the biodiesel industry should continue to grow -- as an outlet for inedible food byproducts. There are numerous other innovations waiting to expand and diversify the biodiesel industry if policies include biomass-based diesel as a carbon-reducing strategy.

By creating value for excess oil, biodiesel helps reduce the cost of protein for consumers and helps farmers satisfy protein demand by using less land area and inputs that might be required to grow alternative protein systems. Without biodiesel, some other large-scale use would be necessary to consume the excess oil. If that oil has no or little commercial value, then the benefits of converting that solar energy into a useful product and real wealth for the economy cannot be fulfilled.

Other innovations supporting biodiesel production can be found in the development of technology and agricultural practices that are continuing to improve crop yields. For example, U.S. soybean growers have almost doubled production since 1980 while decreasing land use, energy usage, and GHG emissions. Similarly, U.S. corn yields have grown dramatically over the past 20 years. Yields of both crops and others are poised to grow further thanks to continued technological developments, such as products and new crop strains that offer enhanced disease protection, drought resistance, and resistance to insects.

There are also several new crops in development that could increase the availability of feedstocks while delivering environmental benefits and ecosystem services. For instance, several varieties of winter cover crops are being developed that can protect the soil and sequester nutrients during seasons when crop land is currently fallow. The incentive to harvest additional biodiesel feedstocks could generate the revenue necessary for farmers to implement these types of conservation practices. Therefore, if biodiesel markets encourage winter cover crops, the carbon sequestration and other ecological benefits could be attributed to biodiesel.

Again, the National Biodiesel Board appreciates the opportunity to inform the policies, strategies, and innovations to achieve substantial and permanent reductions in pollution and other activities that contribute to the climate crisis. We look forward to working with the Committee as you "investigate,



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study, make findings, and develop recommendations on policies, strategies, and innovations to achieve substantial and permanent reductions in pollution and other activities that contribute to the climate crisis, which will honor our responsibility to be good stewards of the planet for future generations”.

Sincerely,

A handwritten signature in black ink that reads "Kurt A. Kovarik".

Kurt Kovarik
Vice President, Federal Affairs
National Biodiesel Board (NBB)