2021 Joint Legislative Budget Hearing on Environmental Conservation
New York State 2021-2022 Executive Budget Proposal
January 27, 2021

Submitted by:
Floyd Vergara, Director of State Government Affairs of the National Biodiesel Board
Shelby Neal, Vice President of Renewables & Energy Policy, Darling Ingredients, Inc.
Scott Hedderich, Executive Director, Corporate Affairs, Renewable Energy Group

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The National Biodiesel Board (NBB) represents the biodiesel, renewable diesel, and sustainable jet fuel industries. NBB members play an important role in displacing petroleum, improving public health, and protecting the environment. Many NBB members are members of environmental organizations and are supportive of state and local initiatives to achieve a sustainable energy future.

Darling Ingredients owns two biodiesel plants and the nation's largest renewable diesel production facility. Much of the company's products are made from used cooking oil (UCO) and animal fat byproducts that it collects throughout North America and further processes into sustainable, domestically-sourced finished fuels. Darling's recycling operations include a UCO and bakery waste facility located in Buffalo as well as used cooking oil collection throughout New York State.

The Renewable Energy Group is a biodiesel and renewable diesel production company headquartered in Ames, Iowa. The company operates 13 biorefineries and a feedstock processing facility. With operations in New York, REG supplies biodiesel to the space heating, and both biodiesel and renewable diesel to the transportation sector.

Darling Ingredients, Inc. and the Renewable Energy Group are members of the National Biodiesel Board.

NBB commends New York State for the adoption of the Climate Leadership and Community Protection Act (CLCPA) and its policy initiatives and current discussions on climate change and carbon emission reduction.

NBB is supportive of the CLCPA carbon reduction goals and wishes to offer comments and suggestions relating to specific topics. We urge you to implement a significant role for biodiesel to help achieve environmental sustainability while realizing the economic benefits that come from new job creation. We would be pleased to work with you to further explore the issues that we describe in this document.

This testimony will address two sectors of the economy, Housing (space heating) and Transportation, where NBB members have already successfully contributed to the replacement of fossil fuel use and increased carbon savings.

HOUSING (SPACE HEATING) SECTOR

What is Biodiesel? As renewable, low carbon replacements for petroleum diesel fuel and heating oil, biodiesel and renewable diesel are made from used cooking oil, animal fats, brown (sewer) grease, and agricultural byproducts or co-products. These biofuels reduce lifecycle greenhouse gases on average 73% - 80%, based on a full life-cycle basis. In addition to significantly lowering greenhouse gas emissions, biodiesel can also significantly reduce harmful criteria pollutants created from the combustion of petroleum. These are pollutants that have been shown to lead to chronic health effects, especially in urban communities.

Emissions Improvements of Biodiesel versus Low Sulfur (LS) and Ultra Low Sulfur (ULS) Heating Oil[1],[2],[3],[4],[5]

Average Change	PAH	PM	CO	NO_x	SO_2	CO_2
Percent	-90 to -95%	50%	Similar to -15%	Similar to -25%	-98% (LS) Similar (ULS)	-73%

Note: PAH-Polycyclic Aromatic Hydrocarbons; PM-Particulate Matter; CO-Carbon Monoxide; NOx-Nitrogen Oxide; SO_2-Sulfur Dioxide; CO_2-Carbon Dioxide

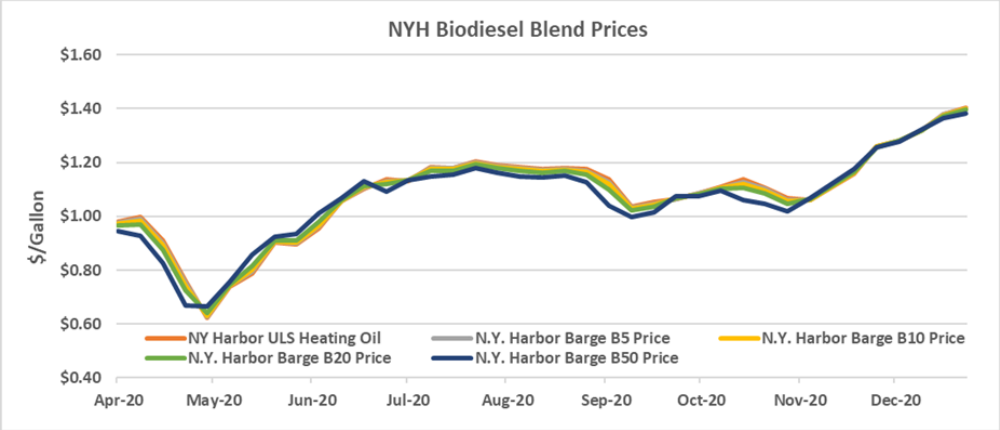
Feedstocks used to produce U.S. biodiesel have become increasingly diversified, with waste products making up an increasing volume of feedstock used to produce fuel. One of the chief reasons is biodiesel offers an especially effective and efficient outlet for recycling fat-based waste streams. While waste fats and oils can be treated in wastewater treatment plants, it is far more expensive and this process yields far fewer GHG savings, if any at all. Furthermore, by processing excess agricultural co-products such as soybean oil into high quality biodiesel, the industry is not only able to provide a lower carbon fuel, but we help facilitate lower protein costs by providing an additional revenue source for the production of soybean meal. Thus, with biodiesel production and use, there is no food-for-fuel issue. Currently, federal law, rules, and regulations do not recognize palm oil in biodiesel production in the federal Renewable Fuel Standard, thus, helping to further reduce deforestation. We are pleased to note that domestically-produced biodiesel meets all federal standards. In fact, US produced soybeans are so sustainable, they are approved under stringent, EU RED II Compliance scheme[6].

As a drop-in fuel, Bioheat® (the registered term for biodiesel blended heating oil) provides immediacy in reducing greenhouse gas emissions and has been effective in states that have biodiesel blending requirements for space heating - New York and Rhode Island, as well as in Massachusetts with their Alternative Portfolio Standard biodiesel incentive program. The same translates to those states with low carbon transportation policies.

Heating oil is currently being delivered to consumers in New York at blends as high as 35% (B35). This blend level and up to 50% (B50) has not required modifications to the heating system, nor has it resulted in increased costs to the consumer versus traditional heating oil. The New York State Energy Research Development Agency (NYSERDA) tracks home heating fuel retail pricing[7], and such data shows no

[1] Macor, A., Pavanello, P., Performance and Emissions of Biodiesel in a Boiler for Residential Heating, *Energy*, vol. 34, 2009.C
[2] Krishna, C.R., Biodiesel Blends in Space Heating Equipment, Brookhaven National Laboratory, 2001.
[3] USDA/DOE 1998, Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus.
[4] Lee, S. Win, He, I., Heritage, T., Young B., Laboratory Investigations on the Cold Temperature Combustion and Emissions Performance of Biofuels Blends, 2003.
[5] https://www.edf.org/sites/default/files/10071_EDF_BottomBarrel_Ch3.pdf
[6] https://ussec.org/european-union-recognizes-ssap-red/
[7] https://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Weekly-Heating-Fuels-Report

differential in price within the regions of NY that require biodiesel blending[8]. Additionally, NYSERDA tracks biodiesel spot market prices and this data shows biodiesel consistently pricing at or below that of ultra-low sulfur heating oil (see chart below). This field experience and governmental data shows that biodiesel is a solution to GHG reduction strategies and is a seamless transition for heating oil customers.



Source: NYSERDA Office of Energy and Environmental Analysis

The Transition to Renewable Liquid Fuel: Bioheat®. Through the efforts of the National Oilheat Research Alliance (NORA), which was authorized by U.S. Congress in 2000, the heating oil industry, in partnership with the National Biodiesel Board, has a laudable track record of accomplishments to improve the efficiency of equipment and provide a cleaner liquid fuel. NORA is funded by a government sanctioned "check-off" program by which $0.002 is collected at the wholesale level on every gallon of heating oil sold in the U.S.; and NBB has contributed millions of dollars for research & development, and educational outreach. This partnership resulted in the development of Bioheat® fuel – ultra-low sulfur heating oil blended with renewable biofuel at levels ranging from B5 to B100.

Because of NORA's continued leadership and guidance from the NBB, the heating oil industry has proactively pursued all legislative and regulatory opportunities to transition to renewable fuel blends in the Northeast. The industry has supported the enactment of biofuel mandates for heating oil in New York City (B5 increasing to B20 in 2034), Rhode Island (B5), and for diesel fuel in Pennsylvania (B2).

Space Heating with Bioheat® in New York. The heating oil industry in New York (NY) is proactively working toward reducing the carbon intensity of its products. NBB and the NY heating oil industry are focused on displacing just the current volumes of traditional heating oil consumption. It is not our goal to meet the state's heating resource needs that are met by other sources, but to transform the 1.5 million homes in NY that currently use heating oil into a deliverable, clean burning renewable liquid heating fuel market by replacing their heating oil with Bioheat®.

New York state's total annual consumption of heating oil is approximately 1 billion gallons[9] or 20% of the U.S. heating oil market. This volume is less than 25% of current EPA-registered biodiesel production capacity in the United States.[10]

[8] Chapter 315 of the NYS Laws of 2017
[9] https://www.eia.gov/dnav/pet/pet_cons_821dsta_dcu_SNY_a.htm
[10] 84 Federal Register at 36,873

The heating oil industry's goal, as set forth in its "Providence Resolution,"[11] adopted in 2019, is to adopt a 50% biodiesel blend for heating oil (B50) by 2030. Within this context, the required biodiesel volumes would be reasonable, as the capacity of the domestically-produced biodiesel market is currently 4 billion gallons, with the potential to grow three-fold.

In 2017, at the behest of the state's home heating oil industry, New York State adopted (Chapter 315 of L. 2017) a 5% blending requirement for biodiesel/renewable diesel in heating oil for the New York metropolitan area, which includes New York City, Long Island (Nassau and Suffolk Counties) and Westchester County. This area comprises 70% of the state's home heating oil market by volume, thus 700 million gallons are consumed in this part of the state. New York City has a biodiesel/renewable diesel blending law (NY Local Law 119-2016) that will increase the blending requirement to 20% by 2034. However, the remainder of the state has no renewable low carbon heating fuel requirement.

Adopting a Biodiesel Blending Requirement. As the Governor and State Legislature negotiate the 2021-2022 State Budget, we urge them to act on an immediate reduction in carbon emissions for the 1.5 million homes in the state that currently use heating oil, by instituting a statewide biodiesel blending heating oil requirement at 20%, as proposed in Assembly Bill A.6344A of 2020 by Senator Todd Kaminsky. This legislation will eliminate the use of 200 million gallons of heating oil and reduce carbon emissions (CO2e) by over 1.8 million metric tons[12].

The NBB, along with the American Lung Association and Trinity Consultants, is completing a study to quantify the public health benefits from using biodiesel numerous cities throughout the U.S., including two locations in New York: The Bronx and Albany. Preliminary results: Extrapolating the heating oil results for the Sotomayor housing development in the Bronx (New York) to the surrounding 5-mile diameter area yields an estimated reduction in cancer burden up to 10, which along with the 16 avoided premature deaths, 10,848 asthma exacerbation, and other endpoints noted earlier, would have a valuation of about $137M in avoided costs if the petroleum distillate were replaced with B100 within that area. In the Albany (New York) site, the use of B100 in place of petroleum heating oil would reduce cancer burden by 1 case and avoid 65 asthma exacerbations. The final study is expected to be released in February 2021.

It is noteworthy to mention the biodiesel blending policy outlined in A.6344A is supported by the American Lung Association and regional organizations such as the New York League of Conservation Voters, New York Public Interest Group, and Citizens Campaign for the Environment.[13]

TRANSPORTATION SECTOR

Transforming Transportation in New York State. NBB is a member of the CleanFuelsNY Coalition, an organization dedicated to advancing a clean fuel standard in New York to tackle transportation emissions, the largest source of GHG in the state. The coalition is comprised of 35+ members across an array of diverse industries including leading environmental, public health and energy groups.

As you enter negotiations on the 2021-2022 State Budget, we urge the Governor and the State Legislature to support a Clean Fuel Standard, such as is proposed by Assembly Member Carrie Woerner

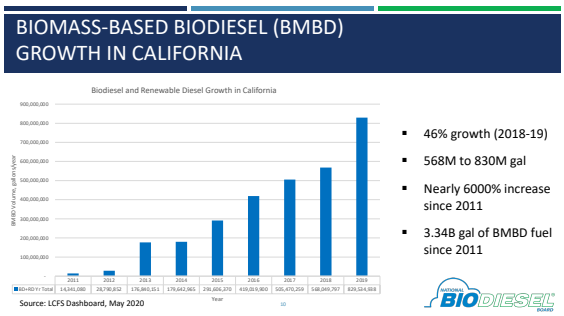
[11] https://nefi.com/news-publications/recent-news/heating-oil-industry-commits-net-zero-emissions-2050/
[12] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
[13] Support letters dated December 12, 2019, January 31, 2020, and March 9, 2020 can be provided upon request.

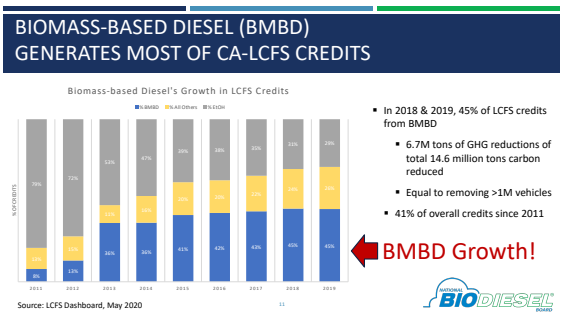
in Assembly Bill A862. A Clean Fuel Standard will help the state attain the carbon reduction and climate change goals set forth in the CLCPA.

Clean fuel standards have been very successful in California and Oregon. A Clean Fuel Standard, also known as a low carbon fuel standard (LCFS), is a technology-neutral, performance-based standard that requires fuel manufacturers and importers to reduce the lifecycle greenhouse gas (GHG) emissions associated with the fuels they make and sell. These requirements have been in place since 2011 in California Title 17, California Code of Regulations, sec. 95480-95503) and 2016 in Oregon (Chapter 340, Division 253; 340-253-0000-8010), and have reduced GHG emissions in those states by more than 73 million metric tons combined[14,15]]. It is one of the single most effective GHG reduction policies in either state, yielding not only carbon reductions, but also transforming the transportation fuel pool, increasing energy security, and reducing health-impactful air pollution.

Consumers have not experienced significant cost impacts at the pump. As we face an unprecedented health and budget crisis, a Clean Fuel Standard would allow New York to improve air quality and clean up the transportation sector at cost parity with conventional gasoline and diesel. Retail pump prices for gasoline and diesel compiled by the U.S. Energy Information Agency show California pump prices in 2019 were at or below 2011 prices, for both gasoline and diesel[16] [17], after nearly 10 years of the LCFS program operating in California. In fact, biodiesel prices (reported for 20% biodiesel blend or B20) on the West Coast were on average 51 cents per gallon less than conventional diesel (as of January 2020).

A clean fuel standard is good for the economy, environment, and public health. Adopting a Clean Fuel Standard in New York will send strong market signals to producers of biodiesel and renewable diesel (collectively called "biomass-based diesel") that the state is open for the renewable liquid fuels business. Under California's LCFS, biomass-based diesel volumes grew from 14 million gallons in 2011 to 830 million gallons in 2019, a 57-fold increase. These sustainable diesel replacements currently comprise about 22% of the California diesel fuel pool. They have generated over 45% of the carbon reductions in the CA LCFS program during 2018 and 2019 and 41% overall to date. Since its adoption of the LCFS, California has seen the development of nine biodiesel facilities and one renewable diesel production plant, supporting 4,400 full-time jobs and $156 million in wages. Overall, the CA LCFS has created 38,000 jobs. And the CA LCFS has been cited as directly contributing to recent announcements by several petroleum refiners to convert a number of traditional refineries to renewable diesel production.





[14] 68.9MMT estimated GHG reductions from CA LCFS through Q2 2020, 2020 LCFS Quarterly Report No. 2, https://ww2.arb.ca.gov/sites/default/files/classic//fuels/lcfs/dashboard/quarterlysummary/20201030_q2datasummary.pdf;
[15] 4.63MMT estimated GHG reductions from OR CFP through Q2 2020, Q2 2020 Quarterly Data spreadsheet, https://www.oregon.gov/deq/ghgp/Documents/cfp-q220.xlsx.
[16] https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMM_EPMR_PTE_SCA_DPG&f=A
[17] https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMD_EPD2DXL0_PTE_SCA_DPG&f=A

These economic benefits have been accompanied by substantial environmental and public health benefits. Unlike petroleum diesel, which adds large amounts of new carbon into the atmosphere, biomass-based diesel is made from waste and by-product fats and oils, thereby reducing GHG emissions by nearly 80%. Further, biomass-based diesel can reduce particulate matter (PM) by nearly 80%, carbon monoxide by over 40%, and other noxious pollutants by significant levels. And since these are drop-in fuels, biomass-based diesel can produce environmental benefits immediately upon use.

Moreover, disadvantaged and environmental justice communities are often located near or around high diesel-use activities, such as ports and railyards. Replacing petroleum diesel with biomass-based diesel substantially reduces diesel PM emissions, which in turn provides immediate public health benefits in the form of avoided cancers, deaths, hospitalizations, and asthma incidents (because diesel PM is a known air toxicant).

As previously mentioned, the NBB, along with the American Lung Association and Trinity Consultants, is completing a study to quantify the public health benefits from using biodiesel numerous cities throughout the U.S., with the final study expected in February 2021. Extrapolating the transportation analysis for the Port of L.A./Long Beach (9.2M TEUs) results to a similar sized population around the Port of New York/New Jersey (4.2M TEUs) suggests cancer burden around the New York/New Jersey port would be reduced by roughly 160, premature deaths by 90, and asthma exacerbations by 58,000, which along with avoided days of reduced activity and work productivity would have a valuation of about $805M in avoided costs.

A Clean Fuel Standard is a critical tool in reducing air pollutants which contribute to significant public health issues, including asthma and other respiratory and cardiovascular diseases that are linked to more severe cases of coronavirus. According to the American Lung Association's annual State of the Air Report, more than 50 percent of New Yorkers live in areas with failing air quality and the greater New York City metropolitan region is consistently ranked in the top 10 cities with the worst air quality in the country.

A Clean Fuel Standard can also enable the complete displacement of petroleum diesel used by fleet operators. Existing fleet managers can convert their fuel consumption to 100% renewable fuel simply by purchasing and using a blend of 80% renewable diesel and 20% biodiesel (R80/B20), which would result in the environmental and public health benefits noted above without any use of petroleum diesel.

Transportation is New York's largest source of GHG emissions—approximately 35 percent and growing. Cars and trucks, which rely overwhelmingly on petroleum-based fuels, represent a significant portion of New York's harmful air pollution. By requiring high polluting transportation fuel providers to purchase credits from low carbon fuel suppliers, the state can reduce greenhouse gas emissions and improve air quality, while creating in-state jobs, supporting regional economic development, and reducing out-of-state payments.

The National Biodiesel Board strongly encourages your support for the Clean Fuel Standard [A.862 (Woerner)] by including this policy initiative in the adopted 2021-2022 State Budget. This policy is a proven solution to reduce transportation emissions in New York, improve air quality and drive investment into new industries.

CONCLUSION

While NBB recognizes that the New York Climate Action Council (CAC) and its advisory panels are currently meeting to help craft a Scoping Plan of policies for the state to consider in meeting it carbon reduction goals of the CLCPA, the negative impacts of climate change are not going to wait until the scoping plan in submitted in December 2021, nor for the final recommendations from the CAC in December 2024. Thus, the use of biomass-based diesel - biodiesel and renewable diesel – provide New York with policy initiatives that can be enacted now and provide immediate greenhouse gas and co-pollutant reductions that can improve the health benefits of all New Yorkers, not to mention the most susceptible in the Environmental Justice communities.

Thank you for your consideration.

NATIONAL BIODIESEL BOARD

SUSTAINABLE

Biodiesel Supports *U.S. Food and Fuel* Supplies

BIODIESEL DRIVES SUSTAINABILITY IN FOOD & FUEL SUPPLY LINES

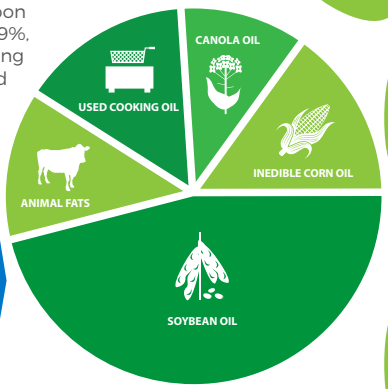
Biodiesel and renewable diesel production improves U.S. food availability and affordability by utilizing byproducts of U.S. food and fuel supply lines.

BIODIESEL COMPLEMENTS RATHER THAN COMPETES WITH FOOD PRODUCTION

Virtually every stage of U.S. biodiesel and renewable diesel production lowers protein costs, helping to reinforce the international food supply and lower costs.

4 REDUCING WASTE & EMISSIONS

Biodiesel and renewable diesel are produced from diverse U.S. resources – such as used cooking oil, recycled animal fats and surplus soybean oil – all of which are excess byproducts of food production. These domestically produced, commercially available advanced biofuels reduce carbon emissions by 52%-79%, even when accounting for market-mediated land use change.



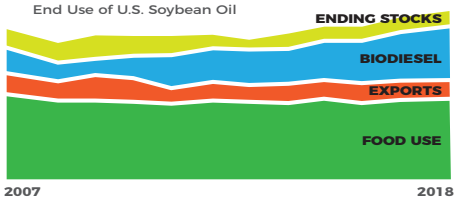
52%–79% REDUCTION IN CARBON EMISSIONS

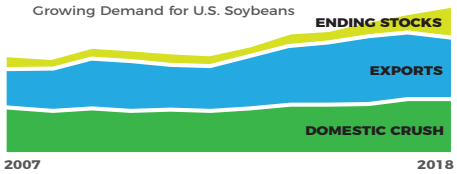
3 RECYCLING EXCESS OILS

The rendering industry recycles 10 billion pounds of oil and fat and collects 4.4 billion pounds of used cooking oil each year. These excess oils can be further recycled as biodiesel feedstock.

2 SUPPORTING SOYBEAN DEMAND

Soy-based protein meal is used as animal feed. Excess soybean oil can be used in food production. However, there is a growing global demand for soy-based animal feed and relatively stagnant demand for soybean oil in food production. Biodiesel supports a new market for the growing surplus of excess soybean oil.





1 CROPS TO CRUSH

U.S. soybeans are grown primarily for protein meal.

Soybean crops are "crushed" to separate excess oil from the protein-rich meal. Of the U.S. soybean crop's total yield, more than 80% is protein meal and less than 20% is surplus oil.

Palm oil is not an advanced biofuel feedstock under the U.S. Renewable Fuel Standard. U.S. biodiesel and renewable diesel producers do not use palm oil.

Sources: USDA Economic Research Service; North American Renderers Association.

nbb.org
biodiesel.org
mybioheat.com

DC 1331 Pennsylvania Ave., NW
Suite 505
Washington, DC 20004
888-246-3437

MO 605 Clark Avenue
PO Box 104898
Jefferson City, MO 65110-4898
800-841-5849

CA 1415 L Street
Suite 460
Sacramento, CA 95814
916-760-8870

BIODIESEL + RENEWABLE DIESEL
Better Together

BIODIESEL & RENEWABLE DIESEL

are low-carbon diesel-replacement fuels produced from renewable feedstocks such as used cooking oil, animal fats, inedible corn oil, soybean oil and canola oil.

B BIODIESEL IS...		RD RENEWABLE DIESEL IS...
Produced through esterification or transesterification, a simple process that reacts a fat or oil with a small amount of alcohol (typically methanol) to produce a finished fuel.		Produced through hydrotreating, a process similar to a traditional refinery operation. This high-heat, high-pressure process produces a fuel that is chemically indistinguishable from conventional diesel.
A "drop-in" fuel that can be used in all engines and equipment up to 20% and many up to 100%.		A "drop-in" fuel that can be used in all engines and equipment up to 100%.
Non-toxic, biodegradable, ultra-low sulfur and 0% aromatics.		Ultra-low sulfur and 0% aromatics.
Better for engines due to higher cetane and improved lubricity.		Better for engines due to higher cetane.
Made to meet the requirements of ASTM D975 (B5), D7467 (B6-B20), and D6751 (B100).		Made to meet the requirements of ASTM D975 (all blends).

B + RD

THE BEST FUEL IS...

A combination of biodiesel and renewable diesel produces a cost-effective full replacement option for petroleum diesel. As a paired fuel, biodiesel and renewable diesel optimize petroleum displacement and cost, as well as particulate matter, carbon and nitrogen oxide reductions.

B20 / RD80

Up to 79% less carbon emissions.	GHG	Up to 79% less carbon emissions.
29% particulate matter reduction.	PM	56% particulate matter reduction.
39% fewer aromatic compounds.	BTX	53% fewer aromatic compounds.
23% less carbon monoxide.	CO	30% less carbon monoxide.
9% NOx reduction.	NO_x	6% NOx reduction.

B50 / RD50

Sources: Impact of biodiesel and renewable diesel on emissions of regulated pollutants and greenhouse gases on a 2000 heavy duty diesel truck, California Air Resources Board, 2015; Effects of biodiesel blends on emissions, National Renewable Energy Laboratory, 2006.

ABOUT BIODIESEL AND RENEWABLE DIESEL

- Made from plant-based oils, used cooking oils, and animal fats
- Clean-burning ultra-low carbon
- Can be used in any diesel engine without modification
- Commercially available nationwide
- Today's solution for heavy-duty trucking, emergency vehicles, bus fleets, and farm equipment

nbb.org
biodiesel.org
mybioheat.com

DC 1331 Pennsylvania Ave., NW
Suite 505
Washington, DC 20004
888-246-3437

MO 605 Clark Avenue
PO Box 104898
Jefferson City, MO 65110-4898
800-841-5849

CA 1415 L Street
Suite 460
Sacramento, CA 95814
916-760-8870