Clean Fuels
ALLIANCE AMERICA

Via Electronic Mail susan.casey1@maryland.gov

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Secretary Serena McIlwain
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Secretary McIlwain,

Thank you and your staff for this opportunity to submit comments in response to the release of Maryland's Climate Pathway Report. We applaud MDE for its comprehensive analysis of the multiple pathways needed to meet the State's aggressive climate reduction goals – but are nonetheless disappointed that a more robust analysis of the use of biomass-based diesel (BMBD) was not conducted for both the thermal heating and transportation sectors.

Clean Fuels Alliance of America (Clean Fuels) is the industry's primary organization for technical, environmental, and quality assurance programs for biomass-based diesel (BMBD), and is the strongest voice for its advocacy, communications, and market development. CFAA represents the farmers, producers, distributors, and end-users of BMBD including biodiesel, Bioheat ® fuel, renewable diesel, and sustainable aviation fuel. Clean Fuels has been actively engaged with legislators and regulators in all of the states that have biomass-based diesel (BMBD) policies in effect, as well as states where policies which are being considered for both the home heating and transportation sectors. Those states include Vermont, Massachusetts, New York, New Jersey, California, Vermont, Connecticut, Oregon, and Washington. In addition, Clean Fuels is engaged in at least fifteen mid-western states that have or are contemplating BMBD tax-incentive policies.

As you know, the Maryland Climate Solutions Now Act of 2022 requires the state to study biofuels as part of a transition to an all-electric building code as well as in the development of energy performance standards. In addition, the Maryland Climate Change Commission recommended the adoption of a Low Carbon Fuel Standard (LCFS) for the transportation sector as one of its many recommendations. We are disappointed that the Pathway Report includes no such language other than a recommendation for the adoption of a Clean Heat Standard for the thermal heat sector which we enthusiastically support.

Our industry supports efforts to phase out petroleum-based diesel for thermal heating and transportation, but we encourage its replacement with biodiesel and renewable diesel, which has proven to be the most cost-effective way to reduce carbon emissions immediately. As you know the United Nations has repeatedly warned of the need to reduce carbon emissions in a timely manner. The IPCC has provided us with a stark warning: "It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread

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and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred." Furthermore, their report states, "From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO_2 emissions, reaching at least net zero CO_2 emissions, along with strong reductions in other greenhouse gas emissions."

Simply put, reducing carbon emissions now is more valuable than reducing the same amount of emissions later. It's the same principle we learned in high school: a dollar invested now is worth more than a dollar invested 20 years from now. This is because earlier reductions limit the long-term climate impact caused by the accumulation of greenhouse gases. This significant and often overlooked principle is frequently absent from policy discussions, which, for example treat a reduction of CO_2 in 2023 with the same weight as a reduction in 2050. This is simply not accurate and skews the market to seek low-technology readiness options which may not be deployed for years or decades, if ever at all.

As Maryland looks to advance the phase-out of fossil fuel heating equipment in new construction and as it looks to implement California's Clean Truck rules, Clean Fuels urges policymakers to embrace the technological advances in fuel development and equipment that will allow heating oil consumers and vehicle owners to reduce transportation and building carbon emissions by utilizing non-fossil, biomass-based diesel – utilizing existing technology with few, if any, additional costs. This is particularly relevant in hard-to-electrify sectors like residential home heating (existing dwellings as well as new construction) as well as the medium and heavy-duty truck sectors where electric Class 7 and 8 vehicles are still prohibitively costly and logistically challenging.

The phase-out of fossil petroleum diesel is happening now. The largest liquid heating appliance equipment manufacturers for all different sizes and equipment applications have worked with Underwriters Laboratories (UL) on B100 UL-rated heating appliance protocols, which were recently approved for home heating appliances[1]. Their efforts are leading to the production of B100 UL-rated components this year that can be put immediately into use throughout the marketplace. Indeed, manufactures such as the Beckett Corporation and Carlin have already begun producing B100-compatible burner equipment.[2] Thus, a 100% renewable liquid fuel for thermal heat in both home and commercial applications can save upwards of 80% carbon emissions is here, and ready to use now. Similarly, most of the major OEM's have approved higher blends of biodiesel for their large engines, and renewable diesel (a full drop-in replacement for petroleum-based diesel) is widely used in states like California where biomass-based diesel outsold petroleum-based diesel in the latest reported quarter.

In September 2019, the National Energy Fuels Institute (NEFI) hosted the Heating Oil Industry Summit in Providence, RI, at which the industry unanimously resolved to move to a cleaner burning fuel and transition away from conventional heating oil. The *Providence Resolution*[1] commits the industry to reduce the carbon emissions of heating systems in line with the many state GHG reduction goals of 40% by 2030 and Net-Zero by 2050. Bioheat® fuel is that future renewable, low-carbon liquid heating fuel available now.

Clean Fuels, through a partnership with the National Oilheat Research Alliance has invested tens of millions of dollars for research, development, and educational outreach that has led to the phasing out of petroleum diesel and the use of biodiesel at levels ranging from B5 to B100 (100% biodiesel). Through NORA's continued leadership and guidance from Clean Fuels, the heating oil industry has proactively pursued all legislative and

[1] See UL296, Nov. 14, 2022 Update to Include Biodiesel Blends Up to B100, NORAweb.org.

[2] Production began the week of Jan. 30, 2023. See Beckett announcement at https://www.beckettcorp.com/product-announcements/r-w-beckett-oil-burners-approved-for-b100-r100-blends/.

[1] https://nefi.com/news-publications/recent-news/heating-oil-industry-commits-net-zero-emissions-2050/

regulatory opportunities to transition to renewable fuel blends for thermal heat and transportation in the Northeast. This included legislative Bioheat® fuel mandates in New York, Rhode Island and Connecticut.

As evidenced from the chart below, Biodiesel use provides additional benefits beyond the immediate reduction of carbon. Co-pollutants such as PM, NOx and So2 are also significantly reduced.

Emissions Improvements of Biodiesel versus Low Sulfur (LS) and Ultra Low Sulfur (ULS) Heating Oil[2],[3],[4],[5],[6]

Average Change	**PAH**	**PM**	**CO**	**NO_x**	**SO_2**	**CO_2**
Percent	-90 to -95%	- 86%	Similar to -15%	Similar to -25%	-98% (LS) Similar (ULS)	-74%

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

The health benefits of using biodiesel in place of petroleum heating oil have been studied and quantified by Trinity Consultants. Trinity studied a number of census tract areas (including a tract encompassing Philadelphia, PA, Reading, PA and Camden, NJ) and the surrounding 5- to 7-mile radius that are near and impacted by high-distillate use sites, so these results are granular and neighborhood specific. The Trinity Study shows the use of biodiesel in transportation and space heating reduces cancer rates by 45% to 85% in surrounding areas, as well as providing dramatic reductions in cases of asthma, premature deaths, and lost workdays.

Link to the Trinity study:

- https://cleanfuels.org/resources/health-benefits-study

Since BMBD is a drop-in fuel for transportation and home heating, these public health benefits begin accruing immediately upon the use of BMBD in place of petroleum diesel. This means asthma attacks, premature deaths avoided, and work loss days can be reduced every year starting today and for the next 10, 20, 30 or more years it will take the state to deploy deep electrification in either sector. For poor and disadvantaged communities that are heavily reliant on petroleum heating fuels or have numerous commercial depots and heavy-duty truck traffic, switching to biodiesel can provide substantial improvements in the health of those communities.

It should be noted that Trinity Consultants is a multi-national firm with 69 offices across the U.S., Canada, United Kingdom, Ireland, Australia and China, and over 40 years of expertise in air dispersion modeling and health risk assessments. The Trinity Study, commissioned in 2020, completed in 2021 and updated in 2022 and 2023, quantified the local community health benefits of switching from petroleum diesel or distillate to 100% biodiesel in 43 sites across the U.S., with a focus on the transportation sector and space heating sector.

On the transportation side, we are disappointed that there are no recommendations in the Pathway Report for a California-like low-carbon fuel standard. California is exhibit A in dramatically reducing emissions immediately from the transportation sector initiating the nation's first LCFS back in 2011 (in a state that is the

[2] Macor, A., Pavanello, P., Performance and Emissions of Biodiesel in a Boiler for Residential Heating, *Energy*, vol. 34, 2009.C
[3] Krishna, C.R., Biodiesel Blends in Space Heating Equipment, Brookhaven National Laboratory, 2001.
[4] USDA/DOE 1998, Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus.
[5] Lee, S. Win, He, I., Heritage, T., Young B., Laboratory Investigations on the Cold Temperature Combustion and Emissions Performance of Biofuels Blends, 2003.
[6] https://www.edf.org/sites/default/files/10071_EDF_BottomBarrel_Ch3.pdf at 5. Studies cited showed PM reduction from the use of B100 in place of fossil distillate heating oil is proportional to biodiesel content (e.g., 20% reduction for B20 blend, 50% reduction for B50 blend). To be conservative, Clean Fuels estimates the PM reduction from using B100 would be approximately 86% in heating applications.

4th largest economy in the world and is arguably one of the toughest jurisdictions in the world on carbon reduction). The California LCFS has been phenomenally successful in reducing carbon emissions from the transportation sector, primarily using biomass-based fuels – drop-in fuels that require no modifications to existing diesel engines. As mentioned above, in the last quarter reported by CARB, biomass-based diesel outsold petroleum-based diesel. That is the first time that has ever occurred in any jurisdiction.

Without renewable fuels that resulted from the LCFS program, California's tailpipe fossil CO2 would have been 15 million metric tons higher in 2020. The reduction is equivalent to taking 3.2 million passenger vehicles off the road for the year.

In conclusion, we believe the Pathways Report is deficient in not including BMBD pathways in the thermal heating and building sector that can substantially and economically reduce carbon on emissions immediately. This is a missed opportunity for the state to achieve its greenhouse gas reduction goals in a manner that is cost-effective, practical and affordable for all of its business and citizens, particularly those in disadvantaged communities.

Sincerely,

Stephen C. Dodge

Stephen C. Dodge
Director of Regulatory Affairs
Clean Fuels Alliance America