



Testimony from Clean Fuels Alliance America
on the Clean Heat Standard Bill (H.715)
Submitted to the Senate Natural Resources and Energy Committee
March 30, 2022

As you consider H.715 in Committee, we ask that you review the following comments regarding the Clean Heat Standard bill before you. The bill is supported by established environmental groups in Vermont for good reason – this measure presents the largest opportunity to date for the state to immediately begin reducing greenhouse gas emissions from the Vermont’s thermal heating sector in order to meet the state’s aggressive and mandatory greenhouse gas reduction mandates.

As outlined below, Vermont should place the highest priority on measures and policies, including adoption of a Clean Heat Standard, that achieve the deepest and fastest reductions of emissions. Please resist attempts to remove biofuels from the bill.

Clean Fuels Alliance America serves as the clean fuel industry’s primary national organization for technical, environmental and quality assurance programs and are the strongest voice for its advocacy, communications and market development. Clean Fuels members play an important role in state and national programs aimed at reducing carbon emissions, displacing petroleum, improving public health and protecting the environment. Many Clean Fuels members are members of environmental organizations and are supportive of state and local initiatives to achieve a sustainable energy future.

Made from an increasingly diverse mix of resources such as recycled cooking oil, soybean oil and animal fats, biodiesel and renewable diesel are better, cleaner fuels that are available now for use in existing diesel engines and heating furnaces and boilers without modification.

You have received some misleading information regarding the role that biofuels can and should play in a Clean Heat Standard. We hope these comments will correct the record.

Vermont Must Implement an “All-of-the Above Approach”

We understand electrification is a viable and important pathway to achieve greenhouse gas reductions, but it cannot realistically be the only pathway, particularly given timeframe which it will take to convert the large number of liquid fuel-fired heating systems currently in use, and particularly when the heating fuel industry is moving to ever-more higher blends of biodiesel - a comparatively priced drop-in fuel that reduces greenhouse gases immediately. It makes no sense to exclude such fuels.

The liquid fuel heating industry has put their money where their mouths are: In September of 2019, the liquid fuels industry in the Northeast adopted the *Providence Resolution*, which incorporates the goal of using renewable liquid fuels for heating at a B20 blend level (15% life cycle carbon reduction) by the year 2023, the B50 level (40 percent life cycle carbon reduction) by 2030, and net carbon neutrality by 2050.

We all know we have to act now. The IPCC’s 6th assessment released last summer provided us with a stark warning: "It is unequivocal that human influence has warmed the atmosphere, ocean and land.

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Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred." Furthermore, the report states, "From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO₂ emissions, reaching at least net zero CO₂ 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 principal is frequently absent from policy discussions, which, for example treat a reduction of CO₂ in 2022 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.

Heat Pumps vs Liquid Fuel Use

The claim by some that passage of H. 715 will result in heat pump installation and weatherization efforts taking a back seat to liquid fuels is false. This claim presents a false dichotomy of needing to choose between weatherization/energy efficiency and fuel switching. The fact is that addressing climate change effectively requires a comprehensive "all-of-the-above" strategy.

With that said, fuel switching is clearly superior to weatherization and energy-efficiency improvements, both from a GHG and cost standpoint:

- Average CO₂ reduction is 41-49% for retrofitting homes in cold climates through weatherization and energy-efficiency improvements; most of those reductions comes from envelope upgrades (insulation)¹.
- CO₂ reduction from switching to B100 (soy) is up to 76% without considering indirect land use change (ILUC), 66-72% reduction when various ILUC cases are considered².
- The cost to convert a home to an air source heat pump is over \$20,000, according to the Massachusetts Clean Energy Center (not including the cost of weatherization and other envelope upgrades). By contrast, switching to Bioheat imposes little to no extra costs on consumers.
- And fuel switching can achieve that 76% GHG reduction immediately, as opposed to the many years it would take for deep deployment of envelope upgrades, which is critical for addressing climate change due to the "time value of carbon" reductions.

Biofuel Does Not Pit Food Against Fuel

This claim of "devastating consequences" as a result of biofuel production is utterly without merit and is made without any supporting evidence. In fact, replacing domestic petroleum diesel consumption with domestically-produced biodiesel for heating applications not only reduces GHG emissions by up to 76%,

¹ • (Amann, J., R. Srivastava, and N. Henner. 2021. Pathways for Deep Energy Use Reductions and Decarbonization in Homes. Washington, DC: American Council for an Energy-Efficient Economy. [aceee.org/research-report/b2103](https://www.aceee.org/research-report/b2103), at 23, accessed March 29, 2022).

² • (Chen et al., Life Cycle Energy And Greenhouse Gas Emission Effects Of Biodiesel In The United States With Induced Land Use Change Impacts, <https://www.sciencedirect.com/science/article/pii/S0960852417321648>, accessed March 29, 2022).

but doing so is one of the most sustainable actions available to Vermont and other states concerned with addressing climate change effectively.

- Biodiesel is the most diverse fuel available, made from a wide variety of waste and by-product feedstocks such as used cooking oil, rendered animal tallow, recycled grease, and agricultural byproducts from canola, soybean, and other plant oils.
- Biodiesel is nontoxic and biodegradable, and its production reduces wastewater by 79% and hazardous waste by 96%
- Biodiesel decreases soybean meal prices by \$20-\$40 per ton, saving livestock producers \$5 billion in reduced soymeal cost and reducing food costs for consumers.
- The U.S. biodiesel industry supports more than 60,000 jobs, generates \$11 billion for the U.S. economy rather than on foreign oil, and recycles atmospheric CO2 into valuable fuel that enables progressive states to keep climate-worsening crude oil (the burning of which produces new, not recycled sources of carbon) in the ground.
- The “devastating consequences” claim appears to conflate palm oil production with soybean oil production. Palm oil production, conducted in tropical countries outside the U.S., often involves destructive practices, but those practices do not occur in domestic production of soybean and biodiesel. If the state wants to preclude the use of palm oil in the Clean Heat Standard, it can easily do so via a prescriptive or performance standard without excluding the environmentally and economically beneficial domestic biodiesel industry.
- Indeed, biodiesel use in climate progressive states like California and Oregon has increased many-fold under their innovative low carbon fuel programs. For example, because of their positive attributes, biodiesel and renewable diesel have grown 61-fold in California since the start of its Low Carbon Fuel Standard (similar to Vermont’s proposed Clean Heat Standard but directed towards transportation fuels only) program in 2011 to comprise over a quarter (27%) of the total on-road diesel fuel pool in the state.
- Such rapid growth has taken place due to substantial increases in agricultural yield, efficiency gains in the processing and production of biodiesel, and other improvements that have enabled the increase biodiesel production without the adverse land and soil carbon impacts noted by the opposition. It is inconceivable that California and Oregon would allow the use of such biofuels, much less the phenomenal growth these fuels have had, if the types of “devastating consequences” were actually being caused by these fuels.
- The U.S. biodiesel and renewable diesel production capacity is currently 3 billion gallons, with 6 billion gallons projected by 2030 (and probably years before then) and, with further innovations in feedstocks, up to 15 billion gallons by 2050. There are ample domestically-sourced feedstocks for biodiesel production to meet all of Vermont's needs.

A Clean Heat Standard Will Follow Universally Accepted Lifecycle Analysis Accounting Practices

- The bill would require GHG accounting to be conducted using the Argonne National Laboratory's GREET Model or "an alternative of comparable analytical rigor."
- In many circles, GREET is considered the state-of-the-art model for energy and environmental analysis of transportation fuels and vehicle technologies, both emerging and conventional. GREET is widely used for biofuel life cycle analyses, including those by regulatory agencies. It is the fundamental basis for fuel lifecycle assessment underpinning the low carbon fuel programs in California, Oregon, and Washington state. GREET was also used by the U.S. EPA in its development of the Renewable Fuel Standard (RFS) regulation in 2010. (See

<https://www.energy.gov/eere/bioenergy/articles/greet-greenhouse-gases-regulated-emissions-and-energy-use-transportation>).

- Under the programs implemented by these leading regulatory agencies, biodiesel achieves a carbon intensity score that is 76% on average lower than petroleum diesel; when the feedstock is used cooking oil, the GHG reduction can be upwards of 92% relative to petroleum diesel. [E.g., biodiesel from used cooking oil by New Leaf Biofuels has a certified carbon intensity of 8.63-15.9 gCO₂e/MJ (84-92% GHG reduction), which is comparable to average grid electricity used in California for electric heavy duty vehicles, an energy efficiency ratio (EER)-adjusted carbon intensity of 15.3 gCO₂/MJ, (https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/current-pathways_all.xlsx, accessed March 29, 2022)].
- Based on GREET accounting, California reports that its Low Carbon Fuel Standard has reduced GHG emissions by over 86 million metric tons of CO₂e since 2011, displacing over 19.5 billion gasoline gallon equivalents of petroleum in the same period. (See https://ww2.arb.ca.gov/sites/default/files/2022-01/quarterlysummary_013122_0.xlsx, accessed March 29, 2022).
- California's LCFS has played a significant role in helping the state meet its legally enforceable AB 32 GHG reduction target of reaching 1990 levels by 2020 four years ahead of schedule. (See <https://ww2.arb.ca.gov/news/latest-state-greenhouse-gas-inventory-shows-emissions-continue-drop-below-2020-target>, accessed March 29, 2022).

Other Northeast States Have Recognized the Need to Establish Biodiesel Pathways to Achieve Immediate GHG Reductions

Several Northeast states, including New York, Connecticut and Rhode Island have already recognized the importance of Bioheat[®] fuel by enacting mandates. New York is actively considering a Clean Fuels Standard as part of its Climate Leadership and Community Protection Act (CLCPA).

In January, the Massachusetts Department of Public Utilities ruled that electric ratepayer-funded subsidies for liquid fuel-fired home heating furnaces should remain in place after our industry and fuel dealers successfully argued that Bioheat fuel is a legitimate pathway to immediately begin reducing carbon emissions. In addition, Massachusetts' Governor Baker has issued an executive order requiring state agencies to increase their use of biodiesel in state buildings for heating purposes over the next ten years.

Disadvantaged Communities Benefit from Biodiesel Use

We understand that equity and affordability are important aspects of the CHS. To better characterize the health benefits biodiesel can generate in local communities who switch from petroleum-based diesel, Clean Fuels commissioned a study by Trinity Consultants, a globally renowned air quality modeling firm, who specializes in air dispersion modeling. Their work, which is published online, characterizes the benefits of these fuels much more granularly, allowing decision makers to understand where the benefits of reduced particulate matter and improved health outcomes, would occur and to whom. The results demonstrate that the use of B100 as a heating oil replacement reduces carcinogenic, diesel particulate matter emissions by 86%. These dramatic reductions can lead to significant health benefits in the form of reduced asthma attacks, avoided work loss days, and reduced cancer risk. This is of particular value to EJ communities which bear a disproportionate burden from the adverse health effects of petroleum-based heating fuel. And, perhaps most importantly, as mentioned above, these health benefits can occur with no additional consumer investments.

In conclusion, renewable fuels such as biodiesel and renewable diesel provide greenhouse gas reductions immediately, benefit American farmers and are cost-effective. Other states have acknowledged the important role that biodiesel can play in reducing greenhouse gas emissions immediately and so should Vermont by ensuring that biofuels are included in H. 715.

Sincerely,

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