Comments Submitted to the New Hampshire Public Utility Commission

Relating to the

Thermal RPS Program

The National Biodiesel Board – About Us

The National Biodiesel Board is the national trade association that represents the biodiesel industry as the coordinating body for research and development in the U.S. It was founded in 1992 and has developed into a comprehensive association that coordinates and interacts with industry, government and academia. Our membership is comprised of: biodiesel producers; state, national and international feedstock and feedstock-processor organizations; fuel marketers and distributors; and technology providers.

Summary of Comments

The National Biodiesel Board supports the plans of the New Hampshire Public Utility Commission to establish a thermal RPS program. We believe that New Hampshire is to be commended for providing effective leadership in the important subject of renewable thermal energy. New Hampshire is setting a positive example for what should in fact be accomplished across the nation.

The National Biodiesel Board suggests that PUC 2502.06(b) be revised or clarified as necessary to allow for participation by oil-fired facilities that incorporate boiler vessels which were in place prior to January 1, 2013 but which have been substantially modified subsequent to the described date through replacement of burners, fuel pumps, tanks, and other components as might be necessary to allow for firing of biodiesel blends at high concentrations. We believe that the increased efficiency and improved environmental performance that result from combustion equipment upgrades would accomplish a "multiplier effect" for benefits from the thermal RPS program and that such additional benefits would warrant the inclusion of previously existing, but modified, oil-fired facilities.

The National Biodiesel Board also suggests that PUC 2506.04 (Monitoring of Renewable Energy Sources Producing Useful Thermal Energy) be revised to specifically allow an alternate thermal output monitoring method for liquid biofuel-fired facilities which would entail metering of fuel delivered (already done with accuracy for billing purposes), combined with the determination of boiler efficiency in lieu of direct thermal output metering. PUC 2506.06 (Request for Alternative Monitoring Methodology) allows for alternate metering based on individual requests from program applicants. But we believe that explicit inclusion of an indirect (but still highly accurate) metering approach would encourage greater participation in the thermal RPS program.

Field efficiency of participating boilers could be established through onsite measurements or through the use of conservative default values as established by the New Hampshire Public Utilities Commission. National Biodiesel Board technical staff would be happy to work with the New Hampshire Public Utilities Commission in suggesting boiler efficiency default values using data that have been obtained by Brookhaven National Laboratory during the course of several decades of testing, and which have been incorporated as reference information by the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE).

Introduction to Biodiesel

The Biodiesel Industry is Creating Green Jobs and Making a Positive Contribution to the Economy

Biodiesel can be made from a wide variety of feedstock materials. The fuel is produced from a wide variety of feedstocks in accordance with the D6751 fuel specification set forth by the American Society for Testing of Materials (ASTM International). Several different types of plants, including soybeans, canola, and pennycress, can provide the base oil for biodiesel production. Yellow grease (used cooking oil) and brown (sewer) grease, as well as animal fats, can also be economical feedstock materials. Biodiesel offers an especially effective outlet for fat-based waste streams that can cause substantial cost for disposal. New Hampshire is already a producer of several biodiesel feedstocks, including both yellow grease and brown grease. New Hampshire also has ready access to other, agriculturally-derived feedstocks via economical rail transportation and could thus further expand its existing biodiesel production capacity.

Biodiesel production offers the opportunity for significant job creation in the agricultural and food industry sectors throughout the US. In 2009, the U.S. biodiesel industry supported 23,000 jobs in all sectors of the economy. This added $4.1 billion to the nation's Gross Domestic Product (GDP) and generated $828 million in tax revenue for federal, state and local governments. The economics of biodiesel can be favorable for small through large-scale, thus providing flexibility for locally-based, feedstock and fuel production. New Hampshire should seek to gain its full potential share of biodiesel-related job creation.

Biodiesel Reduces our Dependence on Foreign Oil

Biodiesel plays a constructive role in expanding domestic refining capacity and reducing our reliance on foreign oil. The 1.9 billion gallons of biodiesel produced in the U.S. since 2005 have displaced an equivalent amount of diesel fuel with a clean-burning, efficient fuel that reduces lifecycle carbon dioxide emissions by as much as 86 percent compared to petroleum diesel fuel and creates nearly five units of energy for every unit of energy that is required to produce the fuel.

Biodiesel is Good for Energy Security and Competition

Biodiesel is produced in local facilities that are distributed across the nation and are often located in close proximity to end-use markets. Production facilities are not concentrated in any particular region and are thus less vulnerable than many other types of energy resources to widespread disruption during weather disasters.

Increasing Availability in the Marketplace

There are currently 173 biodiesel plants in the U.S. with a combined production capacity of 2.69 billion gallons. Biodiesel is primarily marketed as a blending component with conventional diesel fuel and heating oil in concentrations between two (B2) and twenty percent (B20). It is distributed utilizing the existing fuel distribution infrastructure with blending occurring both at fuel terminals and "below the rack" by fuel marketers. Biodiesel is beginning to be distributed throughout the petroleum terminal system. To date, biodiesel is available in more than 72 fuel distribution terminals.

Biodiesel is Good for the Environment

Biodiesel is environmentally safe and is the most viable transportation fuel when measuring its carbon footprint, life cycle and energy balance. Biodiesel's contribution to reducing greenhouse gas emissions is currently equal to removing about 1 million passenger vehicles from America's roadways.

Transportation

Biodiesel's emissions are overall significantly lower than for petroleum diesel. Biodiesel emissions have decreased levels of all target polycyclic aromatic hydrocarbons (PAH) and nitrited PAH compounds. These compounds have been identified as potential cancer causing agents.

Biodiesel blends provide significant reductions in total hydrocarbons; carbon monoxide; and total particulate matter. Research also documents the fact that the ozone forming potential of the hydrocarbon emissions of pure biodiesel is nearly 50 percent less than for petroleum fuel. Pure biodiesel typically does not contain sulfur and therefore reduces sulfur dioxide exhaust from diesel engines to virtually zero.

Heating and Domestic Hot Water

The term Bioheat refers to a blend of biodiesel and heating oil. Biodiesel can be easily blended with traditional no. 2 through no. 6 heating oils to displace imported petroleum. Significant laboratory research and field testing have been performed over the past 10 years to show that Bioheat is a practical and environmentally-friendly fuel for heating systems in residential, commercial and industrial buildings.

Brookhaven National Laboratory (BNL) has been the leading organization to study the properties and performance of Bioheat blends under wide ranges of operating conditions. BNL testing has shown that Bioheat blends of up to B20 can be used in oil-fired heating systems without requiring modifications to tanks, burners or other components. Extensive, carefully-monitored field testing was conducted in several geographical locations to prove the statistical reliability of Bioheat use in existing homes.

Recent testing has shown further that Bioheat blends even as high as 100 percent can be used in commercial and industrial boilers with only limited modifications to fuel storage systems and burners. The moderate solvency effect of biodiesel has also been shown to be effective in keeping large, oil-fired heating systems (especially air swirl vanes on no. 6 oil burners) clean and free of carbon deposits, thus contributing to reduced, smoky exhaust emissions during operation.

Biodiesel is inherently an ultra-low sulfur fuel (sulfur content under 10 ppm) and contributes to the environmental goal of reducing PM 2.5 fine particulate emissions especially in densely populated regions. Biodiesel can thus serve as a renewable component in ultra-low sulfur (ULS) heating oil, which is soon to be required throughout the northeastern United States for oil-fired heating systems.

Laboratory testing has shown that biodiesel can also help to reduce NOx emissions in heating applications. The natural, 10-12 oxygen content of the biodiesel molecular structure can reduce fuel-rich pockets and peak temperatures (the primary culprit for NOx formation) within the flame.

Data published by BNL show a substantial downward trend of SO2 and NOx emissions from an oil-fired heating system as the fuel source is switched from traditional heating oil to B100 (100 percent) biodiesel. The SO2 emissions are almost entirely eliminated. NOx emissions are reduced by approximately 20 percent compared to traditional heating oil.

Greenhouse Gas Emissions Savings Compared to Traditional Heating Oil and Natural Gas

Bioheat can achieve significant savings in greenhouse gas emissions compared to both oil-fired and natural gas-fired heating systems. A recent study by ICF International has compared the greenhouse gas emissions of biodiesel with conventional fossil fuels and shows that B100 biodiesel can achieve an almost 70 percent reduction in greenhouse gas emissions compared to natural gas. An approximately B20 bioheat blend will achieve greenhouse gas emission levels equal to natural gas.

Bioheat has the potential to achieve considerably more greenhouse gas reductions than would be possible through conversion of oil-fired heating equipment to natural gas. Contrary to much of current public policymaker thinking, significant greenhouse gas emissions could actually be achieved by replacing natural gas-fired heating equipment with liquid fuel-fired systems that use Bioheat in B20 or higher concentrations.

Biodiesel, in combination with other energy conservation measures, can offer an effective option for achieving the 80 to 90 percent greenhouse gas reductions that will be necessary to minimize long-term climate change. We encourage New Hampshire to give increased emphasis to this benefit of biodiesel as it seeks to achieve the goal of reducing greenhouse gas emissions by 80 percent by the year 2050.

Biodiesel production is currently the most efficient way to convert sustainable biomass into diesel replacement fuel. As a result, industry demand for economical, low-carbon, reliable sources of feedstock oils is stimulating promising public, private, and non-profit sector research on feedstocks such as algae. The NBB is participating in this effort by making substantial investments in algae research in collaboration with the Donald Danforth Plant Science Center. It is estimated that for every 100 million gallons of biodiesel that is produced from algae, 16,455 jobs will be created and $1.461 billion will be added to the national gross domestic product.

Algae's potential as a source of low carbon fuel has been well documented, and a stable, growing biodiesel end-use industry is necessary if the U.S. is to eventually benefit from the commercial scale production of algal-based biofuels. The NBB estimates that for every 100 million gallons of biodiesel that is produced from algae, 16,455 jobs will be created and $1.461 billion will be added to the GDP.

While soybean oil is not considered a waste feedstock, further discussion of this raw material is merited since farmers in several Northeast and Mid-Atlantic states produce soybeans. In 2007, approximately 39 million bushels of soybeans were grown in the states of Delaware, Maryland, New Jersey, New York, and Pennsylvania. The oil derived from this crop should be considered a sustainable, regional feedstock.

It is important to understand that demand for protein meal used as livestock feed is the primary driver for the planting of soybeans since 80 percent of a soybean is comprised of protein meal. Only 20 percent of the bean is comprised of oil. Historically, the demand for protein meal has driven soy production, resulting in a supply of soybean oil that exceeds the demand for food uses (primarily deep frying foods and baking products). The biodiesel industry helps to make economical use of this excess

oil. By increasing the value of the oil at the soybean crushing facility, the price of the protein meal is also reduced on a proportional basis.

Coproducts have important sustainability benefits

The coproduct relationship between soybean oil and soybean meal delivers environmental benefits because no crop land and no inputs, such as water, nutrients, and energy are used solely to the production of renewable fuel. The coproduct relationship optimizes the beneficial uses from crops that will be planted anyway to satisfy demand for livestock feed and other uses. Growth in biodiesel volumes will come from more efficient utilization of existing wastes and additional vegetable oil produced as a result of yield increases on existing acres, the growing demand for livestock feed, and decreasing demand for high-trans-fat vegetable oils.

Conclusion

The National Biodiesel Board commends New Hampshire for implementing a greater role for renewable thermal energy in its efforts to achieve environmental sustainability along with the economic benefits that come from new job creation and reduced dependence on foreign oil.

Respectfully submitted by:

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