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**Comments Submitted to the Massachusetts Department of Energy Resources**

**Relating to the**

**Alternative Energy Portfolio Standard**

**The National Biodiesel Board**

The National Biodiesel Board (NBB) is the national trade association that represents the biodiesel and renewable hydrocarbon diesel industries 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. NBB's membership is comprised of biodiesel producers, feedstock and feedstock-processor organizations, fuel marketers and distributors, and technology providers.

**Comments**

NBB commends the Massachusetts Department of Energy Resources (MADOER) for its development of draft rules for including renewable heating and cooling in the Alternative Energy Portfolio Standard (APS) program. We believe that the described expansion of the APS program will provide an effective pathway forward to a sustainable energy future.

NBB is supportive of the new APS initiative and wishes to offer the following recommendations and information:

1. Change definition of eligible fuel from "neat" biodiesel to "B99 or as otherwise defined under federal regulations for biodiesel blending or producer tax credits."

Current federal regulations provide for the earning of a tax credit of \$1 per gallon of biodiesel by entities that blend biodiesel into traditional diesel fuel and heating oil. The standard practice for earning the blender tax credit incorporates the blending of neat biodiesel with a small portion of traditional fuel to achieve a biodiesel concentration that is equal to or somewhat above the 99 percent concentration level. We would suggest that MADOER modify its definition of eligible liquid fuel to allow for the use of biodiesel that has been reduced in concentration to such B99 level. Revised legislation is also under consideration which would implement a new, biodiesel producer tax credit in place of the existing blender tax credit. We would thus recommend further that MADOER provide for harmonization of its own fuel eligibility criteria with federal, biodiesel producer tax credit requirements.

## 2. Harmonize biodiesel feedstock requirements with USEPA RFS2 standards.

We would encourage MADOER to harmonize its biodiesel feedstock requirements with those of the U.S. Environmental Protection Agency. The USEPA has established an extensive regulatory framework for ensuring that all renewable fuels used under its RFS2 program are produced in an environmentally responsible manner. USEPA regulations incorporate standards for agricultural land conservation which include, for example, restrictions on the use of previously non-active farmland for fuel production purposes. This aspect provides protection against the burning of rain forests and other unsuitable methods for increasing feedstock production. USEPA regulations also look at the entire life cycle of biodiesel from feedstock production through the various steps of fuel processing to ensure that the entire supply chain is environmentally sustainable. Recent life cycle evaluations of biodiesel feedstock production have also increasingly recognized the substantial, dual benefits of “Food plus Fuel” co-product output resulting from modern agriculture.

NBB supports the use of all available waste feedstock materials, including recycled cooking oil and animal fat, but we also believe that the agricultural industry has improved the efficiency of its operations sufficiently over the past decade, and that our ability to evaluate and model the comprehensive life cycle characteristics of virgin oil feedstock use in biodiesel production has likewise improved, to warrant renewed consideration of virgin feedstock under the expanded APS program in Massachusetts.

### *Environmental and Economic Benefits of Biodiesel in Thermal Applications*

Biodiesel can achieve significant savings in greenhouse gas emissions from thermal applications compared to both oil-fired and natural gas-fired combustion systems. Biodiesel produced in the United States achieves an average of 81 percent greenhouse gas savings compared to traditional diesel fuel and heating oil. A B20 blend with traditional heating oil will produce the same greenhouse gas emissions as natural gas. A recent study by ICF International shows that B100 biodiesel also achieves an approximately 70 percent reduction in greenhouse gas emissions compared to natural gas.

Biodiesel thus has the potential to achieve considerably more greenhouse gas reductions than would be possible through conversion of existing oil-fired combustion systems to natural gas. Significant greenhouse gas emission savings could likewise be achieved by replacing existing natural gas-fired combustion systems with biodiesel-fired systems.

Our experience during recent winters has shown that natural gas pipeline capacity shortages can have enormous, negative consequences on all classes of electric and natural gas ratepayers. The increased use of renewable, liquid fuel as a substitute for natural gas would serve to reduce the need for costly pipeline expansion. This would increase substantially the benefits of using renewable liquid fuels in Massachusetts.

In addition to the global environmental benefits that can be achieved, recent testing has shown that significant local air quality benefits can also be accomplished. Biodiesel can be used in boiler systems of all sizes 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 combustion 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.

Laboratory and field testing has shown that biodiesel can also help to reduce NOx emissions in stationary combustion applications. The natural, 10-12 percent oxygen content of the biodiesel molecular structure can reduce fuel-rich pockets and peak temperatures, which are the primary culprits for NOx formation within the flame.

#### *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 in accordance with the D6751 fuel specification set forth by the American Society for Testing of Materials (ASTM International). Yellow grease (used cooking oil) and brown (sewer) grease, as well as animal fats, are economical feedstock materials. Several different types of plants, including soybeans, canola, and pennycress, can also provide the base oil for biodiesel production. Biodiesel offers an especially effective outlet for fat-based waste streams that can cause substantial cost for disposal.

Biodiesel production offers the opportunity for significant job creation in the agricultural and food industry sectors throughout the US. The economics of biodiesel can be favorable for small through large-scale, thus providing flexibility for locally-based, feedstock and fuel production.

#### *Increasing Availability in the Marketplace*

Biodiesel is a renewable, low-carbon, diesel replacement fuel that is widely accepted in the marketplace. It is the only commercial-scale Advanced Biofuel under the U.S. EPA Renewable Fuels Standard (RFS2) program. Biodiesel is one of the best-tested alternative fuels in the country and the only alternative fuel to meet all of the testing requirements of the 1990 amendments to the Clean Air Act. There are currently more than 150 biodiesel plants in the U.S. with a combined production capacity of over 3 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.

Increasing numbers of fuel distributors, though, have also begun to market B100 biodiesel for thermal applications in the residential, commercial and industrial sectors. Several hundreds of large customers in the New York City market are now using B100 as their primary fuel for heating.

#### *Biodiesel is Good for the Environment*

Biodiesel is environmentally safe and is the most viable renewable fuel for transportation, power generation and thermal applications, based on its low carbon footprint and favorable air quality characteristics. A full life-cycle analysis performed by U.S. EPA for RFS2 shows that biodiesel reduces greenhouse gas emissions by as much as 86 percent compared to traditional heating oil and diesel fuel.

#### *The Biodiesel Industry Stimulates Development of New Low Carbon Feedstocks*

The feedstock used to produce U.S. biodiesel has become increasingly diversified, with waste products such as animal fat and used restaurant cooking oil (yellow grease) making up a larger portion of feedstock used to produce fuel. The National Renewable Energy Laboratory (NREL) recently conducted

an extensive report on the availability of yellow and brown grease. That report concludes that 9.4 pounds of yellow grease and 13 pounds of brown grease are available on an annual, per capita basis throughout the U.S. These figures should be used to more accurately forecast the amount of feedstock available in the Northeast and Mid-Atlantic states. NBB estimates that, nationally, these feedstocks can produce more than 900 million gallons of biodiesel. In addition, a report commissioned by the NBB addresses the use of animal fat, which has also become a major contributor of waste feedstock.

Biodiesel production is currently the most efficient way to convert sustainable biomass into low carbon 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 so-called “second generation” 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 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 produced from algae, 16,455 jobs will be created and \$1.461 billion will be added to the GDP.

While soybean oil is considered a co-product rather than 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 creating a market for this excess oil, the price of the protein meal is reduced on a proportional basis.

#### *Co-products Have Important Sustainability Benefits*

The co-product 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 for the production of renewable fuel. The co-product 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.

The federal RFS2 program explicitly prohibits land conversion for the purpose of producing renewable fuel. U.S. EPA requirements notwithstanding, basic economics dictate that the production of oilseed crops must correlate to the demand for protein meal, and cannot expand solely in response to demand

for vegetable oil. It is impossible for oil demand alone to drive the planting of oilseed crops in North America.

### **Conclusion**

The National Biodiesel Board commends the Massachusetts Department of Energy Resources for recognizing and implementing a substantial role for biodiesel under its Alternative Energy Portfolio Standard.

The National Biodiesel Board would be pleased to work with the Massachusetts Department of Energy Resources to further explore the issues that we have described above.

Sincerely,

A handwritten signature in black ink, appearing to read "Shelby Neal". The signature is fluid and cursive, with the first name "Shelby" written in a larger, more prominent script than the last name "Neal".

Shelby Neal  
Director of State Governmental Affairs