TESTIMONY OF CARTER H. STRICKLAND, JR.,
SENIOR POLICY ADVISOR FOR AIR AND WATER,
MAYOR'S OFFICE OF LONG TERM PLANNING AND SUSTAINABILITY,

BEFORE THE ENVIRONMENTAL COMMITTEE OF THE
COUNCIL OF THE CITY OF NEW YORK

AT AN OVERSIGHT HEARING
REGARDING BIOFUELS AND HEATING OIL
FEBRUARY 25, 2009

Good afternoon, Chairman Gennaro and Members of the Committee on Environmental Protection. I am Carter H. Strickland, Jr., Senior Policy Advisor for Air and Water, Mayor's Office of Long Term Planning and Sustainability, and am testifying on behalf of the Bloomberg Administration. Thank you for this opportunity to submit comments today on this important matter. At the outset, I want to recognize the work of this Committee and especially the leadership of Chairman Gennaro in crafting thoughtful and careful environmental policies. Today's hearing follows that tradition by allowing for detailed fact finding and a full airing of the complex issues surrounding the production and use of biofuels, particularly biodiesel intended for blending with heating oil.

Our sustainability plan, PlaNYC, adopts the goal of having the cleanest air of any major U.S. city by 2030. At present our metropolitan area is out of attainment with national standards for fine particulate matter (PM 2.5) and ozone, pollutants that exacerbate respiratory and cardiovascular illness and contribute to hundreds of premature deaths annually. To address this problem, PlaNYC sets out initiatives to reduce emissions from on-road vehicles, marine vessels, construction vehicles, buildings, and power plants. PlaNYC includes several initiatives to clean up the heating fuel sector, which is responsible for up to a third of the locally-emitted fine particulate matter or PM2.5 and significant emissions of nitrogen oxides or NOx, which is a

precursor to ozone formation. The emission of heavy metals from the combustion of heavy or residual grades of heating oil also creates a significant threat to public health.

This hearing is focused on issues surrounding the blending of biodiesel into heating oil. Biodiesel is typically manufactured through a process called "trans-esterification" that uses an industrial alcohol (typically methanol, sometimes ethanol) and a catalyst to convert base plant oil or animal fat into a fatty-acid mono-alkyl ester fuel (biodiesel). In the United States, most biodiesel is made from soybean oil. However, canola oil, sunflower oil, recycled cooking oils, palm oil, animal fats, and other oils are also used as feedstocks. Biodiesel is not the same as renewable diesel, which is a non-ester based diesel blend derived from the same non-petroleum sources but processed in a refinery along with petroleum stocks. Renewable diesel is indistinguishable from petroleum diesel and does not need to be blended downstream of the refinery. Biodiesel is also different from straight vegetable oils and recycled greases (also called waste cooking oil or yellow grease) that have not been processed.

The use of biodiesel blends is one possible approach to lowering the local emissions of certain pollutants from heating oil because the base biodiesel stock does not contain sulfur. A blend of 5 percent biodiesel will reduce sulfur levels by approximately 5 percent, with some variation due to the lower energy content of biodiesel and the need to burn more of the blended fuel than petroleum fuel. Accordingly, for No. 2 oil that is allowed to have up to 2,000 parts per million (ppm) sulfur in New York City, a B5 blend would reduce allowable sulfur content to a maximum of 1,900 ppm, a B10 blend would reduce sulfur to 1,800 ppm, and a B20 blend would reduce sulfur to 1,600 ppm. These reductions would be an improvement over current levels but would not come close to the reductions that could be achieved through a sulfur cap of 500 ppm or lower. Since transportation fuels already have lower sulfur limits – down to 15 ppm – the use

of biodiesel blends has a negligible effect on PM2.5 levels and is reported in some instances to increase NOx emissions.

Nevertheless, to test the feasibility of biodiesel blends and to support an infant industry that shows some promise to reduce emissions and our dependence on petroleum, the Administration has committed to use B5/No. 2 grade heating oil blends in municipal boilers and biodiesel and ultra-low sulfur diesel blends in certain agency heavy truck fleets. The Administration is also piloting the use of a B20/No. 6 heating oil blend.

The Administration, however, is not yet ready to support broader citywide mandates for blends of biodiesel and heating oil because of open questions regarding sustainability, operations, and supply. We are also concerned that prescriptive technology-based standards focused on biodiesel alone may be less preferable that performance-based standards that are open to all fuels or other approaches that will reduce pollution.

First, the sustainability of biofuels feedstocks is an unresolved issue that has attracted policymakers' attention around the world. All of us want to do the right thing without adopting a cure that is as bad as the disease.

There is no national standard for the sustainability of biofuels. Typically, but not exclusively, sustainability is measured in the "embedded carbon" or "carbon footprint" of different fuels from different sources. Over the past year, publications by Timothy Searchinger (e.g., Science 319: 1238-40 (2008)) and others started an important policy discussion about the unintended consequences of biofuels policy. These papers have hypothesized that the demand for biofuels in the United States and other countries, and the demand for food displaced by biofuels production, will cause widespread deforestation and other "indirect land use impacts." Some of this deforestation may occur in tropical rain forests, where clearing can release

significant amounts of carbon into the atmosphere, but all agricultural production involves the release of carbon to the atmosphere in varying amounts. Scientists have also cited the great use of fertilizer and water in biofuel crops. These criticisms have been taken up by the Union of Concerned Scientists, the Natural Resources Defense Council and other groups.

These critiques of biofuels are not uniformly accepted, as we expect you will hear in detail from other speakers today. In particular, many researchers, scientists, and trade groups (1) have noted the uncertainty in attributing indirect land use change to biofuels as opposed to the growth in population, demand for meat, timber extraction, internal migration, suburbanization, and other land use changes, (2) have questioned the assumptions made about the elasticity in food demand, land productivity, and land conversion, and (3) have pointed out that the indirect effects of the exploration, production, and development of petroleum fuels has not been calculated. Clearly, there are significant differences of opinion among qualified parties on critical issues.

This debate has suspended or slowed many biodiesel initiatives by cities, states, and even several European countries, because many existing biofuels mandates did not have provisions or mechanisms to address sources or sustainability. For example, the 2006 New York State executive order that required state agencies to use biodiesel and the 2007 Maine law that instituted alternative-fuel vehicle rebates and grants did not address sources or sustainability. Other states such as Pennsylvania, Virginia, Illinois, and Minnesota have enacted biofuels legislation that promotes the use of "domestic" or in-state biofuels through incentives or triggers based on attaining certain thresholds of in-state production; these laws address sourcing to some degree but not in a way that would allow for consideration of indirect land use effects or other sustainability factors.

More recent biofuels initiatives do incorporate sustainability standards that are objective, enforceable, and part of a comprehensive quality assurance system. It is worth pointing out that the biodiesel industry has not adopted or enforced sustainability standards or labeling protocols, as exist in limited form for tropical hardwoods and fish. In early February 2009, the National Biodiesel Board announced that it had adopted sustainability principles. While we applaud this initial step, it has not yet evolved into a self-policing and independently-verified labeling regime that would allow purchasers to meet sustainability criteria. The National Biodiesel Board has acknowledged the need to elaborate on these principles.

The experience of Massachusetts is instructive. In July 2008, that state enacted a statewide mandate for using blends of alternative fuels and heating oil, starting at 2 percent in 2010. The initial drafts of that statute, and the version signed by Governor Patrick, had required that such fuels be made from "feedstocks that are grown in a sustainable manner." After concerns were raised about the enforceability of that vague provision, however, the final statute passed by the Legislature required that eligible fuels achieve a 50 per cent reduction in lifecycle greenhouse gas emissions. It is not yet clear how Massachusetts will establish or enforce that standard.

It is clear, however, that Massachusetts is following the lead of the U.S. Congress. In December 2007, Congress enacted the Energy Independence and Security Act (EISA or the Act) and set a graduated schedule for biodiesel and other biofuels to comprise a certain percentage of transportation fuels sold in the United States. The Act requires that eligible biofuels must achieve at least a 50 percent reduction in lifecycle greenhouse gas emissions compared to the baseline lifecycle greenhouse gas emissions of equivalent petroleum fuels. Congress directed the U.S. Environmental Protection Agency (EPA) to make those determinations for various fuel

sources and to include any significant indirect emissions from land use changes and other factors. The EPA has struggled to develop a methodology for quantifying lifecycle greenhouse gas emissions from renewable fuels and failed to meet a December 19, 2008, deadline for finalizing regulations. We understand that draft EPA regulations may be released in the near future, but final regulations are probably a year or two away. Upon the completion of EPA's rulemaking there will be national low carbon fuel standards.

The other major effort underway is by the California Air Resources Board (CARB). That effort has national significance because of the unique status that California has under the U.S. Clean Air Act and with the regulation of air quality generally. In January 2007, the Governor of California issued an executive order that called for a 10 percent reduction in the carbon intensity of California's transportation fuels by 2020. The order required CARB to issue regulations to establish and implement the low carbon fuel standard by 2010 and over the past year CARB has investigated the lifecycle energy use and greenhouse gases of different pathways of transportation fuels. CARB's so called well-to-wheel analysis includes various factors related to sustainability, fuel co-products, and uncertainty that are fed into complex models. It has completed its preliminary analysis for some pathways, including Midwestern soybeans to biodiesel in January 2009. However, CARB's preliminary conclusions do not include indirect land use changes and CARB has not yet released its model for calculating indirect land use impacts.

The land use issue has caused New York State to pull back on additional initiatives for biofuel production and use, including the possible uses of biofuels as a strategy to comply with the cap and trade regime established by the Regional Greenhouse Gas Initiative. It has launched an interagency effort to assess the sustainability of biofuels based on New York and Northeast

feedstocks and the implications for biofuels policy. The effort is led by the New York Energy Research and Development Authority, with the Department of Agriculture and the Department of Environmental Conservation. New York and other Northeast states have also asked the Northeast States for Coordinated Air Use Management (NESCAUM) to develop an effective regional strategy to reduce the carbon intensity of fuels used for transportation, heating, and electricity generation, using the full-lifecycle carbon emissions from fuels similar to the CARB standard. NESCAUM's effort is motivated in part by the recent Massachusetts law, which explicitly directs that state to use information and best practices available from other sources to develop the standard for meeting the greenhouse gas reduction standards. Presumably the Massachusetts' Legislature had in mind the EPA, CARB, and NESCAUM efforts to develop low carbon fuel standards in the transportation sector.

It is our belief that New York City should wait for the scientific understanding of sustainability issues to mature and for the completion of national systems for determining low carbon fuel standards for biodiesel and heating oil blends. In advance of those developments, it is not clear how New York City would adopt or enforce sustainability standards for biofuels or obtain the resources to administer a complicated, stand-alone sustainability system for biodiesel.

Second, we have continued operational concerns about purchasing and using biodiesel blends. Municipal and other large purchasers have detailed specifications for fuel oil so that they can perform tests of deliveries to ensure quality and consistency. The City relies on national standards for fuel content published by the American Society for Testing and Materials International (ASTM). For example, heating oil must meet ASTM D396 specifications. The primary industry standard for biodiesel (the B100 blendstock used to produce biodiesel blends), is ASTM D6751. The conventional petrodiesel specification for road fuels, ASTM D975 can

now contain up to 5 percent biodiesel. That means that No. 2 diesel can now include B5 and still be considered the same fuel without labeling the blend. In October 2008, the ASTM adopted specifications for blends of on- and off-road middle distillate diesel oil that contains 6 to 20 percent biodiesel, designated B6 to B20 (ASTM D7467-08). The new specifications will allow the testing of a biodiesel blend against the ASTM numbers for physical verification of quality. However, there are no ASTM specifications for biodiesel blends with the heavy grades of No. 4 or No. 6 heating oil that emit much of the pollution from the heating sector in New York City.

National specifications are important because boiler manufacturers rely on them to determine the scope of their warranties. Manufacturers warrant the parts and workmanship of boilers, not the fuels that are burned in them, but if the manufacturers can attribute a problem to fuels they won't honor warranties. The resolution of problems caused by fuel depends upon the ability of boiler and burner owners to seek recourse against fuel suppliers and to prove that fuel caused the problem. Only one boiler and burner company has stated explicitly that the scope of their warranties encompasses the use of B5/No. 2 blends; in 2007, Beckett published a technical bulletin indicating that they will honor warranty coverage for blends of up to B5 with No. 2 heating oil. Carlin, Power Flame, and other boiler and burner manufacturers are still reviewing the matter. The new ASTM standards for B6 to B20 blends with No. 2 oil will provide manufacturers with specifications for testing to determine whether the scope of warranties can be expanded to encompass those blends. At this time, we are not aware of explicit statements extending boiler and burner warranties to blends higher than B5 or in blends with No. 4 or No. 6 grade heating oil.

The warranties, in turn, are an important issue because biodiesel is a solvent. Over time, its use can degrade O-rings, gaskets, pump seals, hoses and other components of heating oil

systems that contain natural rubber. Biodiesel will also clean out deposits left in the system by petroleum diesel and clog filters upon initial use. For blends higher than B20, the industry recommends the use of steel, mild steel, stainless steel, aluminum, fluorinated polyethylene fluorinated polypropylene and fiberglass vessels because tanks or lines made of brass, bronze, and copper or lead, tin, and zinc may cause high sediment formation and filter clogging. Pumps and fuel lines can be ordered with biodiesel compatible parts but the existing boiler fleet throughout the city does not contain those elements and any use of blends higher than B20 will require a switchover. The Administration also has concerns about the degradation of biodiesel when stored for a long time, an issue that is particularly relevant to the use of heating oil in emergency generators.

Third, we have to make sure that the supply of biodiesel – and the storage tanks and other local infrastructure required to store and distribute biodiesel and blends at varying amounts – is sufficient to meet mandated levels. Just in the past few weeks, Sprague Energy, the City's supplier of B5 and ultra low sulfur diesel blends for our truck fleet, was unable to meet delivery obligations because of infrastructure problems and fuel line issues at the Stuyvesant Terminal in the Bronx. The storage infrastructure should also be sufficient to handle significant spikes in short-term demand. For example, the tariffs for natural gas customers on an interruptible rate require that customers have a 10-day supply on site or contracts in place that guarantee delivery in 24 hours. The constraint notices issued by utilities can trigger widespread use of backup supplies that need to be replenished at once and at the same time.

A fourth and fundamental concern relates to the structure of pending proposals. A biodiesel mandate would be a departure from fuel-neutral performance standards and would essentially pick one solution, biodiesel blends, rather than renewable diesel, other fuels or even

non-fuel solutions. Again, Massachusetts' statewide mandate is instructive; as originally drafted it referred exclusively to biodiesel but the final law refers to "eligible petroleum distillate substitute fuels" that meet certain greenhouse gas reduction standards. To be sure, the City has adopted technology rather than performance approaches in recent diesel retrofit and other environmental laws and the use of technology standards in appropriate circumstances can lead to easier enforcement and implementation. But as a general matter, performance standards are preferable because they lead to flexible and cost-effective solutions. For example, one of the City's most successful pollution control laws – the mid-1960s cap on sulfur content in fuels – has endured for decades through shifts in fuel mixes because it is technology neutral. In the heating oil sector, additional and lower sulfur caps would continue that legacy. Efforts are underway in the Northeast states to adopt low sulfur rules. While sulfur levels are the principal reason that heating oil creates pollution, it contains other pollutants that could and should also be addressed.

We look forward to continuing to work closely with the Council and this Committee in particular to develop sound environmental policy. Thank you for the opportunity to testify today on this important matter.

Testimony of Don Scott before the Committee on Environmental Protection
February 25, 2009, 10 a.m.

Good afternoon Chairman Gennaro and members of the committee. I appreciate the opportunity to testify before you today.

My name is Don Scott. I serve as the Director of Sustainability for the National Biodiesel Board. I am an environmental engineer with over a dozen years experience protecting natural resources. I left my position as chief of surface water resources for the state of Missouri and joined the biodiesel industry because I realized our society's most critical need is for renewable fuels that are environmentally friendly. We must transition to more sustainable alternatives to fossil fuels if we are to maintain our current standard of living that affords us the great strides we have made in this country protecting clean air, clean water, and natural habitat. It is toward these goals that I offer my services to this industry and to this committee.

The US biodiesel industry was founded a mere 15 years ago to offer a healthier, homegrown fuel that can invigorate economies throughout the US, and increase energy independence. The US biodiesel industry has consistently sought to provide a sustainable solution to America's energy needs. Biodiesel offers significant greenhouse gas emissions reductions compared to its petroleum counterpart and has the greatest energy balance of any U.S. produced transportation fuel. This means biodiesel is the most sustainable alternative currently available for light duty vehicles, heavy equipment, freight, public transport buses, and heating oil.

The most comprehensive lifecycle inventory for biodiesel was conducted in 1998 by the United States Department of Agriculture (USDA) and the Department of Energy (DOE). This analysis considered every bit of energy and associated greenhouse gas (GHG) emissions emitted in the production of soy biodiesel. This included everything required to plant, grow, harvest, transport, and crush soybeans, as well as the energy required to convert surplus soybean oil to biodiesel and transport it to a retail fuel station. The inventory showed that for every unit of energy invested in this process, 3.2 units of energy were returned[1]. This study was recently updated by USDA and the University of Idaho which found that today 4.56 units of energy are returned. This increase from 3.2 to 4.56 in 10 years is a result of improvements in farming and production technology. These continual improvements in efficiency are expected to yield 5.44 units of energy per unit of input by 2015[2].

The USDA/DOE lifecycle inventory also concluded that biodiesel use reduces greenhouse gas emissions by 78% compared to petroleum diesel[1]. It can be expected that this reduction is also improving as a result of efficiency improvements. This reduction is obtained because the carbon emitted as biodiesel is burned was originally pulled from the atmosphere by a soybean plant. In effect, the carbon is being naturally recycled with no net addition of CO2 to the atmosphere. This is in stark contrast to petroleum which pulls carbon, in the form of crude oil, from deep within the Earth's crust and spews that carbon into the air as it is refined or burned in a vehicle. It is this process of unlocking millions of years of sequestered carbon from buried fossil fuels that is responsible 80% of human-induced greenhouse gas emission and is the leading cause of global warming that threatens our earth and our way of life[3]. If we want to reverse global warming, we must find alternatives to fossil fuels.

Reversing the impact of fossil fuels on climate change will not happen overnight. That is why we must begin a transition to renewable fuels immediately. We must also act quickly to protect human health. A twenty percent biodiesel blend in heating oil can reduce nitrogen oxide emission by 20 percent and reduce sulfur oxide emissions by 83 percent[4]. Biodiesel in engines can reduce polyaromatic hydrocarbons, which have been identified as cancer causing compounds, by 50 to 90 percent. B20 use can reduce the estimated risk of premature death due to air toxics by up to 5 percent[5].

The original USDA/DOE lifecycle analysis was done on soy biodiesel production because soy was and remains our nation's largest available source of surplus natural oils. Biodiesel can be made from any under-valued vegetable oil or animal fat. Considerable volumes of biodiesel are made from recycled cooking oil, especially in urban areas; and technology is blossoming for biodiesel made from waste greases. The New York metropolitan area produces enough recycled cooking oil to make 20 million gallons of biodiesel each year, and enough waste grease to make an additional 30 million gallons[6]. Waste greases include sources such as restaurant grease traps. Removing these waste greases from municipal wastewater streams has significant environmental benefits. The City of San Francisco is building a plant to convert waste grease to biodiesel[7]. San Francisco officials estimate that $3.5 million dollars in public works expenditures could be saved every year if they could eliminate sewer backups related to waste greases in their sewers[8].

Alternative sources for biodiesel are growing in proportion to the total volume. The versatility of biodiesel to utilize the growing number of alternative sources while meeting a consistent ASTM specification for biodiesel, #2 diesel fuel, and heating oil stimulates advancements like the development of renewable fuel from algae. Many biodiesel plants can use a variety of feedstocks, which helps their economic sustainability in times of fluctuating markets. Biodiesel is a great fuel now. Public support fosters its potential to get even better.

Biodiesel is the most sustainable liquid fuel available today. And still one of its most compelling attributes is that this young industry has the opportunity to play an even greater role in a sustainable energy future. The US biodiesel industry is not only generating a product with documented health and environmental benefits, it has aggressively committed to continually increase its sustainability. The National Biodiesel Board has developed a Sustainability Task Force and a set of sustainability principles to ensure the highest degree of sustainability for our country and our industry. These principles support biodiesel that significantly reduces greenhouse gases compared to petroleum, improves food security, and protects natural resources such as soil, water and air[9]. Biodiesel made from a wide variety of materials, including soybeans, animal fats, recycled and waste greases, and algae meet that standard.

The National Biodiesel Board is not alone in focusing attention on the sustainability of biodiesel. International organizations such as the Roundtable on Sustainable Palm Oil are implementing criteria for feedstock production to ensure that biofuels are neither causing nor being blamed for unsustainable practices associated with burning forests or illegal logging.

Our objective is to ensure that the future will encourage new research and innovation; incorporate sound science and knowledge based on credible, transparent data; create mechanisms for continual assessment and improvement; and provide the opportunity for biodiesel to realize its full potential as a sustainable, domestic energy source.

Mr. Chairman, once again, thank you for the opportunity to be here today and thank you for your leadership on issues related to biodiesel and green energy.

1. USDA/DOE 1998, Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus.
2. Dev Shrestha , University of Idaho, presentation at the 2009 National Biodiesel Conference and Expo, San Francisco, CA Feb 2, 2009.
3. U.S. Climate Change Science Program 2009, Global Climate Change Impacts in the United States.
4. Massachusetts Oilheat Council & National Oilheat Research Alliance, Combustion Testing of a Biodiesel Fuel Oil Blend in Residential Oil Burning Equipment, 2003.
5. National Renewable Energy Laboratory, Impact of Biodiesel Fuels on air Quality and Human Health, 2003
6. Calculated from lb/person estimate given by National Renewable Energy Laboratory 1998, Urban Waste Grease Resource Assessment.
7. Gavin Newsom press conference San Francisco, CA, Feb 4, 2009.
8. C. Ving, City of San Francisco, presentation at the 2009 Sustainable Biodiesel Summit, San Francisco, CA, Jan. 31, 2009.
9. www.biodiesel sustainability.org

National Biodiesel Board
605 Clark Ave.
P.O. Box 104898
Jefferson City, Missouri 65110-4898
(573) 635-3893 *phone* (573) 635-7913 *fax*

Testimony of Shelby Neal before the Committee on Environmental Protection
February 25, 2009, 10 a.m.

Good afternoon Chairman Gennaro and members of the committee. I appreciate the opportunity to testify before you today.

My name is Shelby Neal. I serve as the Director of State Governmental Affairs for the National Biodiesel Board (NBB). The NBB serves as the trade association that represents the nation's 176 biodiesel production facilities. In this capacity, I have been actively involved in implementation of the California low carbon fuel standard (LCFS) and serve on an advisory committee which is helping the Midwest Governors Association draft an LCFS policy. I hope to bring some perspective from this work to the committee today as you consider ways to move away from petroleum, which we know is unsustainable.

I am sure any number of other witnesses will speak to biodiesel's many benefits in terms of human health, the natural environment, energy independence, and the economy. So what I wish to speak to today are the issues that have arisen from articles published by the popular press and other critics of biofuels. Every industry has critics and enjoys their day in the sun with the news media. Unfortunately, our industry has not been exempt from this phenomenon. So, with the permission of the Chairman, what I would like to do today is walk through some of the most frequently mentioned issues that have been raised by critics.

On March 27, 2008, Time Magazine published an issue featuring an ear of corn on the cover with the following caption: "The Clean Energy Scam." The article, based on work by a Princeton University attorney, Timothy Searchinger, asserted that biofuels are accelerating global climate change – that they are actually worse for the environment than petroleum. It was also asserted that a global food crisis was occurring because increased use of biofuels is raising the price of commodities. The article went so far as to suggest this has sparked "tortilla riots" in Mexico. For sure, these are serious charges. And although corn-based ethanol is clearly the target of the article – Searchinger's paper did not mention biodiesel – biodiesel is mentioned in the Time article, so we are compelled to respond.

I want to first say that, were these charges true, we in the biodiesel industry would be the first to do something about it. Why biodiesel is not a perfect fuel – we can always improve – members of this industry take a great deal of pride in knowing that they produce a green, sustainable product that helps improve the health of the planet and our people. To be sure, converting rainforests for production of crops to produce biofuels does not make sense. Likewise, starving humans to produce biofuels does not make sense. Obviously, no one wants this. But is it happening? This is the real question.

The best available scientific data does not support these charges. With regard to Searchinger's paper, which was based on modeling done by the U.S. Department of Energy's (DOE) Argon National Laboratory, the DOE itself responded to the report by writing: "The Searchinger study is plagued with incorrect or unrealistic assumptions, and obsolete data." The response went on to detail a number of errors such as Searchinger: 1) assumed 30 billion gallons of consumption of ethanol, rather than the 15 billion that is called for in the federal Renewable Fuel Standard; 2) assumed no increase in corn yields over the course of the 167 year timeframe, even though corn yields have increased by an average of two percent per year since 1975; 3) relies on the worst case scenario for all land conversions; and 4) does not take into account export of dried distillers grains, which contribute significantly to the world food market.

I think it is also important to point out that, while Time Magazine asserts that biodiesel is worse for the climate than petroleum-based diesel, to my knowledge – and I am yet to be corrected – no government study or paper published by a scientific journal has come to the same conclusion. It appears that through either negligence or convenience Time completely overlooked leading scientific thought on the issue. As proof of this statement, the 12 institutions and governments that have conducted full lifecycle assessments for biodiesel have concluded that it is at least 41 percent better than petroleum – all of them. The average of the studies suggests biodiesel is a little more than 60 percent better than petroleum. And these sources are no slouches. They include the U.S. Department of Energy (DOE), the U.S. Department of Agriculture (USDA), the National Academy of Sciences, Argon National Laboratory, the California Air Resources Board, Natural Resources Canada, the European Commission, the Dutch Ministry of Economic Affairs, the United Kingdom Department of Transport, and a research arm of the Australian Commonwealth. Even the oil companies – British Petroleum, Total, and Shell Oil – sponsored a study that showed biodiesel's GHG emissions are 55 to 80 percent less than petroleum's. Nevertheless, in light this mountain of evidence to the contrary, Time magazine chose to publish a theory devised by an attorney at Princeton University that had not been peer reviewed and still, to this very day, has not been validated with real world data.

The other issue mentioned by Time is the idea that biofuels are causing commodity prices to spiral out of control, which is causing food prices to spiral out of control, which is causing people to go hungry around the world. On this assertion, I wish to be more succinct than the last by merely making the point that soybean prices have decreased by nearly 50 percent over the past year while biodiesel production increased by more than 50 percent over the same time span. The reason there is significantly less correlation between soybean prices and biodiesel production than many assert is because current U.S. biodiesel production only requires a little more than eight percent of the nation's soybean crop[1]. A 5 percent Bioheat mandate in New York City would require less than four-tenths of one percent of the nation's soybean crop. Moreover, eighty percent of that eight percent (and four-tenths of a percent) is soybean "meal," which is used exclusively for animal feed. Only 20 percent of the soybean is comprised of the oil that goes into Twinkies and Snickers bars.

Needless to say, we are still working to repair the damage done by this single article, which has spawned dozens more news articles. While we are doing this, we are also working to educate people about other aspects of sustainability that are important. I would like to mention a few of those now.

---

[1] This estimate assumes 60 percent of the U.S. biodiesel market is met with soybeans, per 2008 U.S. Census data.

In terms of water use, all U.S. biodiesel production uses less water than is required to irrigate two South Texas golf courses. On the crop side, soybeans require only one-fifth the amount of water corn does. And according to a U.S. Department of Energy and U.S. Department of Agriculture joint study, biodiesel produces 79 percent less waste water than the petroleum-diesel production process and 96 percent less hazardous waste.

In terms of U.S. soybean farmers, GHG-friendly no till practices increased from 6 to 22% from 1990 to 2004. According to the U.S. Environmental Protection Agency, herbicides used today are 10 times less toxic than those used before the 1990s. From 1990 to 2002 yields increased from 34.1 to 42.7 bushels per acre and are expected to increase as much as 10 percent in the next two years due to new seed varieties. And, finally, it is important to remember that soybeans do not require nitrogen fertilizer – unlike corn, they make their own nitrogen.

The primary way all these improved environmental practices can be measured is in biodiesel's so-called energy balance, which is to say how many units of energy are required to produce a unit of biodiesel. Fewer passes with the tractor over the field and fewer chemical applications made with the assistance of petroleum means less energy is needed to make biodiesel, resulting in an improved energy balance. According to the National Renewable Energy Laboratory (NREL), biodiesel's net energy balance in 1992 was 3.2 to 1, meaning it takes one unit of energy to produce 3.2 units of biodiesel. By contrast, according to the same NREL study, petroleum-based diesel requires 1 unit of energy to create .83 units of energy. A USDA-funded study released just last month, which uses the same test protocols as the 1992 study, indicates that biodiesel's energy balance has now increased to 4.56 to 1, meaning only one unit of energy is needed to create more than five units of biodiesel. This is the highest energy balance of any commercial fuel made in the United States.

Finally, I have been asked to comment on the Roundtable on Sustainable Palm Oil, or RSPO for short. As you may know, a group of some 350 stakeholders – including palm growers, palm oil processors, retailers, and 20 environmental and social development organizations – have come together to create a set of principles and criteria that could be independently verified. This effort has been fully up and running for about nine months now. In the interest of time, I will not speak in depth about the protocols, but I will say that traditional critics of the palm industry, such as the World Wildlife Fund, have endorsed the RSPO process. While, as an organization, the NBB has not yet endorsed RSPO, this certification process is an approach that many view as an excellent way of addressing their concerns. RSPO certification has, for example, been used by the Hawaiian Electric Company with the endorsement of the Natural Resources Development Council.

Once again, I would like to thank the Chairman for his advocacy of biodiesel and for inviting me to testify before the committee here today. If time permits, I would be pleased to answer any questions members of the committee might have.

why. FINDING ANSWERS FOR HUNGER AND POVERTY

World Hunger Year, Inc.
505 Eighth Ave., Suite 2100
New York, NY 10018
212 629 8850 phone
212 465 9274 fax

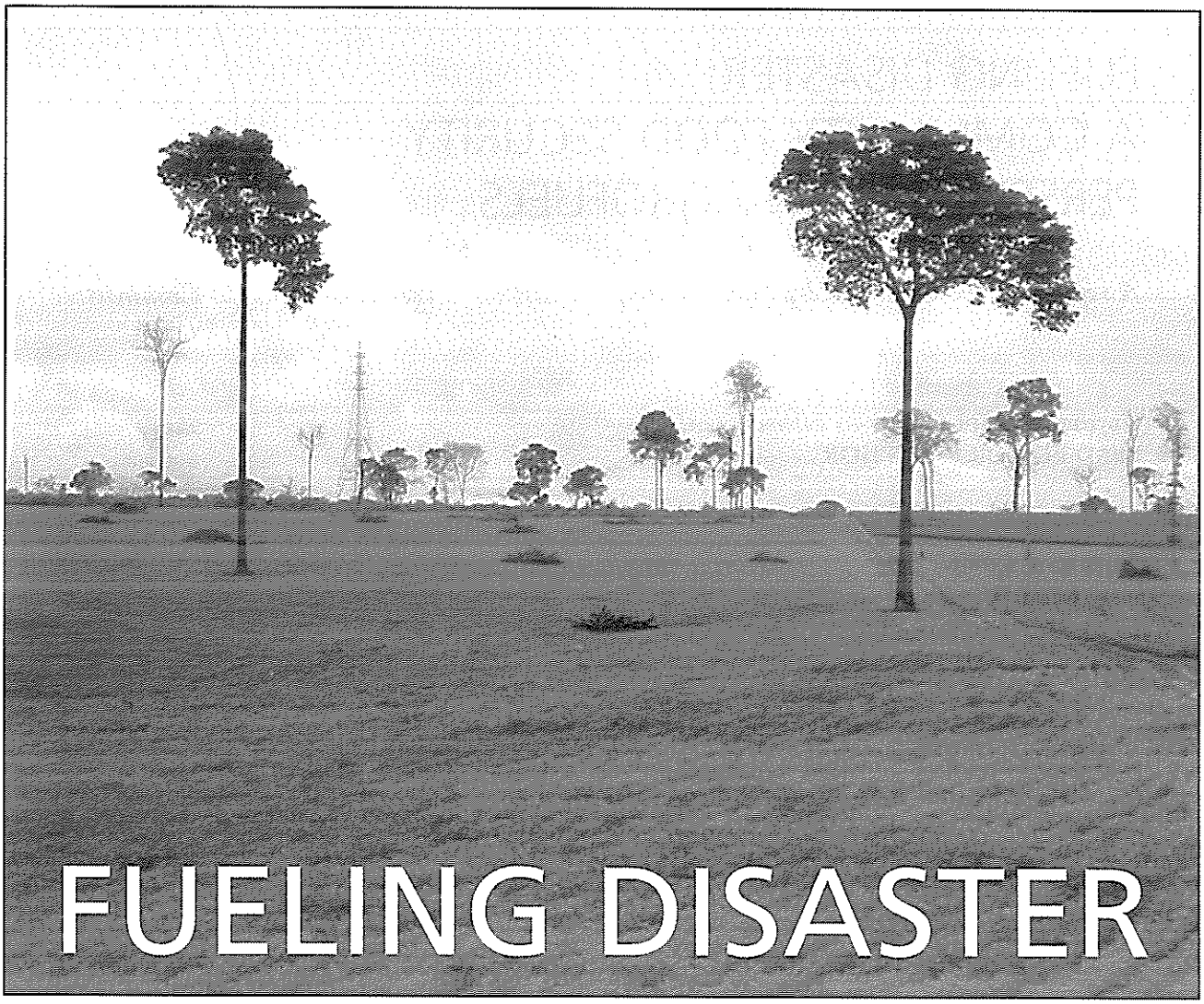
whyhunger.org

Written Statement on the Sustainability of Biofuels

Wednesday, February 25, 2009

Submitted by:
Christina Schiavoni
Global Movements Program Co-Director
World Hunger Year (WHY)
christina@whyhunger.org; 212-629-9788

* This submission is the executive summary of a report entitled *Fueling Disaster: A Community Food Security Perspective on Agrofuels*. The full report is available at http://whyhunger.org/docs/fueling_disaster.pdf



FUELING DISASTER

A Community Food Security Perspective on Agrofuels

A report by the Community Food Security Coalition International Links Committee

DECEMBER 2007

Corrina Steward *Grassroots International* LEAD EDITOR & AUTHOR

CONTRIBUTORS

Christina Schiavoni, Peter Mann, and Siena Chrisman *WHY (World Hunger Year)*

Ken Meter *Crossroads Resource Center*

Robert Gronski *National Catholic Rural Life Conference & Agribusiness Accountability Initiative*

FUELING DISASTER: A COMMUNITY FOOD SECURITY PERSPECTIVE ON AGROFUELS

A report by the Community Food Security Coalition International Links Committee

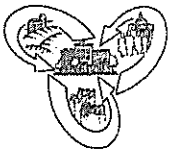
Corrina Steward *Grassroots International*
LEAD EDITOR & AUTHOR

CONTRIBUTORS
Christina Schiavoni, Peter Mann, and Siena Chrisman *WHY*
Ken Meter *Crossroads Resource Center*
Robert Gronski *National Catholic Rural Life Conference & Agribusiness Accountability Initiative*

EDITING TEAM
Corrina Steward *Grassroots International*
Peter Mann, Christina Schiavoni, and Siena Chrisman *WHY*
Ken Meter *Crossroads Resource Center*
Molly Anderson *Food Systems Integrity*
Eric Holt-Giménez *Food First*

Graphic Design: *Rebecca Mann*
Front Cover Photo: *Corrina Steward*, rainforest deforestation for soy production in the Brazilian Amazon
Back Cover Photos: *Corrina Steward*, seeds from around the world brought to Nyéléni 2007 - Forum for Food Sovereignty in Mali; *MST-MA*, rice harvested by hand in Brazil

ACKNOWLEDGMENTS
We would like to thank the following people for their valuable insights to the report: Andy Fisher, Community Food Security Coalition; Kathy Ozer and George Naylor, National Family Farm Coalition; Andrew Kang Bartlett, Presbyterian Hunger Program; Wayne Roberts, Toronto Food Policy Council; Zy Weinberg, Weinberg and Vauthier Consulting; Nikhil Aziz and Maria Aguiar, Grassroots International; and Leah Stern and Maureen Kelly, WHY.



Grassroots INTERNATIONAL

why. FINDING ANSWERS FOR HUNGER AND POVERTY

Crossroads Resource Center

Food First

EXECUTIVE SUMMARY

Faced with dwindling fuel reserves and the intensifying impacts of climate change, society's hopes for the future of our food and energy systems rest on the notion that we can produce renewable fuels. Yet a global debate has erupted over the best sources of renewable energy. "Biofuel" proponents speak of meeting future energy needs while raising farm incomes and renewing rural economies. **Critics, however, warn that what we are getting are "agrofuels," produced in industrial systems that extract wealth out of communities and pollute the environment.**

Meanwhile, recent federal policies have mandated major increases in U.S. agrofuel consumption, causing us to reach outside of our borders to countries such as Brazil to meet our demand. As the United States' appetite for agrofuels continues to grow and other countries join this trend, the ecological and social footprint of agrofuel consumption will be increasingly felt throughout the world. Recognizing the growing interdependency of our food and energy systems, this report addresses the agrofuels debate from a fresh perspective: that of communities who are trying to feed themselves.

Case studies, testimonials from farmer and indigenous movements, and reports from international and U.S. agencies demonstrate that the trend towards massive expansion of agrofuel production is the latest in a progression towards industrial agriculture and corporate consolidation of the world's land, food, and water resources. This trend poses a particular threat to the community food security movement, which promotes the right of all people in all communities "to obtain safe, culturally acceptable, nutritionally adequate diet(s) through a sustainable food system that maximizes community self reliance and social justice."[1]

This report exposes the threat of industrial-scale agrofuel production to community food security through examination of the following areas: **Food Security and the Right to Food, Agricultural Workers' Rights, Community Economic Development,** and **Environment.** This report is addressed to the many constituencies within the community food security movement, including anti-hunger advocates concerned by rising food prices and dwindling food supplies; family farmers threatened by increased corporate control; and food system activists, conservationists, and others working in the areas of health, environment, and justice.

Food Security & the Right to Food

The right to food is already denied to the twenty percent of the world's population who are food insecure.[2] Expansion of agrofuel production (including the industrial-scale production of "second generation" agrofuels) will directly compete with community resources for food production (e.g., land, water, and nutrients); increase dependency on food imports; and perpetuate an unregulated market for agricultural commodities that neither guarantees food for all nor fair prices for farmers.

MST-MA

Agricultural Workers' Rights

Human rights violations are prevalent in industrial agricultural fields today. The growth of agrofuel production, which relies on large-scale plantations, will only perpetuate a system that already disregards workers' rights. Increased demand for agrofuel crops such as sugarcane and soy will likely lead to increased human rights violations including slave wages, enslavement, and child labor, as well as increased incidences of sicknesses and deaths resulting from dangerous plantation work.

Community Economic Development

Agrofuels are often presented as a way of rescuing an industrial agriculture-based economy that is deeply broken. The reality is that the commodity markets themselves are broken. Without addressing corporate concentration, parity for family farmers, and the need for local food systems to feed communities, simply selling more commodities for agrofuels will not reverse existing failures, nor will it bring lasting prosperity to rural communities in the U.S. or abroad.

Environment

Agrofuels are promoted as a "green" technology, yet current production practices contribute to water depletion, soil erosion, contamination by genetically modified organisms, and other environmental problems. The refining process is also quite polluting, and the common placement of refineries in low-income communities has raised serious environmental justice concerns. Furthermore, the net energy balance of agrofuels remains subject to major debate, and as carbon-capturing forests are felled to make way for fuel crops, the result will be increased, rather than decreased, greenhouse gas emissions.

Conclusions and Recommendations

The principles of community food security imply that **fuel is not a priority over food**, and governments' actions to make it so undermine the world's hungry and struggling rural communities. Unless the agrofuels market builds new wealth that stays in rural economies, strengthens the social fabric of communities, and builds greater resilience for an uncertain future, communities will gain very little from agrofuel production. While this report focuses on industrial-scale agrofuels, there are examples of integrating sustainable energy and agriculture that benefit community food security, such as small farmer settlements in Brazil intercropping energy and food crops and community farms in the U.S. using locally-made biodiesel for farm machinery. Family farmers, indigenous peoples, and environmentalists are using these examples to further explore the connections between sustainable energy, food security, and rural development and to promote food and energy sovereignty – the democratization of both food and energy systems. Below are key actions that focus on food security and developing real sustainable energy solutions.

Corrina Steward

Jake Miller, Grassroots International

What you can do to support community food security and sustainable energy:

- Sign your group/organization on to the moratorium on global agrofuels trade. For more information and to sign on, contact the Rainforest Action Network: *www.ran.org*.
- Tell Congress that you do not support policies (e.g., subsidies, targets, and other measures) that increase the production of industrial agrofuels.
- Tell Congress that you want real market reforms for family farmers, including support for fair prices for food and loosening of agribusiness' control over our food and fuel markets.
- Resist the threat to the hungry from increasing food prices and dwindling food supplies by advocating for price stabilization and national food reserves.
- Support sustainable agricultural practices that reduce energy consumption. Promote more localized food systems to reduce food mileage.
- Join with ecojustice and family farm movements throughout the world, such as the Movement of Landless Rural Workers (MST) in Brazil and the Via Campesina global peasant network, that are fighting back against agrofuel monocultures.
- Publicize the conflict of interest when agribusiness corporations gain greater control of the fuel industry, and vice versa.
- Organize your community to resist corporate control of local food and energy resources. Join movements calling for enforcement and strengthening of anti-trust and anti-monopoly measures.
- Focus the energy debate on conservation and energy consumption rates. No alternative to fossil fuels will be able to meet current and future energy demands if we do not decrease our energy usage altogether and put a major emphasis on conservation.

[1] Anne C. Bellows and Michael W. Hamm, "U.S.-Based Community Food Security: Influences, Practice, Debate," *Journal for the Study of Food and Society* 6.1 (2002): 31-44.

[2] Food and Agriculture Organization of the United Nations, *State of Food Insecurity in the World 2006* (Rome: UN FAO, 2006), 06 December 2007 <*http://www.fao.org/docrep/009/a0750e/a0750e00.htm*>.

Industrial agrofuels are already exacting heavy costs on food security and rural communities around the world. The anticipated increase in agrofuel production could lead to catastrophic impacts on community food security. This report addresses these impacts and identifies actions that would buffer communities from increased hunger, poverty, and environmental degradation.

INTRODUCTION

Faced with dwindling fuel reserves and the intensifying impacts of climate change, the interdependency of our food and energy systems is more apparent than ever. Our global food system relies heavily on fossil fuels and is a major producer of greenhouse gases. At the same time, agriculture is proving to be increasingly vulnerable to the erratic conditions brought about by global climate change. On a global scale, people are realizing that energy has become an agricultural issue.

Our society's hopes for the future of our food and energy systems rest on the notion that we can produce renewable fuels. Yet a global debate has erupted over the best sources of renewable energy. While "biofuel" proponents speak of meeting future energy needs while raising farm incomes and renewing rural economies in the U.S. and internationally,[1] others see ominous warning signs. Increasingly, global attention is being paid to the fact that "green" energy sources, when produced in an industrial model, may create more harm than good. Critics quite properly warn that what we are actually getting are "agrofuels," produced in industrial systems that are as extractive as the fuel refining process itself.

As the community food security movement in the U.S. grapples with these issues, it has an important role to play in supporting holistic, sustainable, and community-based solutions to our global food, energy, and climate crises. In doing so, it must confront the global agrofuel trend that is undermining the goals of the community food security movement and exacerbating the very problems the movement strives to address.

This report addresses the agrofuels debate from a fresh perspective: that of communities who are trying to feed themselves. Viewed from the vantage point of community food security, our analysis raises critical questions about agrofuel production in an industrial model. This report is addressed to the many constituencies within the community food security movement, including anti-hunger advocates con-

Why Call Them Agrofuels?

Agrofuels are liquid fuels from biomass grown on a large industrial agriculture scale. Agrofuels are currently produced from plants such as corn, oil palm, soy, sugar cane, sugar beet, rapeseed, canola, jatropha, rice, and wheat, as well as animal fat. They can also include trees that are grown on a large scale on plantations.[1]

Biofuel is a problematic term because it makes no distinction of scale or production model. It is being used by industry as an umbrella term to falsely present all fuels derived from biomass as sustainable and "green."

This report argues that it is critical to make a distinction between large-scale, industrial production of fuel from biomass versus fuel grown and harvested sustainably on a small scale for the benefit of local communities. Use of the term *agrofuels* allows for this distinction.

[1] Language adapted from "Moratorium on U.S. Incentives for Agrofuels, U.S. Agroenergy Monocultures and Global Trade of Agrofuels," December 2007.

cerned by rising food prices and dwindling food supplies; family farmers threatened by increased corporate control; and food system activists, conservationists, and others working in the areas of health, environment, and justice.

A Community Food Security Approach

The overarching goal of the community food security movement is for *"all community residents to obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice."*[2] Inherent in this goal is respect for basic rights, including the universal right to food; the rights of farmers and agricultural workers to fair wages and safe working conditions; and communities' rights of self-determination and political voice in shaping their food and agriculture systems. Community food security also prioritizes use of productive land to meet communities' food needs through diversified, sustainable agriculture based on ecological principles.

The community food security movement is a response to the predominant corporate-driven food system. This system is based on an industrial model of agriculture that depletes the Earth while extracting wealth from communities and fostering hunger and poverty. This report argues that the trend towards massive expansion of agrofuel production is the latest step in a progression towards industrialization and corporate consolidation of the world's land, food, and water resources. Agrofuel production causes the same environmental, health, and labor problems as the industrial-scale production of other agricultural commodities grown for food or food inputs (e.g., corn). The trend toward agrofuels, however, is particularly alarming because of the rapid rate at which farmland, forests, and other productive land are being converted into fuel-crop monocultures, depleting precious resources such as water and topsoil in the process. Equally troubling are the new alliances being formed between agribusiness and energy conglomerates that are actively working against the goals of the community food security movement.

This report is not an argument against the use of biomass for fuel, which has long played a role in meeting society's energy needs (e.g., growing fodder for draft animals or burning dung and wood for heat). Our main goal is to identify and denounce the current threats to community food security from industrial-scale agrofuels. From case studies, testimonials from farmer and indigenous movements, and recent reports from international and U.S. agencies, there is clear evidence that agrofuel production is already exacting a heavy toll on community food security.

The report presents evidence of the impacts of agrofuels in the following areas: **Food Security and the Right to Food, Agricultural Workers' Rights, Community Economic Development** and the **Environment.** Attention is given to the impacts of agrofuels in both rich and poor countries, while emphasizing those communities in poor countries that are the most severely affected. While we primarily focus on the impacts of agrofuels in the Americas, the issues we analyze are part of a global trend.

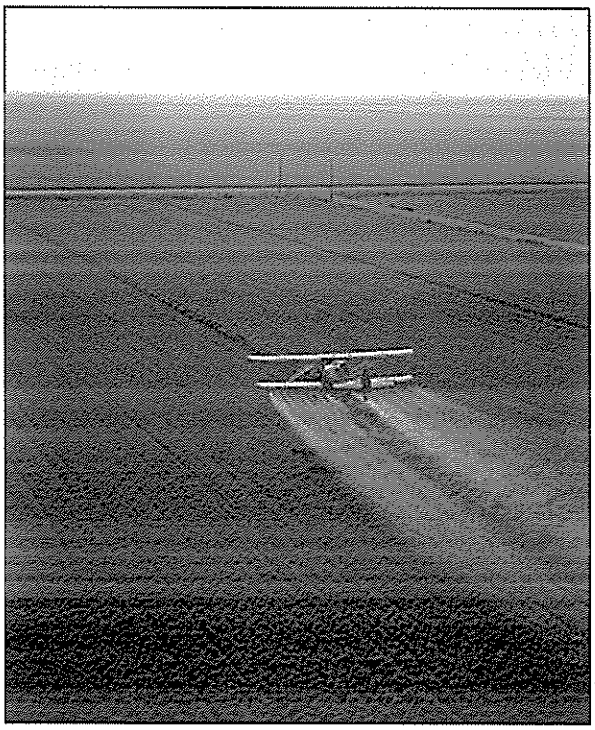
The report concludes that when agriculture is used to fulfill fuel needs, it should be done from a community food security framework that includes diverse, sustainable, community-based farming and puts communities' food needs first. Increasingly, the community food security movement is pointing to *food sovereignty*, the right of people to determine their own food and agricultural policies, as offering a clear step forward in the food versus fuel debate.

BACKGROUND

Modern agrofuel development in the U.S. began during the oil crisis that erupted in 1973.[3] This set the stage for development of a domestic agrofuel industry, which included establishment of an import tariff on ethanol to protect U.S. agrofuel production,[4] along with support for agrofuel facilities, production-related payments, and exemption of agrofuels from fuel-excise taxes.[5] An estimated $5.5 billion to $7.3 billion are spent annually in U.S. agrofuel subsidies for ethanol and biodiesel.[6] In January 2007, President George W. Bush set a policy direction to reduce gasoline consumption by twenty percent in 10 years through a fifteen percent substitution of conventional gasoline with agrofuels and five percent gasoline reduction through increased fuel efficiency.[7] Since setting the "Twenty in Ten" goal, a proliferation of additional federal and international agrofuel support programs have been proposed.

The U.S. set a mandatory agrofuel target called the Renewable Fuel Standard (RFS) in the 2005 Energy Bill. To meet the 2007 "Twenty in Ten" goal, Congress is poised to increase the RFS and U.S. ethanol infrastructure in the 2007 Energy Bill.[8] Even with major expansion of the U.S. agrofuel industry in recent years (from 2004 to 2005, there was a twenty percent increase in agrofuel production),[9] current levels of U.S. agrofuel-based fuel use total only about three and a half percent of total U.S. gas consumption.[10] Agrofuel proponents and critics alike agree that reaching the fifteen percent target will require importing agrofuels from countries where the ethanol industry and infrastructure is more advanced, such as Brazil.[11] To facilitate mass importation of agrofuels, the Bush Administration is currently working to process and import agrofuels via Central America, the Caribbean, and Mexico, where regional trade agreements and bilateral memorandums of understanding circumvent the1973 ethanol import tariff.[12] These anticipated sources mean that sugarcane, corn, and palm oil will serve as the primary means of agrofuel supply for the foreseeable future.

The U.S. will only continue turning to other regions to meet its energy needs through agrofuels. In a March 2007 meeting between President Bush and Brazilian President Lula, Brazil's agrofuel industry and technology were the major topic of discussion, indicating a strengthening alliance for Brazil-U.S. agrofuel import.[13] Other developments include World Bank and Inter-American Development Bank investment in research and policy development for the growth of agrofuel production in Central and South America.[14] The United States' appetite for agrofuels continues to grow, and other countries are seeing opportunities both to produce and consume agrofuels. As these trends continue, the ecological and social footprint of agrofuel consumption will be increasingly felt throughout the world.



Charles O'Rear, USDA

ANALYSIS

THREATS TO FOOD SECURITY AND THE RIGHT TO FOOD

The Right to Food

A fundamental principle of community food security is *access to safe, nutritious, and culturally appropriate food for all people at all times.* Similarly, the International Convention on Economic, Social and Cultural Rights (Article 11) codifies the right to food and governments' obligation to uphold it.[15] The right to food means having regular, permanent, and unrestricted access to food, through the means to produce or to purchase food that is quantitatively and qualitatively adequate. The right to food is already denied to the twenty percent of the world's population who are food insecure.[16] Expansion of agrofuel production will only increase this number and further challenge the values of community food security.

The United Nations Special Rapporteur on the Right to Food, Jean Ziegler, recently expressed great concern to the Human Rights Council that agrofuels are contributing to hunger.[17] Ziegler states, "The sudden, ill-conceived, rush to convert food - such as maize, wheat, sugar, and palm oil - into fuels is a recipe for disaster. There are serious risks of creating a battle between food and fuel that will leave the poor and hungry in developing countries at the mercy of rapidly rising prices for food, land and water. If agro-industrial methods are pursued to turn food into fuel, then there are risks that unemployment and violations of the right to food may result..."[18] Fuel crops use resources - land, water, credit, labor - that could otherwise be dedicated to food production, and cases of violations of the right to food as a result of agrofuel production are already surfacing. Zeigler notes that in Brazil, the aggressive production of ethanol is inhibiting the potential of six million landless people to obtain land and produce food for their families. Similarly, in Africa, "it is becoming clear that whenever agrofuels are on the agenda, the pressure on farmers to leave their land intensifies."[19] The agrofuel industry is even prospecting countries facing famine, such as Ethiopia, where vast tracks of land are now being granted to foreign companies to produce energy for export to Europe.[20]

A Broken System

In the last century, agricultural industrialization and supportive trade and agriculture policies, including the U.S. Farm Bill, have moved in the opposite direction from community-based food systems and the reality of food for all. The dominant agricultural model relies on the market to set prices for commodity foods and, ostensibly, to keep those prices low enough to "feed the world." Yet the continuing prevalence of hunger worldwide clearly shows that the market approach hasn't succeeded in feeding the world, let alone in providing adequate income to sustain family farmers and rural livelihoods.

It is clear that the industrialization of agrofuels is an extension of a failed market approach to agriculture that has and will result in corporate concentration, unstable prices for farmers, and more hunger. Under the current system, agrofuels have become one more end product, like meat or processed foods, competing for the global supply of raw commodities. Increased competition for corn as the raw material for corn-based ethanol, for example, has already resulted in higher corn prices which, combined with high oil prices, has contributed to recent increases in food prices.[21]

Higher retail food prices, however, are not reflected in prices paid to growers, especially for growers who produce raw commodities rather than food crops. Recent price spikes will not create any lasting solution for family farmers, who face skyrocketing costs for fuel, fertilizer, and other inputs, and who are at the mercy of a volatile marketplace in which prices could change at any moment. Historically, due to farmers' lack of market power, each time the prices paid to farmers have risen, input suppliers or buyers have found ways to increase farmers' costs.[22,23] The USDA Economic Research Service (ERS) predicts that agrofuels will have far-reaching effects throughout the U.S. agricultural sector, including increased volatility of crop prices and reduced supplies of crops for food.[24] The U.S. currently only holds a few months' worth of grain reserve as a buffer against production shortfalls, natural disasters or other shocks. This creates an even more precarious situation for farmers and consumers alike. The increased volatility of the U.S. food system spurred by the agrofuels boom is coming at a time when many community food and family farm allies are advocating for just the opposite – *a sound food and farming system that ensures fair, stable prices for producers while maintaining secure access to affordable food for consumers.* Such a system would include infrastructure to move fresh foods to local markets, as well as strategic reserves for storable foods such as grains.[25]

The threat that agrofuels pose to food security is not so much the increases in crop prices as it is the perpetuation of an unregulated market for food commodities that makes no guarantee that everyone will get enough food. The world's poor – both consumers and producers – are the most vulnerable in this market-driven food system.

Increased Dependency on Food Imports

A primary concern impacting the right to food is that the increased land use for agrofuel production will make more people increasingly reliant on food purchases or food aid, as communities will be less able to produce food for themselves.[26] Short-term projections by the UN Food and Agriculture Organization (FAO) calculate that the poorest countries will see their cereal import bill increase by one quarter over the course of a season, spurred by demand for agrofuel.[27] The USDA ERS also predicts that ethanol expansion in the U.S. will impact countries that import U.S. food.[28]

Daniel Moss, Grassroots International

The recent uproar over tortilla prices in Mexico is a dramatic example of the long-term impact of market-driven agricultural trade policies compounded by competition of agrofuels for global commodity supplies. Mexico has become increasingly dependent on U.S. corn since the passage of the North American Free Trade Agreement (NAFTA) in 1994. NAFTA pushed through industry and land reforms that resulted in increased food and agriculture industry concentration, fewer small farmers able to feed themselves, and greater dependency on food imports.[29,30] Given this framework, it came as no surprise this past year that as corn prices increased in the global market, the price for corn tortillas skyrocketed in Mexico. Increased demand for agrofuels is one of the major reasons cited for this price spike, along with speculation and hoarding by agroindustrial monopolies and increased energy costs.[31] Price spikes were an especially great assault on the poor, who most rely on corn tortillas as a staple food.[32]

The tortilla price crisis was particularly alarming because Mexico's capacity for domestic food production has been eroded by the passage of NAFTA, leaving local communities even more food insecure. Throughout the world, development of agrofuel markets exacerbates the erosion of local food production by shifting food supplies and agricultural resources to energy production for the global market. In South Africa, where corn is a critical staple food for the poor, its availability has plummeted and prices have increased because of the country's ethanol push.[33] In Argentina, the agrofuel boom is further driving the production of soy, accelerating the rate at which staple food crops are being replaced with agroindustrial commodities.[34] In Indonesia, the very communities who are producing palm oil for the global agrofuel market cannot afford the same palm oil for their basic cooking needs.[35]

Not only does increased competition for commodities decrease food access for the poor, increased competition coupled with the lack of food reserves make it harder to respond to emergencies such as wars and droughts that require food aid. UN agencies, U.S. government agencies, and prominent charitable food programs[36] have all recently testified to the dramatic increases in food prices as well as shipping costs, with drastic consequences for the amount of food aid available to the hungry of the world.

Second Generation Agrofuels as the Answer?

Agrofuel proponents often claim that any food security threats posed by agrofuels today will be mitigated by the development of "second generation" agrofuels derived from fast-growing trees and grasses in the future. These second generation agrofuels will not undermine food security, they argue, because they will be derived from non-food crops and can be planted on marginal land so as not to compete with food crops for more productive land. What they fail to mention, however, is that these crops, even if they are not food crops per se, will continue to compete for the very same resources as food crops (e.g., water, nutrients, and even land). According to Eric Holt-Giménez of Food First, "The issue of which crops are converted to fuel is irrelevant. Wild plants cultivated as fuel crops won't have a smaller 'environmental footprint.' They will rapidly migrate from hedgerows and woodlots onto arable lands to be intensively cultivated like any other industrial crop, with all the associated environmental externalities."[37] The bottom line is that any industrial agricultural production - whether corn or switchgrass - that attempts to produce large quantities of agrofuel stock for the global marketplace will compromise the resources available for food production.

AGRICULTURAL WORKERS RIGHTS

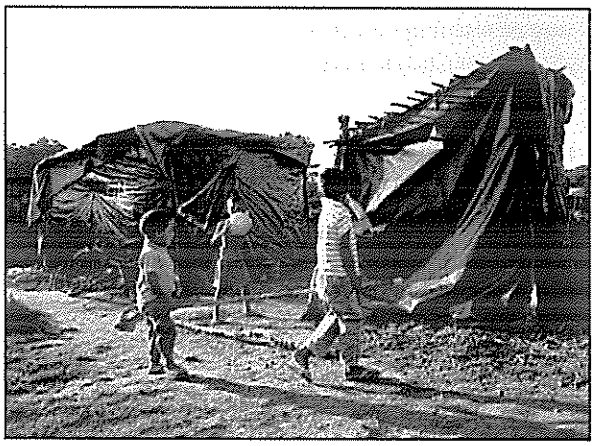
Fundamental principles of community food security are *fair wages, decent working conditions, and sustainable livelihoods for farmers and food system workers alike.* Human rights violations are prevalent in industrial agricultural fields today. As we have seen, the growth of agrofuel production and development will only perpetuate a system that already disregards workers' rights. The cost to human lives and dignity as a result of these human rights violations remains mostly invisible, because the effects are predominantly felt by marginalized people in developing countries.

João Roberto Ripper

Research on the connections between agrofuel production and human rights is in preliminary stages, but initial reports are alarming. The situation on sugarcane plantations, where the majority of Latin American agrofuel biomass is grown, is among the most well-documented. These examples are not exclusively drawn from agrofuel-dedicated plantations, but these cases clearly demonstrate the current reality for many plantation workers - and what more we can expect from increasing agrofuel production.

The majority of agricultural workers are landless migrants from the poorest regions of countries like Brazil, or migrant workers who travel from a poor country to a more agriculturally developed neighbor (e.g., from Nicaragua to Costa Rica). They have little power to negotiate wages, hours, or working conditions, and are often forced to live under the parameters of the plantation since they have no home of their own. Some governments have laws on the books to protect agricultural workers, but they are rarely enforced. In Costa Rica, for example, where Nicaraguans annually migrate for the sugarcane harvest, wages are generally based on tons harvested, and usually do not equal the legally-mandated minimum daily wage.[38] In Brazil, workers in the largest ethanol-producing state, São Paulo, are also paid by the ton, earning $1.20 per ton harvested. Sugarcane plantations set a typical daily quota of ten to fifteen tons, which, harvested by hand, translates to a back-breaking thirty swings of the scythe per minute for eight hours -- and only a minimal monthly salary.[39] While some reports highlight these wages as a good deal for migrant workers given the lack of other options,[40] on-the-ground human rights investigations uncover that most sugarcane workers cannot meet the quotas. Not only do they then not receive their monthly pay, this is often used as grounds for firing, often without retroactive pay.[41]

The most atrocious reports coming from the agrofuel fields are cases of slavery and child labor. In June 2007, Brazil's Ministry of Labor uncovered 1,108 workers living under slave conditions in a sugarcane plantation in the Amazon.[42] An earlier Greenpeace report revealed slave labor on soybean plantations, also in the Amazon.[43] The conditions on these plantations included being paid with food, harvesting equipment, and lodging before being paid wages. Under these conditions, workers remain in debt to plantation owners and are unable to earn their way out of debt. In Bolivia, the sugarcane industry is notorious for using child labor on plantations. One study found that 7,000 children and adolescents work in the fields. The youngest are categorized as "helpers," while adolescents cut sugarcane up to twelve hours a day, sometimes without pay.[44]

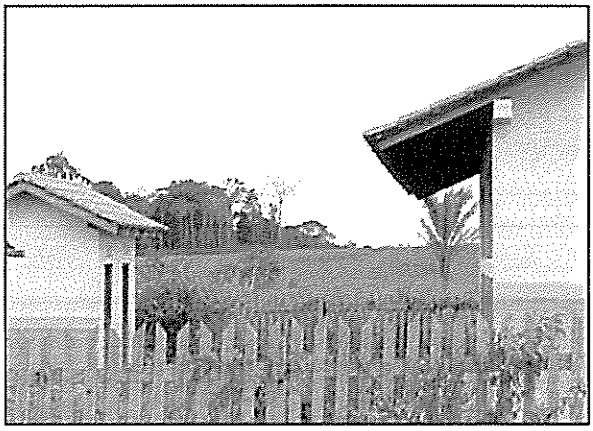


Andy Lin

The working and living conditions for agrofuel workers are extremely harsh with regards to health. The standard method of sugarcane harvest is to burn the fields before cutting the cane. The resulting poor air quality has led to cases of asthma, bronchial illnesses, headaches, burns and dehydration in both workers and their families living on or near the plantation.[45] A Brazilian worker describes the work of cutting sugarcane, saying, "By the end of the day, your entire body hurts so much you think you are going to die."[46] From 2005 to 2006, 17 workers in Brazil died from pure exhaustion, and in 2005, 450 deaths of Brazilian sugarcane workers were officially reported from assassinations, accidents, health-related conditions and burns. Some estimates indicate that between 2002 and 2006, 1,300 sugarcane workers died from these combined causes.[47]

COMMUNITY ECONOMIC DEVELOPMENT

A critical component of community food security is *"a sustainable food system that maximizes community self-reliance and social justice."* This means a food system that is *adapted to local ecology and culture; is responsive to diverse community needs; and fosters equitable access to healthy, culturally appropriate food.* These principles are currently being violated by an extractive food and fuel economy in which wealth and resources are drained from communities to serve corporate interests. Agrofuels are often presented as a way of rescuing an industrial agriculture-based economy that is deeply broken. Yet the commodity markets themselves are broken. Simply selling more grains will not reverse these failures, nor will it bring lasting prosperity to rural communities in the U.S. or abroad.



Corrina Steward

Rural Community Survival

Commodity markets are exceptionally efficient at extracting wealth from rural areas. In the U.S., farmers have doubled productivity since 1969, while net farm income fell from $40 billion to $6 billion (in 2005 dollars).[48] Federal farm subsidies help to compensate for these losses, but they do not solve the underlying problems. Faced with difficult circumstances, farmers are often encouraged to take on more debt than local credit sources can sustain. When farmers pay interest on these loans, they ship far more dollars out of the community than subsidies can replace.[49] Although some farms may prosper, the region as a whole is weakened. As a result, rural communities find themselves depleted by commodity markets. Already, ethanol factories have started to close, ironically squeezed by rising prices of corn and fossil fuel on one side and the lack of distribution infrastructure on the other.[50]

The situation is similar internationally. Agrofuel production offers little benefit or foundation for rural economies and communities. Brazil is one of the best case studies for understanding what happens when industrial agriculture becomes the basis for a rural economy. Decades of large-scale agricultural production have led to increasing concentration of land ownership in a few hands and massive exodus of small farmers. The expansion of agrofuel production is causing even more dramatic disappearances -- not only of farmers, but of entire rural villages and communities. In the Amazon, soy plantations are buying out whole communities.[51] In northeast and southern Brazil, expansion of sugarcane plantations is plowing through rural areas, leaving no sign of the pre-existing communities except for community members that end up working on the plantations.[52] In Colombia, the government has given away large tracts of indigenous Afro-Colombian peasants' land to paramilitary group for the production of palm oil.[53] Such exploitive practices, of course, are not new. The point is that increased industrial agrofuel production only exacerbates them, in the absence of democratic channels for local resource planning.

Agrofuels further skew the balance of agricultural development towards large producers who do not feed the local community. Local transactions that could cycle resources and wealth within rural locales are not favored by existing economic infrastructure - including tax policies, lending, and distribution channels. In Brazil, programs that encourage family

farmers to grow agrofuel crops have been touted as an example for the U.S. to follow. Evidence shows, however, that family farmers in Brazil would rather have government support for growing food.[54]

Some agrofuel proponents state that agrofuels could spell a real win for developing countries if they result in less "dumping" of agricultural commodities into local markets, as corn and soybeans are diverted for fuel production.[55] The fact is that much more would be needed to renew rural economies devastated from years of exploitative agricultural policies, and agrofuels only make a bad situation worse. National agricultural markets in Mexico, for example, are so decimated from years of dumping under the North American Free Trade Agreement, that becoming food self-reliant would require investment in agricultural development for food production and a reversal of trade policies. This is a very unlikely scenario, particularly when agricultural investment dollars are instead growing for agrofuel production and decreasing for food production. The real issues are the extractive economic model and continued fluctuation of commodity prices, both of which will only continue under the new agrofuel markets,[56] that prevent family farmers around the world from having secure livelihoods.

Agrofuel Industry and Corporate Concentration

Industrial agrofuel development takes communities off the path toward self-reliance by placing decision-making power in the hands of those outside the community. Governments and corporations are investing billions of dollars in agrofuel production, and food and energy companies are forming new partnerships. According to Miguel Altieri, University of California at Berkeley professor, these new food and fuel alliances are in a position to decide the future of the world's agricultural landscapes. Altieri explains that the agrofuel boom consolidates corporations' control over our food and fuel systems and allows them to decide what will be grown, the modes of production, and the global supply of food and agrofuel. Corporations' concern will not be for the communities invisible to the market, and the result will be more rural poverty, environmental destruction, and hunger.[57]

Corrina Steward

The ultimate beneficiaries of the agrofuel revolution will not be rural communities, small farmers, or consumers, they will be major grain merchants including Cargill, ADM and Bunge; petroleum companies like BP, Shell, and Chevron; and biotech corporations such as Monsanto, DuPont, and Syngenta. We see the move towards corporate consolidation already with processing facilities. While 34% of U.S. ethanol plants are currently owned by farmer associations, 88% of newer facilities are owned by large corporations.[58] Clearly, small farmers are not the main beneficiaries of the agrofuels trend, as the agrofuels industry would have us believe. Instead, the very same megacorporations that the community food security movement has long been up against are now behind this agrofuel push - and new, powerful alliances are forming across industry sectors to promote the agrofuel agenda.

ENVIRONMENT: THE EROSION OF RESOURCES FOR COMMUNITY FOOD SECURITY

The community food security movement is *dedicated to good food, clean water, fertile soil, healthful crops and sustainable agricultural practices.* These values can only be realized through *a food system based on diverse, agroecological, community-based family farming and small-scale agriculture.*

Agrofuels are promoted as environmentally-friendly "green" technology. But while there is proven technology to convert biomass to energy, there are major challenges to implementing such technology in a way that conserves resources and has a positive environmental impact. The industrial agrofuel model is not meeting those challenges.

Linda Mason

An analysis of Brazil's expanded ethanol program demonstrates that continuing Brazil's program will create a social and ecological disaster.[59] Agrofuel production simply expands the number of hectares in large-scale industrial agriculture production, and leaves intact the underlying social problems of landlessness, hunger, and joblessness. Industrial agriculture increases chemical inputs, soil erosion, water use, and pollution. Ultimately, more acreage in industrial agrofuel production will lead to greater environmental degradation - further contributing to social problems and poverty.

Impacts on Community Food Resources

Water depletion, soil erosion, contamination by genetic modification, and pollution are just some of the specific ecological crises that will be exacerbated by agrofuel production.

Forty percent of the world's population currently experiences water shortages. Aquifer depletion, drought, and dry riverbeds are challenges many communities already face, while water needs continue to grow worldwide. Growing crops for fuel and agrofuel processing will cause an even greater strain on water resources. The International Water Management Institute analyzed the impact of agrofuels on water availability and found that in India and China, the increasing production of sugarcane and corn for ethanol is resulting in water transfers from water-abundant to water-scarce areas. The study concludes, "These [water transfer] projects are controversial because of their costs, environmental impacts, and number of displaced people by big dams. Unless other less water-intensive alternatives are considered, biofuels are not environmentally sustainable."[60]

Using biomass as a fuel source - which can mean removing whole-plant top growth from fields - has the potential to quickly deplete soil productivity if not replaced by other organic matter. When high prices cause more acres to be planted with year-round monocultures instead of healthy crop rotations, agrofuel production will prove damaging to long-term soil productivity. According to the Ontario Ministry of Agriculture, "Organic matter is key to soil productivity. If we allow it to be depleted, there might be a short-term financial gain, but we'll be faced with compaction, poor soil structure and many other long-term soil quality issues."[61]

Increased agrofuel production will further threaten food supply through expansion of so-called "green

deserts" - huge swaths of land planted with a single crop: one which is usually a sterile hybrid, and often genetically modified. In the last century, 75% of the world's crop diversity has been lost, primarily due to large-scale production of a handful of crops.[62] Further land conversion to production of agrofuel monocultures accelerates the loss of genetic diversity in our food stocks. Crop diversity, especially in-situ, is important for buffering the impacts of the crop diseases, pests, and climate change on local and global food supplies.

There are already grave concerns over the safety of genetically modified (GM) food crops. The agrofuel boom is a major opportunity for the biotech industry to further expand its reach over the agricultural sector, and biotech companies are in the midst of developing and patenting a host of new GM agrofuel crops to complement what is already being grown in the fields. For example, Monsanto plans to sell a GM maize variety with high starch content for ethanol production and a GM sugarcane variety resistant to its RoundUp Ready pesticide.[63] Biotech companies are also pushing to lift a ban on genetic seed sterilization, more commonly known as Terminator Technology, in the name of "containment" of GM crops to prevent genetic contamination. Furthermore, the promise of cellulose-based "second generation" agrofuels is being built around the "promise" of genetically-modified microbes and synthetic biology, since current conversion processes are not efficient enough to be commercially viable.[64,65]

Environmental Justice

The health of all humans is tied inextricably to the health of the environment, but low-income communities are often most vulnerable to repercussions of environmental degradation. For reasons that mirror the controversial situating of sewage treatment plants or oil refineries in low-income communities, the agrofuel industry has now come under scrutiny for environmental justice concerns. Both existing and new ethanol refineries are predominantly located in low-income communities.[66] Ethanol plants are in the top 20% of the worst U.S. facilities for emissions of recognized carcinogens. The refining process releases carbon monoxide, sulfur dioxide, particulate matter, fine particulate matter, volatile organic compounds, and nitrogen oxide. The resulting smog causes respiratory damage, asthma, and cancer.[67,68] As new findings are just beginning to emerge in this area, new plants and several existing ones are already meeting increased resistance by those citizens fighting for environmental justice.[69]

Food Security vs. Climate Change?

Climate change is a serious community food security concern. Real solutions will be required to alleviate the predicted impacts on food production, especially in vulnerable regions of the global South. Agrofuels are promoted as part of the solution to mitigate climate change. However, there is still a great deal of debate over the net energy balance of agrofuels - some studies have found that agrofuels (particularly corn ethanol) have a net energy loss due to inputs and processing,[70] while others have showed an energy gain.[71] Even in the latter studies, however, net energy gain is minimal, demonstrating that agrofuels are not going to eliminate our reliance on carbon-burning fossil fuels any time soon.

Industrial agrofuel production requires major agricultural inputs including energy-intensive fertilizer and pesticides.[72] Planting and harvesting are done by machinery powered by conventional fuels. Converting plant biomass into liquid fuel produces significant greenhouse gas emissions,[73] while transport to markets further raises fossil fuel use. Furthermore, as carbon-capturing forests are felled to make way for fuel crops, carbon emissions will increase, not decrease.[74] Increased deforestation not only contributes to climate change, it also destroys a vital community food resource.

CONCLUSIONS AND RECOMMENDATIONS

Today, the industrial production of agrofuels is not aligned with community food security nor is it sustainable.[75] Agrofuels are another step in the industrial-corporate transformation of our energy and food systems that further takes control of food and fuel resources away from communities. The principles of community food security imply that fuel is not a priority over food, and governments' actions to make it so undermine the world's hungry and struggling rural communities. Unless the agrofuels market builds new wealth that stays in rural communities, strengthens the social fabric of communities and builds greater resilience for an uncertain future, rural communities will gain very little from agrofuel production.

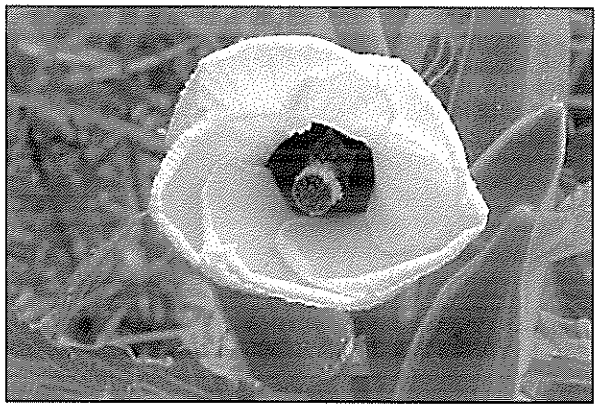
There are some proposals that insist that increasing the use of agrofuels, with safeguards to protect the environment and family farmers, will bring the possibility of a rural revitalization (primarily in the U.S.).[76] This might be true in an ideal agrarian context, but that is not the reality today. Many conditions and policies would be needed to allow agrofuels to be a foundation for rural revitalization in the U.S., including fair prices that actually go to farmers and farm workers; a national system of grain reserves; local use of feedstock and fuel; and local ownership of processing plants. This scenario is just as far from reality in the international context.

MST-MA

The values of community food security and sustainable energy are not opposed; in fact, the two are very much interrelated.[77] Although this report has focused on industrial-scale agrofuels, it is important to point out that many communities have taken their energy needs into their own hands. New ways of integrating sustainable energy and agriculture that benefit community food security are surfacing, from small farmer settlements in Brazil intercropping energy and food crops, to community farms in the U.S. using locally made biodiesel for farm machinery. Small farmers, indigenous peoples, and environmentalists are using these examples to further explore the connections between sustainable energy, food security, and rural development. A powerful example from the global South is a proposal for a new sustainable development paradigm that combines food sovereignty and energy sovereignty - the democratization of both food and energy systems.[78]

Food sovereignty and the building of local food systems can do more for climate change mitigation and feeding people than industrial agrofuel production can.[79] Around the world, small farmers are calling for local agricultural development that would bolster small-scale production of sustainable energy for local use under local control and prioritize food in diverse, agro-ecological farming systems. Creating and supporting local food systems plays a vital role in local development (including for sustainable energy). If rural communities could make policy for themselves, the most rational way for them to invest would be in creating green energy systems that fuel local food production. This would reduce living costs and build greater self-reliance. Further community benefits would include reducing the costs of shipping fuels great distances, and removing the need to defend foreign production and distribution channels. The next steps needed to counter the tremendous impact of agrofuels on community food security

include short-term changes to stave off immediate damage, and longer-term shifts in rural development and agricultural policies that work towards a community food security vision. Immediate action is needed to soften the blow of U.S. agrofuel policy on communities in the U.S. and around the world. Alliance building and organizing with global South and North networks and movements are needed to bring about future shifts in sustainable food and energy systems. Lastly, participatory and transparent dialogue is needed to bring critical issues like energy consumption into the agrofuel discussion. Below are key actions that address this range of recommendations.



Corrina Steward

What you can do to support community food security and sustainable energy:

- Sign your group/organization on to the moratorium on global agrofuels trade. For more information and to sign on, contact the Rainforest Action Network: *www.ran.org*.
- Tell Congress that you do not support policies (e.g., subsidies, targets, and other measures) that increase the production of industrial agrofuels.
- Tell Congress that you want real market reforms for family farmers, including support for fair prices for food and loosening of agribusiness' control over our food and fuel markets.
- Resist the threat to the hungry from increasing food prices and dwindling food supplies by advocating for price stabilization and national food reserves.
- Support sustainable agricultural practices that reduce energy consumption. Promote more localized food systems to reduce food mileage.
- Join with ecojustice and family farm movements throughout the world, such as the Movement of Landless Rural Workers (MST) in Brazil and the Via Campesina global peasant network, that are fighting back against agrofuel monocultures.
- Publicize the conflict of interest when agribusiness corporations gain greater control of the fuel industry, and vice versa.
- Organize your community to resist corporate control of local food and energy resources. Join movements calling for enforcement and strengthening of anti-trust and anti-monopoly measures.
- Focus the energy debate on conservation and energy consumption rates. No alternative to fossil fuels will be able to meet current and future energy demands if we do not decrease our energy usage altogether and put a major emphasis on conservation.

A broad network of social and environmental movements is working hard to make the vision of localized, community-based food systems a reality. If we do not buffer communities from the effects of agrofuel production, their efforts will be greatly compromised. Immediate action is needed to prevent governments around the world from setting and implementing targets requiring increased production and importation of agrofuels. It is time to bring the attention of governments and the public back to the importance of true food and energy security. It is time to develop real and sustainable solutions rather than painful policies that hurt farmers, the environment and the poor and hungry.

ENDNOTES

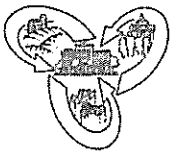
[1] See, for example, Mark Muller, et al., "Food Versus Fuel in the U.S." (Minneapolis, MN: Institute for Agriculture and Trade Policy, September 2007).
[2] Anne C. Bellows and Michael W. Hamm, "U.S.-Based Community Food Security: Influences, Practice, Debate," Journal for the Study of Food and Society 6.1 (2002): 31-44. In this piece, Bellows and Hamm provide a framework for the principles and practices of community food security, which are referenced throughout this report. This report also draws from the language of the Community Food Security Coalition, available at *www.foodsecurity.org*.
[3] Henry Ford's vision for the Model T was based upon the idea that ethanol would be the fuel of choice; he saw his automobiles as a source of rural income as well as urban. Moreover, ethanol was frequently used as an octane enhancement to gasoline even when gas became the paramount fuel. In the 1920s, however, tetraethyl lead was substituted, since it cost one penny less per gallon.
[4] Hamza Hasan, "Overview of U.S. Ethanol Market," Food First/Institute for Food & Development Policy, September 2007 *<http://www.foodfirst.org/node/1723>*.
[5] Ronald Steenblik, "Biofuels - At What Cost? Government support for ethanol and biodiesel in selected OECD countries" (Geneva, Switzerland: Global Subsidies Initiative of the International Institute for Sustainable Development. September 2007).
[6] This is an estimate of combined state and federal subsidies. D. Koplow, "Biofuels - At What Cost? Government support for ethanol and biodiesel in the United States" (Geneva, Switzerland: Global Subsidies Initiative of the International Institute for Sustainable Development. October 2006).
[7] The White House, *Twenty in Ten: Strengthening America's Energy Security* (Washington: GPO, October 2007) *<http://www.whitehouse.gov/stateoftheunion/2007/initiatives/energy.html>*.
[8] Sholnn Freeman, "House Passes Bill to Support Renewable Energy," Washington Post, 05 August 2007: A09.
[9] Steenblik.
[10] Soyatech, "Ethanol Facts," September 2007 *<http://www.soyatech.com/ethanol_facts.htm>*.
[11] According to a letter by environmental, agricultural and international development organizations to House of Representatives Speaker Nancy Pelosi, conversion of over thirty percent of current U.S. corn production would be required to meet the 15 billion gallons of corn ethanol that is slated to contribute to the fifteen percent agrofuel consumption goal. The Borneo Project, et al., Letter to Speaker Pelosi, October 9, 2007, 04 December, 2007 *<http://www.foe.org/biofuel/RFS_Letter_Pelosi%20FINAL%2010oct07.pdf>*.
[12] Ben Lilliston, "CAFTA's Impact on U.S. Ethanol Market" (Minneapolis, MN: Institute for Agriculture and Trade Policy, June 2005).
[13] The White House, "President Bush and President Lula of Brazil Discuss Biofuel Technology," March 2007, September 2007 *<http://www.whitehouse.gov/news/releases/2007/03/20070309-4.html>*.
[14] Laura Carlsen, "The Agrofuels Trap," Americas Program, 11 September 2007, October 2007 *<http://americas.irc-online.org/am/4535>*.
[15] Office of the High Commissioner for Human Rights, *International Covenant on Economic, Social and Cultural Rights.* Adopted and opened for signature, ratification and accession by General Assembly. Resolution 2200A (XXI) of 16 December 1966, 06 December 2007 *<http://www.unhchr.ch/html/menu3/b/a_cescr.htm>*.
[16] Food and Agriculture Organization of the United Nations, *State of Food Insecurity in the World 2006* (Rome: UN FAO, 2006), 06 December 2007 *<http://www.fao.org/docrep/009/a0750e/a0750e00.htm>*.
[17] "Council Discusses Report on Democratic Republic of Congo, Reviews Mandates on Right to Food, Rights of Indigenous People," United Nations, 26 September 2007, 06 December 2007 *<http://www.unhchr.ch/huricane/huricane.nsf/view01/04DF09111A33746AC1257362005247 7C?opendocument.>*.
[18] Jean Ziegler, "Report of the Special Rapporteur on the right to food." United Nations General Assembly, Sixty-Second Session. August 22, 2007.
[19] Grain, "The New Scramble for Africa," *Seedling* July 2007: 42.
[20] Grain, 43
[21] Richard Doornbosch and Ronald Steenblik, Round Table on Sustainable Development "Biofuels: Is the Curse Worse than the Disease?" (Rome: Office of the General Secretariat, OECD, 2007), 06 December 2007 *<http://www.rsc.org/images/biofuels_tcm18-99586.pdf>*.
[22] George Naylor, "Farm Bill Ignores Dire Need for a Grain Reserve," *Minuteman Media*, 10 October 2007, 06 December 2007 *<http://www.minutemanmedia.org/NAYLOR%20101007.htm>*.
[23] Lisa Hamilton, "Ethanol Booms, Farmers Bust," *AlterNet*, 25 May 2007, 06 December 2007 *<http://www.alternet.org/environment/52073/>*.
[24] Paul C. Westcott, "Ethanol Expansion in the United States," *ERS Outlook*, FDS-07D-01 2007.
[25] Naylor.
[26] "Council Discusses Report on Democratic Republic of Congo, Reviews Mandates on Right to Food, Rights of

Indigenous People," United Nations, 26 September.
[27] "Crop Prospects and Food Situation," Food and Agriculture Organization. No. 3, May 2007, 06 December 2007 <ftp://ftp.fao.org/docrep/fao/010/j9940e/j9940e00.pdf>.
[28] "U.S. Ethanol Expansion Driving Changes throughout the Agricultural Sector," *Amber Waves* September 2007, 06 December 2007 <http://www.ers.usda.gov/AmberWaves/September07/Features/Ethanol.htm>.
[29] Victor M. Quintana S., "Biofuels and Small Farmers," Americas Program Policy Brief (Washington, DC: Center for International Policy, August 29, 2007), 06 December 2007 <http://americas.irc-online.org/am/4510>.
[30] A. Nadal and T. Wise, "The Environmental Costs of Agricultural Trade Liberalization: Mexico-U.S. Maize Trade Under NAFTA" (Massachusetts: Working Group on Development and Environment in the Americas, June 2004) 06 December 2007 <http://ase.tufts.edu/gdae/Pubs/rp/DP04NadalWiseJuly04.pdf>.
[31] Luis Hernández Navarro, "The New Tortilla War," Americas Program Special Report (Silver City, NM: International Relations Center, 07 May, 2007), 06 December 2007 <http://americas.irc-online.org/am/4205>.
[32] Ibid.
[33] Grain, 40.
[34] Biofuelwatch et al., "Agrofuels: Toward a reality check in nine key areas," June 2007, 06 December 2007 <http://www.biofuelwatch.org.uk/docs/agrofuels_reality_check.pdf>.
[35] Almuth Ernsting, "Agrofuels in Asia: Fueling Poverty, Conflict, Deforestation, and Climate Change," *Seedling* July 2007: 28.
[36] Including: FAO; World Food Program; USAID; USDA; Catholic Relief Services; Food for the Hungry; and CARE. Community food security advocates, of course, favor food aid in the form of cash payments to buy food from local farmers, rather than the dumping of subsidized U.S. commodity crops which undermine local farmers in recipient countries.
[37] Eric Holt-Giménez, "Biofuels: Myths of the Agro-fuels Transition" *Food First Backgrounder* 13(2) Summer 2007.
[38] Ibid.
[39] Ibid.
[40] J.K Bourne, Jr., "Green Dreams," *National Geographic Magazine* October 2007: 38-59.
[41] Stan Lehman, "Sugar cane's bitter secret in Brazil," AP, 17 October, 2007, November 2007 <http://www.miamiherald.com/127/story/269962.html>.
[42] Pastoral Land Commission, Network for Social Justice and Human Rights. "Agroenergy: Myths and Impacts in Latin America." October 2007, 06 December <http://www.focusweb.org/images/stories/pdf/agro_fuels_in_la_english.pdf>.
[43] Greenpeace International, "Eating up the Amazon," 06 April 2006, 06 December <http://www.greenpeace.org/raw/content/international/press/reports/eating-up-the-amazon.pdf>.
[44] Pastoral Land Commission, Network for Social Justice and Human Rights.
[45] Ibid.
[46] Lehman.
[47] Pastoral Land Commission, Network for Social Justice and Human Rights.
[48] Statistics for this comparison accessed in 2006 from the USDA Economic Research Service (http://www.ers.usda.gov/Data/AgProductivity/) and the U.S. Department of Commerce Bureau of Economic Analysis (http://www.bea.gov/regional/reis/).
[49] Ken Meter, "Evaluating Farm and Food Systems in the U.S.," in Bob Williams and Iraj Imam, eds. (2006). *Systems Concepts in Evaluation: An Expert Anthology*. American Evaluation Association monograph published by EdgePress of Inverness, 146. Data source: USDA Economic Research Service (2006) <www.ers.usda.gov>.
[50] C. Krauss, "Ethanol's Boom Stalling as Glut Depresses Price," New York Times. 30 September 2007.
[51] Corrina Steward, "From colonization to 'environmental soy': A case study of environmental and socio-economic valuation in the Amazon soy frontier." *Agriculture and Human Values* (2007): 24:107-122.
[52] S. Araujo. Personal communication with Movimento Pequeno Agriculturas, Grassroots Brazil program trip. June 2007.
[53] "Colombia oil palm biodiesel plantations: A 'win-win' development strategy? Or 'lose-lose' attack on Afro-Colombians' Food Sovereignty?," *Food First Backgrounder*. Winter 2007.
[54] Corrina Steward. Personal communication with Maisa Mendoca, April 2007.
[55] Muller et al.
[56] C. Krauss, "Ethanol's Boom Stalling as Glut Depresses Price," *New York Times*. 30 September 2007.
[57] Miguel Altieri and Elizabeth Bravo, "The Ecological and Social Tragedy of Crop-based Biofuel Production in the Americas," Food First/Institute for Food & Development Policy, April 2007, 06 December <http://www.foodfirst.org/node/1662>.
[58] Hasan.
[59] Isabella Kenfield, "Brazil's Ethanol Plan Breeds Rural Poverty, Environmental Degradation" (Silver City, NM: International Relations Center, March 6, 2007), 06 December 2007 <http://americas.irc-online.org/am/4049>

[60] Charlotte de Fraiture, et al. "Biofuels and Implications for Agricultural Water Use: Blue impacts on green energy." (Colombo, Sri Lanka: International Water Management Institute. 2007) 06 December 2007 <http://www.iwmi.cgiar.org/EWMA/files/papers/Biofuels%20-%20Charlotte.pdf>.
[61] Tom Button, "Cheap biofuel feedstocks take a toll on soil health," *The New Farm*, 13 September 2007, 06 December 2007 <http://www.newfarm.org/features/2007/0907/biofuels/button.shtml> (first appeared in www.agcanada.com).
[62] C. Picone and D. Van Tassel, "Agriculture and Biodiversity Loss: Industrial Agriculture," Niles Eldredge (Ed.), *Life on Earth: An Encyclopedia of Biodiversity, Ecology, and Evolution* (2002): 99-105, September 2007 <www.landinstitute.org>.
[63] Steve Suppan,"Patents Taken for Granted in Plans for a Global Biofuels Market," Institute for Agriculture and Trade Policy, October 2007.
[64] Ibid.
[65] Eric Holt-Giménez, et al., "The Agrofuels Boom: The answer to global warming, energy independence, and rural poverty?," Food First/Institute for Food and Development Policy, Draft, 2007.
[66] See www.energyjustice.net for existing and proposed ethanol refinery plants in the U.S.
[67] Ibid.
[68] Paul Wilkinson, et al., "A global perspective on energy: health effects and injustices," *Lancet* 370(2007): 965-78.
[69] Holt-Giménez, et al.
[70] David Pimentel and Tad W. Patzek, "Ethanol Production Using Corn, Switchgrass, and Wood; Biodiesel Production Using Soybean and Sunflower," *Natural Resources Research*, March 2005, 06 December 2007 http://petroleum.berkeley.edu/papers/Biofuels/NRRethanol.2005.pdf.
[71] Hosein Shapouri and Paul Gallagher, "USDA's 2002 Ethanol Cost-of-Production Survey," United States Department of Agriculture, 2005, 03 December 2007 http://www.usda.gov/oce/reports/energy/USDA_2002_ETHANOL.pdf.
[72] Jason Hill et al., "Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuel," *Proceedings of the National Academy of Sciences of the United States of America* 103.30 (25 June 2006): 11206-11210.
[73] Pimentel and Patzek.
[74] Liz Marshall and Suzie Greenhalgh, "Beyond the RFS: The Environmental and Economic Impacts of Increased Grain Ethanol Production in the U.S." *WRI Policy Note* (Energy: Biofuels No.1, September 2006) 06 December 2007 <http://www.nelson.wisc.edu/outreach/biofuels/readings/beyond_rfs.pdf>.
[75] Sustainability is widely accepted as development which meets today's needs without compromising the ability of future generations to meet their own needs. In the case of industrial agrofuels, it's clear that it will compromise future generations' ability to meet their land, water and food needs.
[76] Jim Kleinschmidt, "Biofueling Rural Development: Making the Case for Linking Biofuel Production to Rural Revitalization," *Policy Brief No. 5* (Durham, NH: Carsey Institute, Winter 2007) 06 December 2007 <http://www.agobservatory.org/library.cfm?RefID=96834>.
[77] R. Anil Cabraal, et al., "Productive Uses of Energy for Rural Development," *Annual Review of Environment and Resources* 30 (2005):117-44.
[78] Via Campesina-Brazil, et al., "For Food and Energy Sovereignty: Social organizations, movements and pastorals position on agroenergy in Brazil" (Parana, Brazil: 1st National and Popular Conference on Agroenergy in Brazil, 31 October 2007).
[79] Via Campesina, "Small Scale Sustainable Farmers are Cooling Down the Earth" (Jakarta, Indonesia: La Via Campesina, 9 November 2007) 06 December 2007 <http://www.viacampesina.org/main_en/index.php?option=com_content&task=view&id=457&Itemid=37>.
[80] Ibid.

This publication is produced by the Community Food Security Coalition and WHY.

COMMUNITY FOOD SECURITY COALITION



The Community Food Security Coalition (CFSC) is a North American organization of social and economic justice, environmental, nutrition, sustainable agriculture, community development, labor, anti-poverty, anti-hunger, and other groups. The Coalition has 325 organizational members in 41 states, 4 Canadian provinces and the District of Columbia. We are dedicated to building strong, sustainable, local and regional food systems that ensure access to affordable, nutritious, and culturally appropriate food to all people at all times. We seek to develop self-reliance among all communities in obtaining their food and to create a system of growing, manufacturing, processing, making available, and selling food that is regionally based and grounded in the principles of justice, democracy, and sustainability.

MAIN OFFICE:
PO Box 209
Venice, CA 90294
Ph: (310) 822-5410
Fax: (310) 822-1440
www.foodsecurity.org

WASHINGTON, DC OFFICE:
110 Maryland Ave NE #307
Washington DC 20002
Ph: (202) 543-8602
Fax: (202) 543-0978

CFSC INTERNATIONAL LINKS COMMITTEE

The International Links Committee works to connect the Community Food Security Coalition to its food security allies around the world through initiatives for food security and food sovereignty, fair trade policy, and sustainable agriculture. The Committee seeks to share US community food security efforts with our international allies; to communicate international perspectives to the US movement; and to place US community food security work in an international context. The Committee is a space for effective collaboration among CFSC members working on international issues. For more information and to get involved, visit www.foodsecurity.org or contact christina@worldhungeryear.org.

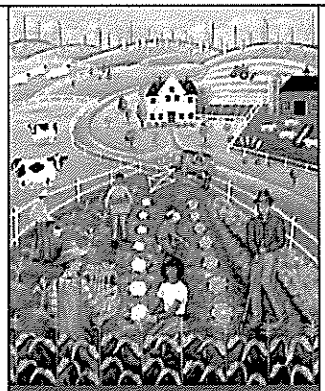
WHY

why. FINDING ANSWERS FOR HUNGER AND POVERTY

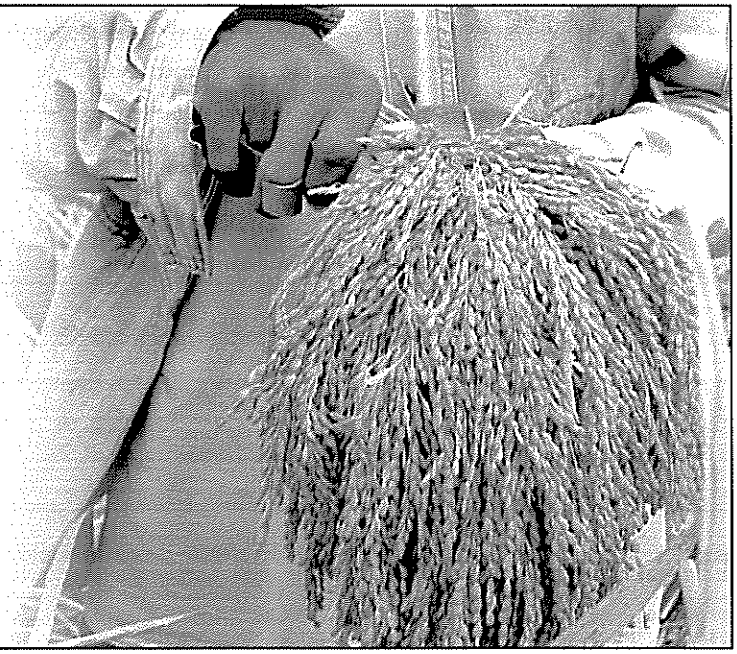
Founded in 1975, WHY is a leader in the fight against hunger and poverty in the United States and around the world. WHY is convinced that solutions to hunger and poverty can be found at the grassroots level. WHY advances long-term solutions to hunger and poverty by supporting community-based organizations that empower individuals and build self-reliance, i.e., offering job training, education and after school programs; increasing access to housing and healthcare; providing microcredit and entrepreneurial opportunities; teaching people to grow their own food; and assisting small farmers. WHY connects these organizations to artists, funders, media and legislators. WHY is a not-for-profit registered 501(c)(3) organization founded by radio talk show host and present Executive Director Bill Ayres, and the late singer-songwriter Harry Chapin.

505 Eighth Avenue, Suite 2100
New York, NY 10018
1-800-5-HUNGRY
www.worldhungeryear.org

For additional copies contact: Christina Schiavoni at christina@worldhungeryear.org, or go to the Community Food Security Coalition's website at *www.foodsecurity.org*, publications section.



COMMUNITY FOOD
SECURITY COALITION
PO Box 209
Venice, CA 90294
Ph: (310) 822-5410
Fax: (310) 822-1440
www.foodsecurity.org



Testimony of Richard Nelson before the Committee on Environmental Protection
February 25, 2009, 10 a.m.

Good morning/afternoon Chairman Gennaro and members of the committee. Thank you for the opportunity to come before you today and offer testimony concerning one important issue currently facing the biodiesel industry.

My name is Richard Nelson and I currently serve with the Center for Sustainable Energy at Kansas State University. In addition, I am principal of Enersol Resources, a private energy and environmental consulting firm. I have been associated with applied research and assessment of bioenergy feedstocks and land base utilization for over 19 years and have served as a consultant to the National Renewable Energy Laboratory, Oak Ridge National Laboratory, Idaho National Laboratory, the Western Governors' Association, and a variety of private entities, mostly focusing on bioenergy feedstock energy and environmental assessment, in particular sustainable biomass production.

My purpose before this committee is to address issues related to land use for biofuel production, specifically those related to biodiesel. First of all, I would like to state upfront that converting rainforests for production of agricultural commodity crops of any kind makes absolutely no sense whatsoever from many different perspectives. The same can certainly be said of "removing" land and feed grains and/or oilseeds from the market for biofuel production at the expense of feeding the world's population. Without question, preserving the natural resources and environmental and ecological services of our land is critical to the future of our society.

There are two important points I wish to make here at the beginning of my presentation that have direct bearing on the issue of land use change, direct and indirect. First, in the public discussion of indirect land use, land is, for the most part, perceived as basically homogeneous; by all means it certainly is not. Land bases differ by their individual chemical and physical characteristics as well as local climate conditions (precipitation, sunlight, etc.), all of which affect how they are utilized and managed which coupled together can make a world of difference in their sustained productivity. Within the larger discussion of biofuels development, including land use, it's time to get very real about exactly what land bases we are considering in order to get a clearer picture about sustainable biodiesel development. This has not really been done on a refined regional or localized scale.

The second point I would like to make, which builds upon the previous one, involves how I believe the biodiesel industry, and in particular, soybean-based biodiesel, is being unfairly painted as carrying a large burden of unsustainable global land management. No other industry has been held accountable by regulators for actions that occur in the global economy beyond the control of its operators. So I ask the following question: To what extent should biofuels be burdened with some or all other factors concerning land use change and global land management? To start with, I believe it's vitally important to establish what actually constitutes a "baseline" condition regarding the global food, feed, and fiber supply (e.g., without US and/or global biofuel production) and their affects on global land management, pro and con. This is an extremely important point I believe and one that absolutely must be addressed. For example, Michael Wang of Argonne National Laboratory pointed out the Searchinger article wasn't clear

what baseline, if any, was used in the analysis. This type of data is absolutely critical as we discuss sustainable biofuel development. Understanding local agronomic, economic, and political factors affecting land use decisions and the factors that lead to land degradation and land loss via unsustainable farming is crucial. As an example of this, a recent paper suggests ineffective and impoverished economies, failed political systems, lack of agricultural technology transfer to developing countries, and ill-conceived agricultural and trade policies are the real culprits.[1] This is definitely something to consider.

On the more technical side, due to my work in biofuel production and land base sustainability, four areas immediately come to mind that need to be both considered and deserve further analysis and research.

Yield improvements are extremely important to sustainable biofuel feedstock production and have a direct impact upon land base utilization. From 1990 to 2007 US soybean yields increased from 34.1 to 41.7 bushels per acre (a 22.3% increase) and are expected to increase **as much as 10 percent in the next two years** due to new seed varieties. Gaining productivity on the same acres/land base will only help increase the sustainability of oil and meal production from soybeans.

New crops (new to the biofuel world) such as high-yielding oilseeds like Camelina, Brassica Juncea, and others may provide sustainable sources of oils with less energy inputs thereby increasing the energy-profit ratio (renewable energy output versus fossil fuel input), provide environmental enhancements such as improved soil tilth to the land bases upon which they are grown, and also potentially provide a greater return to the rural landowner. In addition, the hottest research area in biofuels involves production of oil from algae. This isn't quite at the large-scale commercial stage as of today, but does have tremendous potential to significantly increase the oil supply without impacting the land base.

Double cropping – In certain geoclimatic areas of the US, it is possible to "double crop" soybeans with a small-grain crop such as winter wheat. Soybeans are no-till planted immediately after winter wheat harvest. This makes utilization of the same acreage for two annual crops, versus only one, possible. And in the case of growing soybeans directly behind winter wheat, they, as a legume, provide a replenishment of nitrogen to the soil which helps maintain and/or increase soil quality/productivity. In this case, no "extra" land would be required for biodiesel feedstock production.

Potential Utilization of Underutilized/Marginal lands – One overlooked aspect associated with increasing the biodiesel supply is the utilization of underutilized/marginal lands which are generally defined as not being able to support sustained commodity crop production due to a variety of reasons such as low rainfall, depleted soils, etc., but very well may be able to provide a sustainable base for biodiesel feedstock production when paired with one or more of the new crops mentioned above, which have fewer nutritional needs and have greater drought tolerance. Planting high-yielding oilseed crops on marginal acreages will very likely provide for land base

---

[1] GEIST, H.J. & LAMBIN, E.F., 2002, Proximate Causes and Underlying Driving Forces of Tropical Deforestation, BioScience, 52(2), pp. 143-50.

enhancement/improvement due to less soil erosion and subsequently less carbon loss and water runoff, as well as an overall improvement in soil tilth due to annual cover. Given these attributes, biodiesel feedstock production on these types of lands would definitely be a good thing for air, soil, and water quality. In Kansas we currently have a dedicated effort to investigate use of all types of underutilized/marginal acreages for many types of bioenergy feedstock production and see how they affect environmental quality, pro and con. This, to me, is extremely important area we really need to consider and begin to earnestly analyze nationally.

The science of indirect land-use change is certainly in its infancy and is highly uncertain. Analysis of indirect GHG emissions with respect to biofuel development requires an intimate understanding of a myriad of global agricultural, economic and trade, commodities and demand, social, and political issues and effects. Even among researchers who agree indirect land use change effects of biofuels should and can be analyzed, the disparity in the estimates of these effects is absolutely huge. A recent study by researchers at Purdue University concluded, for example, land use emissions associated with expanded corn ethanol production under the US RFS was nearly four and one-half times lower than the estimates reported by Searchinger.[2] This, to me, proves conclusively, far and wide differences exist in how the issue of indirect land use change is viewed. Upon review, I personally found the data and assumptions used by the Purdue University researchers more realistic than those used by Searchinger et al. In addition, California is currently planning to include a factor for indirect land use which, even upon inclusion, will likely still make biodiesel from soybeans about 40 percent better than petroleum in terms of GHG emissions.

Biofuels definitely need to be part of the overall energy security solution and I certainly feel they should not unnecessarily be burdened with the whole of problems in global land management due to increased energy and environmental needs and concerns worldwide. I would also like to emphasize, that in my opinion, reliance upon a single analysis or two by individuals, parties, or organizations concerning how to account for indirect land use, such as the one advanced by Searchinger et al. is premature and really makes no sense given the other many analyses.

The number and type of factors that drive land use expansion worldwide are numerous and extremely complex and as I have shown earlier, wide variations in land use emissions exist. So, if I were to make one recommendation to policy makers today, it would be to rely on the current scientific consensus until such time as a new consensus based on sound scientific research (and possibly a worldwide standard from the International Standards Organization) is developed and realize we as a scientific community are still researching and investigating this issue.

Again, thank you for the opportunity to address this committee. If time permits, I would be pleased to answer any questions members of the committee might have.

---

[2] Tyner, W.; Taheripour, F.; Balso, W. Land use change carbon emissions due to US Ethanol Production." Department of Agricultural Economics, Purdue University. Revision 3 Draft. January 2009.

AMERICAN LUNG ASSOCIATION®
IN NEW YORK

Testimony of
Michael Seilback, Vice President, Public Policy & Communications
American Lung Association in New York
Sustainability of Biofuels
February 25, 2009

Good morning Chairman Genarro and members of the Environmental Protection Committee. My name is Michael Seilback, VP Public Policy & Communications for the American Lung Association in New York.

Today, you have heard and will continue to hear a lot about feed stocks, life cycles and carbon footprints. I hope you will indulge me as I veer a little off that course. As we sit here today, over one million New York City residents have been diagnosed with asthma, including 320,000 children. I want to speak a little this morning about them and the struggles that many of them face daily to breathe.

New Yorkers are exposed to some of the most unhealthy air pollution levels in the country. Year after year the American Lung Association State of the Air report shows that the outdoor air quality in the five boroughs is toxic. The State of the Air report is a county-by-county report card on the two most pervasive air pollutants: particle pollution (soot) and ozone (smog). Long term exposure to both of these pollutants can permanently damage lung tissue and has been shown to shorten lives.

In order to significantly improve the air quality right here in New York City, our Association has long advocated for cleaning up home heating oil. The combustion of sulfur-laden home heating oil contributes significantly to the high ambient concentrations of ozone and fine particles found in New York State – particularly in New York City and all of the surrounding counties. To that end, we are strong advocates for the use of biodiesel in the home heating sector to address this significant source of pollution.

Since it has such a high level of sulfur, combustion of home heating oil makes it the second largest source of sulfur dioxide emissions in the State, second only to the power sector.

In New York City alone, nearly one million households heat their homes each winter with heating oil. Over 79% of the State's consumption of heating oil occurs in the New York Metropolitan area, contributing to New York City's poor air quality. Yet most New Yorkers are not aware that this is a significant source of pollution in their homes and that alternative, cleaner fuels exist for home heating purposes. Bioheat is one such alternative that New York City should work to promote as a cleaner, cost efficient option.

Unlike the use of biofuels in some other sectors, Bioheat has been shown to reduce emissions of all pollutants. Promoting the use of Bioheat, consisting of 20% biodiesel in combination with low or ultra low-sulfur fuel, will significantly eliminate the sulfur dioxide emissions from heating oil use and simultaneously reduce NOx emissions.

Not only will cleaner fuels result in decreased emissions of harmful pollutants, but use of cleaner biofuels can also produce economic advantages for the consumer. For example, boilers need to be serviced less frequently and they have been shown to foul at least 50% less frequently. In fact, if cleaner home heating oil were used statewide, homeowners would save $200 million annually in cleaning costs.

At the State level, there is also a Residential Bioheat tax credit. This credit provides an economic benefit for apartment owners, to use the cleaner Bioheat alternative instead of traditional home heating oil.

The time is now to clean up the air that we breathe. We implore you to consider the public health of New York City residents when deciding the future of how we will heat our homes. Intros 594 and 599 are two pieces of legislation which would help towards that goal.

Thank you for the opportunity to comment. We are happy to entertain any questions you may have.

NYLCV
NEW YORK LEAGUE OF CONSERVATION VOTERS

Testimony of Marcia Bystryn
President, New York League of Conservation Voters

Hearing of the New York City Council Environmental Committee

February 25, 2009

On behalf of the New York League of Conservation Voters, I am here today to pledge our support for legislation that would drastically clean up home heating oil. Specifically the legislation would require home heating oil consumers to switch to environmentally friendly bioheat as well as require the fuel to have less sulfur in it.

New York State is the largest consumer of home heating oil in the United States with New York City alone consuming an estimated 500 million gallons of fuel oil a year. The burning of home heating oil contributes significantly to environmental and health problems in New York. The consumption of home heating oil is responsible for releasing 42,000 tons of sulfur, a major lung irritant that has been shown to trigger asthma attacks, into our atmosphere each year. Heating oil is also a significant contributor to greenhouse gas emissions and is a major component of the 79% of New York City's greenhouse emissions that come from buildings.

Bioheat offers an affordable, sustainable and domestically produced alternative to traditional home heating oil. By blending biodiesel, a relatively clean fuel made primarily from agricultural products such as soybeans, with lower sulfur home heating oil, New York City can make a significant impact on the health of our communities. Bioheat containing anywhere up to 20% biodiesel ("B20") can be used in conventional heating systems and can reduce sulfur emission by as much as 83% and carbon dioxide emissions by as much as 20%.

The State Legislature has recently restored the New York State Residential Bioheat tax credit, which will provide financial assistance to homeowners who switch to bioheat. The time has come for the City Council to act on proposed legislation that would require all City buildings to begin using bioheat, would eventually require all heating oil distributed in the city to contain bioheat, and would mandate that it all contain a maximum level of 500ppm sulfur and eventually be in par with on-road diesel fuel at 15ppm.

This legislation will improve the health for countless New Yorkers and is a critical step forward in the city's pioneering fight to combat climate change. We urge the Council to continue its tradition of environmental leadership and act swiftly to approve this bold initiative to clean up home heating fuel.

Testimony to the NYC Council on the Sustainability of Biofuels. February 25, 2009

Introduction

On behalf of NYSERDA, we thank you for the opportunity to testify here today on the sustainability of biofuels.

NYSERDA, the New York State Energy Research and Development Authority, is a public benefit corporation involved in a variety of energy and environment-related topics.

We currently manage a range of bioenergy and *bioproduct* programs including initiatives to develop, test, and evaluate *biofuels* as potential alternatives to the fossil-fuel-based transportation and heating fuels New Yorkers now use. Environmentally sustainable biofuels can be produced locally, thus supporting energy independence, minimizing export of dollars for fuel, creating local economic development, raising farmer incomes and maintaining our agricultural base. However many technical, economic, and environmental issues remain to be solved. NYSERDA is supporting research in feedstock development, production techniques, and information collection. We lead a $25M program supporting two cellulosic ethanol pilot facilities that will use a variety of biomass feedstocks, including willows grown here in New York. Research to better understand the emissions, life-cycle greenhouse gas, and land-use implications of biofuels is also being conducted. Results from NYSERDA's biofuels program will provide information to help support development of the New York State Biofuels and Feedstock Sustainability Roadmap recommended in the Governor's 2008 Renewable Energy Task Force Report. Besides biofuels, NYSERDA also invests in a diverse portfolio of other bio-energy technologies (*e.g.*, solid biomass fuels, biogas) to pursue a range of applications in the transportation, power generation, and heating sectors. With appropriate standards in place for feedstock sustainability, these combined bio-energy resources can play a major part in New York's future fuel mix.

The infrastructure needed to distribute biofuels to New Yorkers is also important. We helped upgrade terminals in New York so biofuels can be added to the suite of products for sale, and meet fuel quality standards. Retail gas stations also received funds to install tanks and pumps dedicated to biofuels. Public and private fleet demonstrations have proved that biofuels work in New York's climate, further allowing other fleets such as school districts switch to blended biodiesel in their buses.

In recent years, the "green-ness" of biofuels has come under greater and more public scrutiny. The topic of environmental sustainability is an extremely complicated one, and biofuels have many of their own nuances: (unlike wind to electricity, for example, which starts with one feedstock and ends with one product) biomass starts with many different feedstocks, uses many different conversion processes, makes many different products that are used in many different end-use applications, and sold to customers in many different market sectors. It is therefore important not to paint all pictures with the same broad brush. Our goal at NYSERDA is to support programs that provide a balanced scientific approach to further our understanding of the rapidly changing dynamics of the biofuels industry. This approach is designed to be a conscientious response to national and global concerns about the economic and environmental implications of biofuels and the fuels they replace, including better understanding the direct and the indirect land-use effects.

Environmental Impacts and Sustainability

We have recently initiated several studies to better understand the environmental impacts of biofuels. We are closely following the developments of organizations like NESCAUM, (Northeast States for Coordinated Air Use Management), CARB (California Air Resources Board), and EPA, as well as federal programs in advanced biofuels development.

NYSERDA is in final stages of completing a report entitled "The Environmental Impacts of Biofuels in New York State"[i]. The report includes assessment of potential environmental impacts and sustainability goals for biofuels. The evaluation focused on lifecycle analysis of ethanol from corn and cellulosic feedstocks; biodiesel from soybeans and waste grease; biobutanol; and renewable diesel. In this report, we began to develop NY-GREET, which is a New York specific version of the GREET model for evaluation of the total fuel cycle emissions and energy use for alternative fuel vehicles (which includes biofuels). Ongoing NY-GREET work is expanding this model to include biofuel production pathways. New research on indirect land use effects by Searchinger and others are addressed briefly in this report, and the topic is being addressed in our ongoing research.

Field Studies on emissions

New Yorkers use approximately 2.3 billion gallons of petroleum-based heating oil each year. NYSERDA, with Brookhaven National Laboratory, has taken the lead in studying the introduction of biodiesel in the residential home heating oil market. Field demonstrations have been conducted in residential homes and institutions, and research has been initiated to improve furnace equipment for biodiesel use. Research for all sizes of furnace equipment shows lower emissions (including NOx) and reduced maintenance costs for biodiesel compared to fossil fuels.[ii]

In addition, NYSERDA has sponsored several field studies to characterize emissions from biofuels in a variety of applications, such as off-road equipment and power generators. These studies in diesel engine applications showed large decreases in fine particulate matter and they support previous studies that showed that at low to medium blends (e.g., B20), biodiesel used in a compression ignition engine would not result in increased NOx emissions. Biodiesel (B100) did increase NOx, however.[iii] [iv]

State-wide Biodiesel Study

In 2004, NYSERDA looked at the feedstocks available to produce biodiesel locally. In our 2004 report, the "Statewide Feasibility Study for a Potential New York State Biodiesel Industry,"[v] the authors concluded that: 1) if biodiesel were blended into diesel statewide at a 2% level, transportation and heating would use more than 60 million gallons/year of biodiesel, increasing to more than 70 million by 2012; and that, 2) New York could supply its own feedstock to make about 40 mgpy of biodiesel by 2012. Of that about 30% comes from farming seed crops and 70% from fats and greases. Most of the grease is from restaurants, which are concentrated in major urban areas. Though little specific data exists, we believe this environmentally friendly feedstock is currently under-collected and therefore

underutilized. The authors also concluded that properly designed biodiesel production and use policies would attract investment, expand the State economy, generate additional income for New Yorkers, create new jobs, and benefit farmers.

Roadmap

In their February 2008 report, Governor Paterson's Renewable Energy Task Force recommended that a Renewable Fuels Roadmap and Sustainable Biomass Feedstock Study for New York ("the Roadmap") be developed. [vi] This study was in part prompted by concern over some of the recent findings regarding the potential adverse environmental impacts of some biofuel pathways. NYSERDA, a member of the Task Force, has worked with the Governor's Office and the other agencies on the Task Force, including the New York State Department of Environmental Conservation, the New York State Department of Agriculture & Markets, and the New York State Department of Economic Development to develop the Roadmap. Work on the Roadmap has recently begun, and is being led by the Pace Energy and Climate Center. The City Council is invited to participate in the Roadmap. We encourage you to attend an upcoming stakeholder meeting in Westchester on March 26, 2009.[vii]

The Roadmap: 1) addresses life-cycle environmental and public health consequences of renewable fuels compared to fossil fuels; 2) outlines sustainability criteria and best management practices to mitigate potential negative impacts; 3) analyzes New York State land use, resource condition, and feedstock supply (baseline and potential) and local, state and regional economic effects; 4) evaluates technological and economic barriers to large-scale feedstock production in New York and analyzes potential solutions; and, 5) compares current and future renewable fuel feedstock and process technologies to each other, current and future fossil fuels, and competing uses for biomass in terms of sustainability criteria, highest-value uses, and *commercial* viability in New York State. Now, *sustainability* is a term that encompasses many things, including deforestation, carbon impacts, and food versus fuel, but also jobs and economic development opportunities. Public perception of sustainability will be assessed, including which criteria are most important, which can be enforced, and which can even be measured.

The Biofuels Roadmap and Sustainable Feedstock Study will be available in draft form in the fourth quarter of 2009. The resuts of this study will help inform our State policy on biofuels.

Collaboration

NYSERDA is also collaborating regionally. Environmental and energy officials from eleven Northeast and mid-Atlantic states signed a Low Carbon Fuel Standard Letter of Intent on December 29, 2008. States have agreed to work together on plans for a regional, market-based, technology-neutral standard. The objective in setting the standard is to lower the carbon content of fuels for transportation, home heating, industrial processes, and electricity generation. NYSERDA signed the letter and is a participant in the ongoing process to develop the standard.

Conclusion

Though our knowledge of biofuels is incomplete, based on all we know to date, there are some biofuels, feedstocks, and applications that appear to offer clear environmental benefits. One example is the use of yellow-grease derived biodiesel in heating applications (which offers local and regional pollution reduction benefits and solves a waste management problem). No one biofuel can solve all of our problems, however. There is not enough yellow grease to support a biodiesel industry, and even the new research aimed at using trap grease would likely add only a few more million gallons of biodiesel per year to the supply. Yet doing nothing is a poor choice. Though feedstock-specific standards are not perfect, they could potentially be implemented as an interim measure until better performance-based standards are developed.

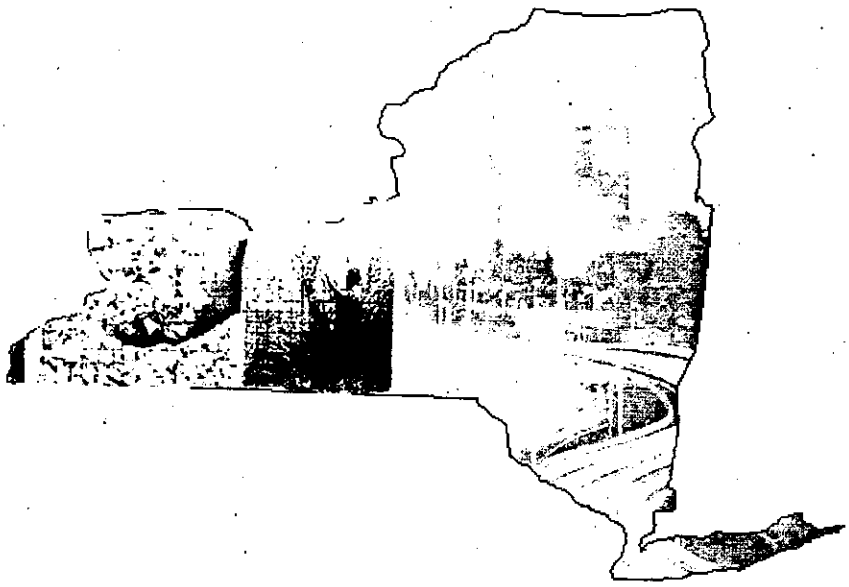
In conclusion, given that fossil fuels are not sustainable, we need to find the best alternatives. The sustainability of biofuels is clearly a complicated topic, but the energy and environmental challenges associated with our current fossil-based system are so significant that New York and the nation will need to consider a wide variety of options to solve them. Biofuels are rapidly evolving and improving so it would therefore be premature to categorically dismiss all biofuel pathways. Our challenge is to find the pathways, ie the feedstocks, conversion processes, and applications that are indeed environmentally and economically sustainable for our region. And in so doing, New York may have the opportunity to be a leader in the emerging clean energy economy.

We welcome the opportunity to work with New York City in the development of science-based policies toward that end.

---

[i] http://www.nyserda.org/publications/Draft%20Executive%20Summary%20%20Report%2008-07.pdf
[ii] http://www.powernaturally.org/About/Library.asp#
[iii] http://www.nyserda.org/publications/In-Use%20Evaluation%20of%20Emissions%20from%20Non-Road%20Diesel%20Equipment%20Using%20Biodiesel%20Fuel_2008-03-17.pdf
[iv] http://www.nyserda.org/publications/Generic%20Protocol_Final.pdf
[v] http://www.nyserda.org/publications/biodieselreport.pdf
[vi] http://www.nyserda.org/funding/1249rfp.pdf
[vii] http://www.pace.edu/page.cfm?doc_id=33540

NEW YORK RENEWABLE FUELS WORKSHOP



Please join us for this unique opportunity to learn about and provide feedback on the planned NY Renewable Fuels Roadmap project and provide critical input *(gathered by survey at the workshop)* on issues important to New Yorkers. The New York Renewable Fuels Roadmap project (funded by NYSERDA, NY Ag & Markets and NYS DEC) seeks to address these and other questions for New Yorkers:

1) How much biomass (wood, grasses, and energy crops) do we have?
2) What factors are important in producing sustainable biomass?
3) What new business opportunities do you see in biomass?

REGISTRATION REQUIRED FOR THIS FREE WORKSHOP. (Lunch provided.)

Attendance may qualify for planning board training credit.

Meeting size is limited so remember to pre-register.

VOICE YOUR OPINIONS: If you are not able to attend but would like to fill in a survey, please contact a Cornell Cooperative Extension office listed below for details.

HOSTED BY: Cornell Cooperative Extension in collaboration with Pace University Energy and Climate Center, NYSERDA, NY Ag & Markets, and NYS DEC.

NEW YORK RENEWABLE FUELS WORKSHOP

PRELIMINARY AGENDA

10:00 am Welcome and introductions
Plan for the morning

10:10 am Renewable Fuels and how they fit into the Renewable Energy Framework – an overview from beginning resources to possible end uses and how biomass fits into the big picture.

10:30 am First feedback session: What's going on with biomass in your area? What unique opportunities and resources exist in your home town?

10:45 am Outcome of the NY Renewable Fuels Visioning Meeting: Vision Statement and Goals

11:00 am Video: New York Renewable Fuels Roadmap Project

11:30 am The concept of physical Sustainability: Video: The Earth as an Apple (from Ag in the Classroom).

11:35 am NY Renewable Fuels Feedback and Discussion: What have we forgotten? What is of critical importance to you? How much biomass (wood, grasses, energy crops) do we have? What factors are important in producing sustainable biomass? What new business opportunities do you see in biomass?

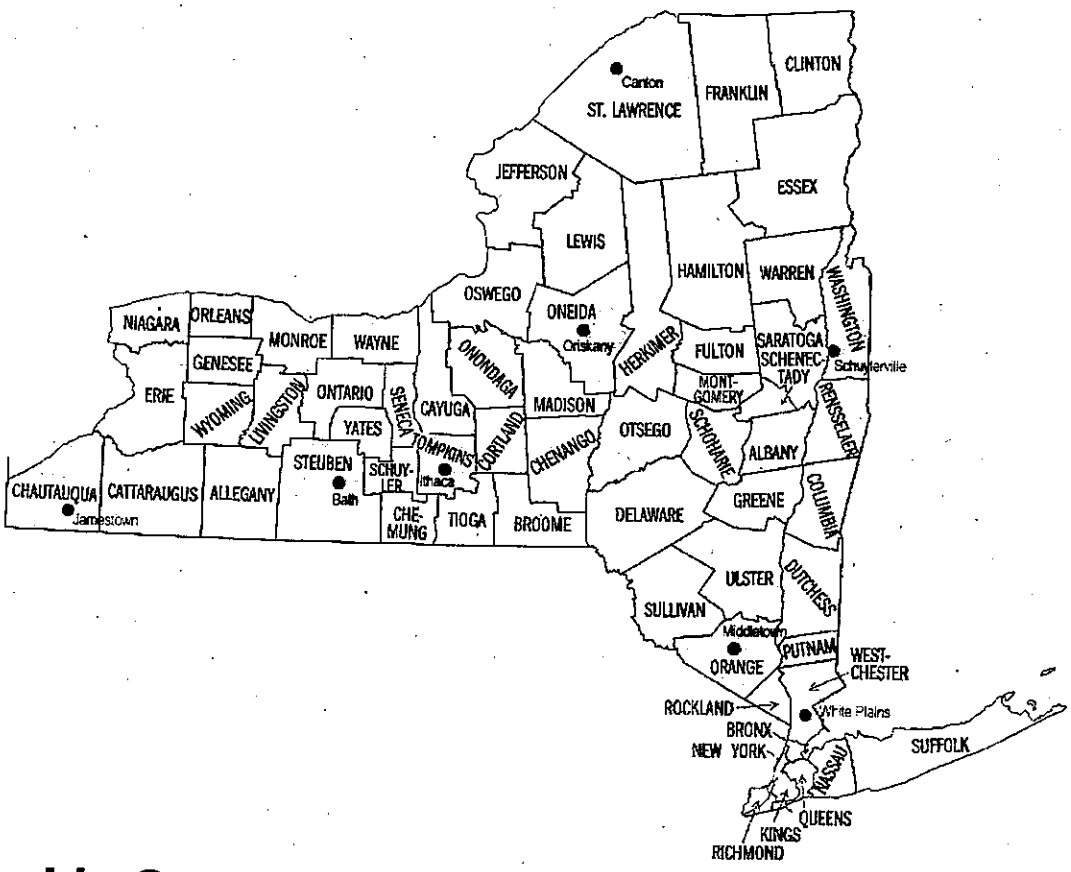
12:00 pm Turn in surveys and pick up your lunch as the discussion continues.

1:00 pm Adjourn- Thank you for your participation!

HOSTED BY: Cornell Cooperative Extension in collaboration with Pace University Energy and Climate Center, NYSERDA, NY Ag & Markets, and NYS DEC.

MEETING TIMES AROUND THE STATE

For an updated meeting list please visit the ***events*** page at: http://www.law.pace.edu/energy



Oneida County

FEBRUARY 6, 2009 (Friday)

10 am at the Cornell Cooperative Extension Oneida County

Contact: Cindy at Cornell University Cooperative Extension of Oneida County 121 Second Street, Oriskany, New York 13424

Phone: 315.736.3394 Extension 124; clc66@cornell.edu www.cce.cornell.edu/oneida

Chautauqua County

FEBRUARY 9, 2009 (Monday)

10 am at the Cornell Cooperative Extension Chautauqua County

Contact: Wendy Sanfilippo, Recycling educator, Cornell Cooperative Extension 3542 Turner Rd. Jamestown, NY 14701; wes33@cornell.edu

Chautauqua County: t.716-664-9502 ext. 221 Cattaraugus County: t.716-938-2487

--Continued on next page –

HOSTED BY: Cornell Cooperative Extension in collaboration with Pace University Energy and Climate Center, NYSERDA, NY Ag & Markets, and NYS DEC.

Washington County
FEBRUARY 13, 2009 (Friday)
10 am at the American Legion in Schuylerville
American Legion, 6 Clancy St, Schuylerville, NY, off of Burgoyne Ave.
Contact: Aaron Gabriel, Cornell Cooperative Extension of Washington County
518-746-2560 adg12@cornell.edu http://counties.cce.cornell.edu/washington

Orange County
FEBRUARY 18, 2009 (Wednesday)
10 am at the Cornell Cooperative Extension Orange County
Contact: Larry Hulle, Cornell Cooperative Extension Orange County
18 Seward Avenue, Suite 300, Middletown, NY 10940
(845) 344-1234; lrh6@cornell.edu www.cce.cornell.edu/orange

Steuben/Schuyler County–
March 19, 2009 (Thursday)
10 am Civil Defense Center, Route 54, Bath, NY,
Contact: Carl Albers, Cornell Cooperative Extension Steuben County or
Brett Chedzoy, Schuyler County
To register call CCE-Steuben County at 607-664-2300.

Westchester County
MARCH 26, 2009 (Thursday)
1:30 pm at the Pace University Energy & Climate Center
Contact: Zywia Wojnar, Pace University Energy & Climate Center
Pace University School of Law, 78 North Broadway White Plains, New York 10603
914-422-4450; zwojnar@law.pace.edu www.law.pace.edu
****Special 9:00 am Renewable Fuels Policy Colloquium to precede the 1:30 pm workshop – contact Dana Hall at dhall@law.pace.edu or (914) 422-4063 for more information****

St. Lawrence County – Date to be announced

Tompkins County – Date to be announced

For an updated meeting list please visit the ***events*** page at: http://www.law.pace.edu/energy

HOSTED BY: Cornell Cooperative Extension in collaboration with Pace University Energy and Climate Center, NYSERDA, NY Ag & Markets, and NYS DEC.

Testimony of Michael Ferrante
President, Massachusetts Oilheat Council
New York City Council – February 25, 2009

Biofuels and the Home Heating Oil Industry

As President of the Massachusetts Oilheat Council, a state trade association of nearly 350 retail and wholesale heating oil companies, I am most pleased to submit testimony for your consideration as you weigh the possible introduction of biofuel blends within the home heating oil marketplace in New York City.

I have been employed at the Council for 18 years and I consider my work on biofuels and bioheat to be the most important project of my career. I truly believe it will help reshape the Oilheat industry, offer consumers an innovative and clean burning fuel, reduce our overall use of fossil fuels, and spark economic development in states that embrace biofuel use.

THE MASSACHUSETTS LEGISLATION

On July 28, 2008, An Act Relative to Clean Energy Biofuels was signed into law by Massachusetts Governor Deval Patrick, making Massachusetts the first state in the nation to mandate a blend of biofuel for home heating oil and transportation diesel beginning no later than July 1, 2010. At that time, all #2 petroleum distillate fuel must contain at least a 2% blend of *"eligible petroleum distillate substitute fuel."* The blend escalates to 3% by July 1, 2011, 4% by July 1, 2012 and 5% by July 1, 2013.

OILHEAT INDUSTRY SUPPORT

It is important to note that the Board of Directors of the Council, which is comprised of 40 retail and wholesale companies statewide, unanimously supported the biofuels legislation and our association played a key role in drafting the final measure. In addition, the National Oilheat Research Alliance (NORA), which represents the Oilheat industry in 24 states, endorses the introduction of biofuels for Oilheating up to a 5% blend.

IMPORTANT ELEMENTS OF THE MASSACHUSETTS BIOFUELS EXPERIENCE

Prior to passage of the Massachusetts biofuels law, Governor Patrick and our state legislature assembled the Advanced Biofuels Task Force (ABTF). In their final report, the Task Force states that it was created "out of respect for the magnitude of this task," and because "biofuels policy can be complicated and contentious." The Task Force held public hearings throughout the state to learn from academic institutions, communities, environmental groups and industry representatives. The hearings gathered input on biofuels research and development, production, commercialization, distribution, and utilization.

By holding these hearings the Task Force "tapped into expertise close to home and around the world, explored what other states and countries have implemented or are in the process of implementing, and reviewed the most current scientific research."

I encourage the New York City Council to establish a similar task force. I have included a copy of the final ABTF report with my testimony for your review. I have also included a copy of the Massachusetts biofuels law and I'm hopeful that the measure will help guide you as you examine:

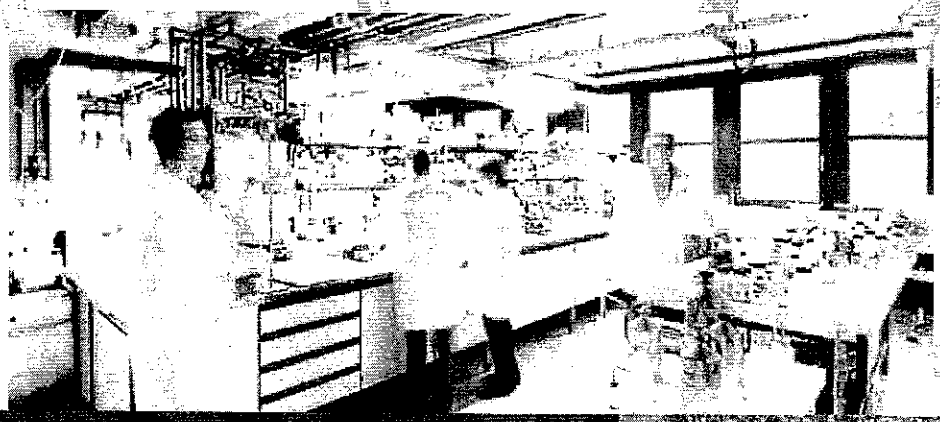
1. Greenhouse gas emissions standards as they relate to biofuels
2. The use of ASTM fuel standards, specifically ASTM 6751, to ensure the highest quality feed stocks for home heating oil equipment
3. Options for possible implementation of BQ 9000 certification for manufacturers of biofuels
4. Low Carbon Fuel Standards
5. Legislative off-ramps in the face of supply disruptions, lack of blending facilities or unreasonable cost, and
6. Averaging of heating oil sales to meet any mandate you may impose

In summary, Massachusetts has thoroughly examined all aspects of biofuel use for home heating oil and transportation diesel. Although regulations to support the law still need to be drafted and approved, I am confident that Massachusetts will help lead the nation in implementing a biofuels program that will advance energy policy on reducing fossil fuel use, jump start the use of cleaner energy fuels, provide benefits to Oilheat consumers, improve the environment and create jobs.

I stand ready to assist the New York City Council with additional information or guidance. Thank you for the opportunity to provide testimony.

Michael Ferrante
Massachusetts Oilheat Council
118 Cedar Street, Wellesley Hills, MA 02481
Ph: 781.237.0730
Fax: 781.237.2442
Email: mferrante@massoilheat.org
On the web @ www.massoilheat.org

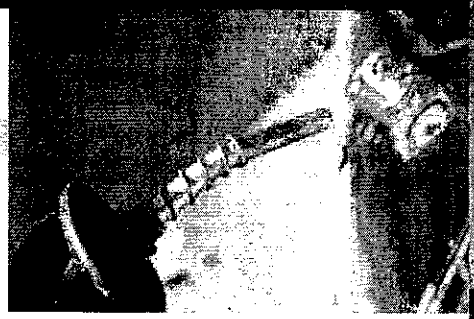
■

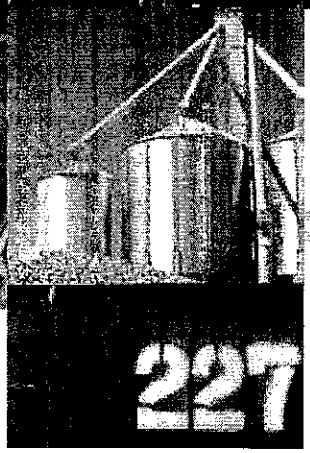


Advanced Biofuels
Task Force Report

Commonwealth of Massachusetts

Spring 2008





227

Acknowledgments

The Advanced Biofuels Task Force would like to thank those who contributed to the development of this report. In particular, we acknowledge the work of U.S. **Representative William Delahunt**, who has been a state and national leader on advancing the development of biofuels.

We also would like to acknowledge all those who provided oral and/or written testimony (see Appendix C for a complete list), plus the following individuals: **Shannon Ames** (staff for Senator Resor), **Kathy Baskin** (EEA), **Linda Benevides** (EEA), **Dwayne Breger** (DOER), Marc Breslow (EEA), **Ben Bunker** (DOER intern), **Lisa Capone** (EEA), **Steven Clarke** (EEA), **Brooke Coleman** (New Fuels Alliance), **Lisa Conley** (staff for Representative Smizik), **Coralie Cooper** (NESCAUM), **James Cope** (EOT), **Jennifer Crawford** (staff for Representative Dempsey), **Zachary Crowley** (staff for Representative Smizik), **Michael Ferrante** (Massachusetts Oilheat Council), **Ian Finlayson** (EEA), **John Fischer** (DEP), **David Howland** (DEP), **Chris Kealey** (MTC), **Robert Keough** (EEA), **Christine Kirby** (DEP), **Steven Larrabee** (staff for Representative Jones), **Judith Laster** (staff for Speaker DiMasi), **Michelle Manion** (NESCAUM), **Joanne McBrien** (DOER), **Patricia Moynihan** (staff for Representative Dempsey), **Sudhir Nunes** (MTC), **Christine Raisig** (MTC), **Arthur Robert** (MOBD), **Sara Schnitzer** (staff for Senator Resor), **Nancy Seidman** (DEP), **Teresa Sousa** (EEA), **Bethann Steiner** (staff for Senator Downing), **Jeannine Wheaton** (DOR), and **Christine Williams** (EOHED).

The following organizations are appreciated for their support and contributions: **Economic Development Research Group**, the **Massachusetts Technology Collaborative**, **Navigant Consulting**, and the **Northeast States for Coordinated Air Use Management**.

The Commonwealth of Massachusetts
Advanced Biofuels Task Force

April 16, 2008

Dear Governor Patrick, Senate President Murray, and Speaker DiMasi:

In November 2007, you created the Advanced Biofuels Task Force and directed us to "develop a strategic framework to accelerate the development and deployment of commercially viable advanced biofuels, and facilitate expansive biofuel research throughout the Commonwealth." We present this report to you in fulfillment of our charge.

While there are detailed findings and recommendations throughout the report, our proposals to aggressively move an advanced biofuels sector forward while maintaining high environmental standards include the following priorities:

- Prioritize efforts to achieve near-term implementation of a regional, technology-neutral and performance-based Low Carbon Fuel Standard (LCFS), with Massachusetts leading the way.
- While a Massachusetts LCFS is being developed, pass amended versions of the legislation you co-sponsored, implementing targeted transitional biofuels mandates and exempting cellulosic biofuels from the state gasoline tax, with a sunset date. Both the transitional mandates and cellulosic fuel exemption should require significant greenhouse gas reductions and other environmental protections, including direct and indirect impacts such as those on land use. The mandates and cellulosic tax exemption should be as technology-neutral as possible, and should phase out as a Low Carbon Fuel Standard comes into existence.
- Support pilot deployment in the state fleet of plug-in hybrid and all-electric vehicle technology in light- and heavy-duty vehicles, as well as fuel-efficient flex-fuel vehicles.
- Develop infrastructure necessary for consumer use of biofuels and implement limited-cost investments in equipment for ethanol and biodiesel distribution, such as E85 stations along major state highway corridors, subject to budget constraints.
- Develop standards for full lifecycle evaluation of biofuels that consider their carbon and other environmental impacts, including direct and indirect land use impacts.
- Parallel to progress on biofuels, continue to explore policy options for vehicle efficiency and reducing vehicle miles traveled.

We developed these and other recommendations outlined in the full report through a robust process of analysis and public engagement. Biofuels policy can be complicated and contentious. Nevertheless, we have arrived at a set of recommendations that allows the Commonwealth to aggressively seize the economic opportunities you foresaw, while also protecting the environment and combating climate change. It is clear to us that, with the appropriate safeguards, advanced biofuels can and should be a central part of the Commonwealth's clean energy strategy.

The potential for economic growth, environmental protection, and the improvement of our energy security is significant. Out of respect for the magnitude of this task, we held public hearings throughout the state to learn from academic institutions, communities, environmental groups and industry representatives the lessons they have learned and the wisdom they wished to pass along. This included input on research and development, production, commercialization, distribution, and utilization. We have tapped into expertise close to home and around the world, explored what other states and countries have implemented or are in the process of implementing, and reviewed the most current scientific research.

We hope that these recommendations will be of use to you in considering legislative and administrative actions to promote the development of an advanced biofuels industry in the Commonwealth. We look forward to following up with you in the coming weeks.

Sincerely,

Secretary Ian A. Bowles
Energy and Environmental Affairs
(Chair)

David W. Cash
Energy and Environmental Affairs
(Secretary's designee)

Bruce A. Jamerson
CEO, Mascoma

Colin South
President, Mascoma (designee)

David S. Davenport
Department of Revenue

Representative Bradley H. Jones, Jr.
Minority Leader

Senator Pamela P. Resor
Chair, Joint Committee on Environment,
Natural Resources and Agriculture

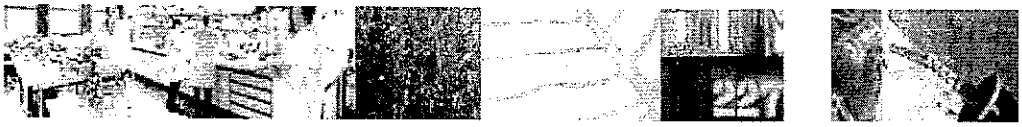
Senator Benjamin B. Downing
Chair, Senate Committee on Ethics and Rules

Senator Bruce E. Tarr
Assistant Minority Leader

Representative Brian S. Dempsey
Chair, Joint Committee on
Telecommunications, Utilities, and Energy

Representative Frank I. Smizik
Chair, Joint Committee on Environment,
Natural Resources and Agriculture

Table of Contents



Report of the Advanced Biofuels Task Force
EXECUTIVE SUMMARY

In November 2007, the Governor, Senate President and Speaker of the House announced the creation of an Advanced Biofuels Task Force to "promote the development of an advanced biofuels industry in the Commonwealth." At that time, the price of oil was about $85 per barrel. In the five months the Task Force has been doing its work, the price has risen roughly 30%, reaching $110 per barrel. By itself, the dramatically rising cost of energy would be reason enough for Massachusetts to seek alternatives to imported fossil fuels. But there are many more reasons—the opportunity to become the global center for advanced biofuels; growth of jobs in R&D, production and commercial applications; and reduction in harmful emissions.

Governor Deval Patrick stresses the potential of Advanced Biofuels

In this context, the Task Force was charged with drafting a strategy to seize opportunities related to biofuels development and explore their economic, energy, and environmental benefits and costs. This report outlines such a strategy. It is the result of intensive work by the Task Force, legislative and executive staff, four public hearings throughout the Commonwealth, and input from academic experts as well as a wide range of industry, environmental, community, and other stakeholders.

Biofuels are substitutes for liquid petroleum fuels, including gasoline, diesel, and heating oil, that are derived from renewable organic matter and promise several advantages over fossil fuels. Petroleum products used for transportation currently contribute more than a third of greenhouse gas emissions in Massachusetts. Due to limitations in domestic supplies, reliance on petroleum makes the U.S. dependent on imports from foreign nations, many of them politically unstable. And Massachusetts, having no supplies of our own, pays high prices for imports from around the country and around the world.

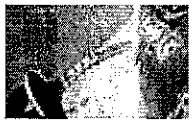
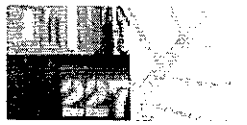
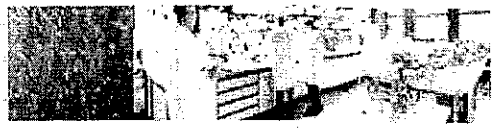
Speaker Salvatore DiMasi addresses the audience on biofuels

Advanced biofuels, which are defined in federal law as those that yield a net lifecycle reduction of at least 50% in greenhouse gas emissions compared with fossil fuels, offer particular advantages for the environment as well as the Massachusetts economy—including playing to our strengths in research and technology development and sustainable forestry.

Senate President Therese Murray speaking at the announcement

This Executive Summary briefly reviews the main findings of the Task Force's report and provides the policy recommendations resulting from its deliberations. The report has six chapters:

Chapter 1 – The Potential Economic Opportunities of an Advanced Biofuels Sector in Massachusetts

Chapter 2 – The Energy and Environmental Lifecycle of First-Generation and Advanced Biofuels

Chapter 3 – Biofuel Feedstocks—Energy Crops, Biomass, and Waste Products

Chapter 4 – Statutory and Regulatory Mandates, Regulatory Flexibility

Chapter 5 – Promoting Infrastructure for Delivery and Distribution of Biofuels

Chapter 6 – Grants, Loans, and Tax Incentives

Chapter 1 – The Potential Economic Opportunities of an Advanced Biofuels Sector in Massachusetts

Given the state's intellectual capital and academic and laboratory resources for research and development, supporting an advanced biofuels sector offers potentially significant opportunities for economic development and job creation.

Congressman William Delahunt speaking at the announcement

In-state production of advanced biofuels derived from feedstock grown in Massachusetts could replace about 6% of our gasoline use, reducing our dependence on imported energy sources while generating jobs at home and boosting the state's growing energy sector. Biofuels have the potential to keep marginal agricultural land in production—a benefit for a state like Massachusetts, which values small-scale farming as part of its economic and physical landscape.

As an emerging technology, the economic viability of advanced biofuels still needs to be proven, however, and will depend significantly on the true extent of the greenhouse gas reductions these fuels provide.

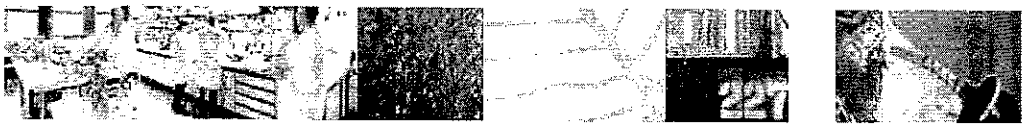
The Task Force estimates that a mature advanced biofuels industry—including technology development, feedstock cultivation, and processing into fuel—could contribute $280 million to $1 billion per year for the Massachusetts economy by 2025, while generating 1,000 to 4,000 permanent jobs and 150 to 760 temporary construction jobs. Including indirect "multiplier" effects, we estimate the permanent gains as $550 million to $2 billion and 2,500 to 9,800 jobs.

Chapter 2 - The Energy and Environmental Lifecycle of First-Generation and Advanced Biofuels

Depending on the feedstocks utilized (corn, soybeans, waste oil, switchgrass, tree trimmings, the organic portions of municipal solid waste), the energy source used to convert the feedstocks (coal, natural gas, renewables), and the land on which the feedstocks are grown (land already in production, forests or grasslands converted to croplands), biofuels can either reduce or increase greenhouse gas emissions relative to fossil fuels.

Without considering indirect impacts from changes in land use, corn ethanol could reduce greenhouse gases by approximately 20% relative to petroleum, possibly more if production processes are improved. Soybean-based biodiesel gets much better initial reviews, with greenhouse gas benefits estimated to be in the 70% range.

But recent research finds that it is critical to take land use changes into account. Shifting a substantial part of the world's food supply to fuel production is likely to cause forests and grasslands to be converted to crop farming somewhere in the world. It would take decades for future crops planted on these lands to absorb the amount of carbon dioxide that is released (due to burning and decomposition of trees, plants and soil) when they are initially cleared for farming.

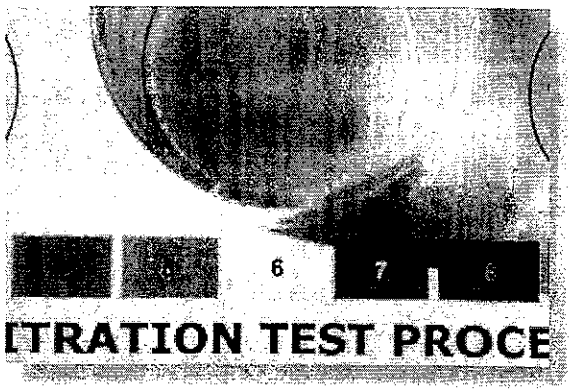


As a result of direct and indirect changes in land use, use of corn ethanol, soy biodiesel, and other crop-based fuels may result in even greater greenhouse gas emissions than burning gasoline and petroleum diesel, though it is essential to use direct and indirect impacts of petroleum production in any comparison to biofuels production. The scientific analyses for true "apples to apples" comparisons are still being developed, so no firm conclusions can be drawn.

Better environmental results are expected from advanced biofuels, such as those derived from cellulosic sources. Cellulosic fuels, including cellulosic ethanol, can be made from feedstocks such as tree trimmings and switchgrass, which require little or no fertilizer or pesticides. They can be grown on agriculturally marginal lands and thus do not necessarily compete with food production. As a result, they may yield as much as a 90% reduction in carbon dioxide emissions compared with gasoline. But since cellulosic fuel is not yet produced on a commercial scale and the technology is still evolving, there are still uncertainties about environmental impacts—though compared with first generation biofuels, these advanced biofuels offer much promise.

Recommendations of the Task Force:

1. Develop standards for lifecycle evaluation that consider the carbon and environmental impacts of biofuels, including potential impacts on agricultural, forest and other land use in Massachusetts and on a global basis, using definitions like those employed in California and included in the new federal energy law. These evaluations must include both direct and indirect impacts, as well as consideration of impacts on environmental justice. Due to the complexity of lifecycle analysis, to the extent possible Massachusetts should make use of analyses done by other parties, including the California Air Resources Board, U.S. EPA, and the European Union.
2. Lifecycle evaluation methods should put biofuels, petroleum fuels, and other energy sources for vehicles (such as electricity and hydrogen) on a level playing field, assessing secondary and indirect impacts for all.
3. To receive state support for biofuels development and/or use, a particular biofuel must provide a substantial reduction in greenhouse gas emissions relative to petroleum fuels on a lifecycle basis.



4. The state should ensure that developers of refineries meet stringent water discharge limits and select technologies that reduce water needs.
5. Since biofuel made from in-region waste materials, such as waste oils, is likely to have lower greenhouse gas and environmental impacts than biofuel from virgin materials, state agencies should have the latitude to exempt fuel produced from waste materials from a full lifecycle greenhouse gas emissions analysis. However, state agencies should require a review that considers the highest reuse option for the waste feedstock (including recycling) and conduct appropriate environmental reviews of biofuel production processes that seek to minimize potential air and water impacts, as well as chemical and energy use.
6. Support the development and implementation of fuel quality standards (for example, federal ASTM standards) to provide consumer assurance of reliability of advanced biofuels.



Chapter 3 – Biofuel Feedstocks—Energy Crops, Biomass, and Waste Products

In comparison with other states, Massachusetts is not a large agricultural producer, and so has limited potential to benefit economically from first-generation crop-based biofuels such as corn ethanol and soy biodiesel.

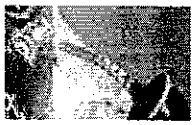
The Commonwealth has greater potential to capitalize on second-generation, or advanced, cellulosic feedstocks such as agricultural switchgrass, willow and crambe (an industrial oil crop that grows well in cool climates), agricultural waste products (such as cranberry waste), forest residues and wood from sustainably managed forests, and the organic component of municipal solid waste. Potential benefits include keeping marginal or threatened agricultural lands in production, providing income from open lands not currently in agricultural production, displacing imported fuels, and providing a market for waste oils.

Total in-state feedstocks could replace roughly 6% of petroleum imports, although these same materials are also under consideration for use in electricity generation and thermal applications, where they might displace coal, natural gas, or petroleum fuel, and potentially be used for transportation via plug-in hybrid or electric car technology.

Recommendations of the Task Force:

Note: A variety of tax and other state incentives have the potential to support the development of advanced biofuels feedstocks in the Commonwealth. Recommendations relating to state incentives are discussed in detail in Chapter 6.

1. Conduct additional field trials and commercial demonstration plots on biomass crops in Massachusetts to determine optimal crops, production methods and costs for the state. Trials on marginal agricultural land and other working landscapes are of particular interest. Evaluation of these trials should include environmental impacts (including carbon emissions and soil sequestration) and infrastructure needs for planting, harvesting, and transporting materials.
2. Expand a preliminary UMass study on economic potential of energy crops in Massachusetts to include other crops and non-agricultural marginal lands and to improve yield and cost assumptions. Develop a spatial model illustrating potential lands that may be conducive to biomass crops.
3. Support development work (genomic and breeding) on energy crops such as crambe and switchgrass, to improve crop yields and biofuel production.
4. Explore opportunities to promote algae production by the Massachusetts aquaculture industry, and bioengineering research at Massachusetts companies and universities.
5. Conduct an internal review of all state agricultural preservation and assistance programs for the purpose of integrating energy crop production. Explore the benefit of establishing capacity at the state Department of Agricultural Resources and UMass Extension to provide outreach and training to farmers and other landowners interested in establishing early commercial plantations.
6. Complete the current work of the Massachusetts Sustainable Forest Bioenergy Initiative on woody residue and forest biomass feedstock and consider

the potential use of this feedstock for production of cellulosic ethanol.

7. Work with the federal government to support biorefinery technologies and demonstration projects that can be developed on smaller scales to utilize locally available fuel, including waste feedstocks.

8. Investigate the feasibility and design of a statewide program to increase the collection of waste vegetable oil and grease trap waste from restaurants and institutional kitchens and transportation of these wastes to biofuel production facilities. The investigation should consider needs for collecting, transporting and processing these wastes, and the use of technical assistance, incentives and mandates to accomplish these goals.

9. Due to the inherent environmental benefits of reusing waste products over virgin sources of biofuels, give state environmental agencies the authority to reduce or provide exemptions from greenhouse gas emissions lifecycle analysis requirements when applied to biofuels produced from waste feedstocks.

10. Further investigate the applicability of cellulosic waste materials, including the organic portions of municipal solid waste, paper sludge, and construction and demolition debris, for cellulosic ethanol production, while maintaining strict regulatory controls to ensure that no increases in toxics or other pollutants take place.

Chapter 4 - Statutory and Regulatory Mandates, Regulatory Flexibility

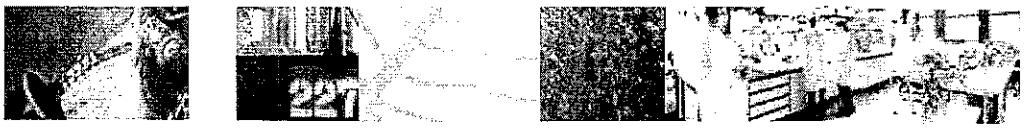
This chapter addresses the principal statutory and regulatory mechanisms available to promote biofuels: a Low Carbon Fuel Standard and content mandates. It also suggests the need for regulatory flexibility to facilitate pilot demonstrations of new technologies.

Content mandates, like those in the federal Energy Independence and Security Act of 2007, require the use of specified amounts of particular biofuels. Some states have enacted content mandates, although in the Northeast they generally apply only to fuel use by state vehicles.

Legislation filed by Governor Patrick, Senate President Murray, and House Speaker DiMasi in November 2007 would exempt cellulosic ethanol from the state gasoline tax and set minimum requirements for the use of biodiesel blends in diesel motor vehicle fuel and Number 2 heating oil sold in the state. The Task Force supports this legislation with amendments that would make it more performance-based and technology-neutral, as well as addressing implementation issues and the need for a transition to a Low Carbon Fuel Standard.

Legislation filed by Governor Patrick, Senate President Murray, and House Speaker DiMasi in November 2007 would exempt cellulosic ethanol from the state gasoline tax and set minimum requirements for the use of biodiesel blends in diesel motor vehicle fuel and Number 2 heating oil sold in the state.

A Low Carbon Fuel Standard (LCFS) is a performance-based, technology-neutral approach that sets limits on greenhouse gas emissions without mandating specific fuel content. It allows the market to drive the development of alternative fuels and technologies at the lowest cost. California is currently developing regulations to implement its LCFS, which would require a reduction of 10% by 2020 in the carbon intensity, on a lifecycle basis, of vehicle fuel sold in California. By not picking winners among technological alternatives to petroleum propulsion, the LCFS allows the best approaches to powering vehicles to win out over time, whether they be biofuels, all-electric vehicles, plug-in hybrids, or hydrogen



fuel cells. Because the market for fuels in the Northeast is regional, rather than state-by-state, and the LCFS is a complex tool, it would be far preferable to implement it on a regional basis.

Recommendations of the Task Force:

A Low Carbon Fuel Standard is a performance-based, technology-neutral way to set limits on greenhouse gas emissions without mandating specific fuel content. By not picking winners among technological alternatives, the LCFS allows the best approaches to powering vehicles to win out over time.

1. Prioritize efforts to achieve near-term implementation of a regional, technology-neutral and performance-based Low Carbon Fuel Standard. Position Massachusetts as a leader in this regional development. Given the uncertainty of regional coordination, however, the Commonwealth should also move forward without delay in designing a Massachusetts-specific LCFS that other states and provinces can adopt. The Standard should include lifecycle greenhouse gas reduction standards, as discussed in Chapter 2 of this report, and should reward companies for performance-based results in achieving such reductions.

2. Consider incentives to promote the best uses of sustainably harvested biomass, whether as a replacement for transportation fuels or in other energy applications, such as a liquid fuel substituting for heating oil or as a solid fuel used directly for space heating and/or electricity generation. This would move the state farther along the continuum of being technology-neutral, searching for the most cost-effective means of reducing petroleum use and greenhouse gas emissions.

3. While a Massachusetts Low Carbon Fuel Standard is being developed, implement transitional, carefully targeted mandates, such as requirements for minimum percentages of biodiesel in motor and heating fuel. Mandates should require that the fuels yield substantial lifecycle greenhouse gas reductions, including direct and indirect impacts such as those on land use, while not increasing the release of other pollutants; and should be limited, such as by being tied to in-state production of the feedstocks and by phasing out as a Low Carbon Fuel Standard comes into existence. Mandates should be as flexible and technology-neutral as possible. Use of a trading system for meeting the requirements should be considered, although the regulatory complexities this would add must be weighed carefully.

4. The state should ensure that temporary, pilot scale biorefineries are allowed to proceed after review of appropriate environmental safeguards and evidence that the pilot's results will be useful if it succeeds. Analysis of potential contaminants contained in or produced from the processing of waste products such as construction and demolition waste, the organic fraction of municipal solid waste, and biosolids from wastewater treatment plants. MassDEP should review its regulatory authority to determine whether revisions are needed to allow pilot scale waste-to-fuel production. MassDEP should assist in the review of pilot scale projects (whether or not they need a permit) to ensure that, when a proponent seeks approval for a commercial project, those permits can be issued in a timely manner.

5. The state should support the demonstration of operational, maintenance and environmental impacts from the use of waste-based renewable fuels in commercial boilers or turbines. Funding for the purchase of biofuels and to oversee tests done at state facilities may be needed. State environmental agencies should adopt reasonable reporting requirements for those deciding to burn advanced fuels. The continued use of existing permitted fuel, if the advanced biofuel is unavailable, should be allowed.

6. Further research and analysis should be done to evaluate the benefits and costs of policies to support biofuels development

through a regulatory framework, including those in (3) above, on an expedited timeline.

Chapter 5 – Promoting Infrastructure for Delivery and Distribution of Biofuels

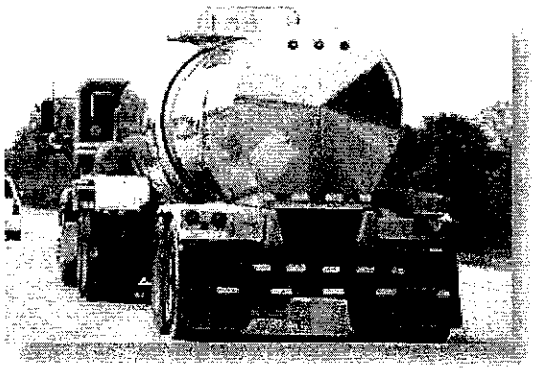
For Massachusetts to become a national leader in the development and use of advanced biofuels as a substitute for petroleum, the infrastructure for biofuels delivery and distribution will have to be in place. Consumers will need to be able to use biofuels in their vehicles and homes in order to make them a true alternative to petroleum products.

The Commonwealth has no crude oil production, no refining capacity, and no direct service by a major interstate petroleum pipeline. All petroleum products are imported from two main sources: domestic refined products, originating in the Gulf Coast, and imports supplied primarily by Canada, Venezuela and the U.S. Virgin Islands.

While ethanol and biodiesel are both used almost exclusively in blends with petroleum, their supply chain and infrastructure needs differ significantly. For biofuels to transition successfully from the current usage of corn- and soy-based feedstocks in low blends into a significant industry in the region, accommodations will be needed in the mechanisms by which Massachusetts meets its fuel needs in transportation, heating, and other uses—mechanisms that are now geared almost exclusively to the use of petroleum products.

Recommendations of the Task Force:

1. Implement limited-cost investments in infrastructure for ethanol and biodiesel, subject to budget constraints, such as E85 stations along major state highway corridors, and possible assistance for storage and distribution of biodiesel.
2. Study the benefits and costs of measures to increase the share of flex-fuel vehicles in Massachusetts, including mandates and incentives. Such research should take into account both short- and long-term impacts on actual greenhouse gas emissions and other environmental concerns. Explore policies to induce automakers to provide more fuel-efficient flex-fuel vehicle models than are currently available. For its own fleet, the state should purchase flex-fuel vehicles that exceed the average CAFE standard mileage requirements for each vehicle class.
3. Subject to state budget constraints, provide incentives to encourage development of smaller regional biorefineries, especially for cellulosic biofuels, that utilize locally available fuel including waste feedstocks.



4. Support pilot deployment of plug-in hybrid and all-electric vehicles, including flex-fuel plug-in hybrid vehicles, in both light-duty and heavy-duty vehicle classes.
5. Investigate the costs and benefits of incentives for additional heated storage tanks and blending infrastructure at regional terminals.
6. Support rail freight infrastructure for biofuels as part of a broader policy of promoting rail over road freight transportation.



Chapter 6 - Grants, Loans, and Tax Incentives

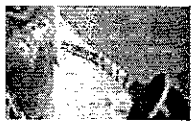
Aggressive expansion of an advanced biofuels industry holds the promise of jobs and economic growth as part of a larger clean energy sector that capitalizes on Massachusetts's advantages in technology, venture capital, sustainable forestry and a highly skilled workforce. In addition, advanced biofuels offer the prospect of environmental benefits in the form of reduced greenhouse gas emissions as they displace the use of imported petroleum in our engines and furnaces. Reducing oil imports is also vital to the energy security of the U.S. as a whole. To realize this promise of global leadership, job creation and retention, economic growth, and environmental benefits, Massachusetts should begin rigorous benefit-cost analysis to identify the financial tools that can develop the sector. Such an effort must necessarily account for revenue impacts and direct and indirect environmental impacts.

As a general matter, state governments have the ability to use their own financial resources to aid particular industries whose growth they see as being in the public interest. Generally, the instruments at their disposal for this purpose include grants, loans, and the state tax code. Massachusetts has used these tools in recent years to provide targeted assistance in a number of areas, including for manufacturers, R&D companies, biotechnology, and the film industry. This chapter discusses the applicability of these options to the emerging biofuels industry, and makes recommendations about how to tailor state financial incentives to maximize the industry's potential in the Bay State.

Most existing federal and state biofuel subsidies, including various tax incentives, are designated for first generation biofuels, mainly corn-based ethanol and soy-based biodiesel. Such policies are common in states with large agricultural sectors, but would have relatively little potential for providing economic benefits in Massachusetts. Advanced, or cellulosic-based, fuels are more promising candidates for support from the Commonwealth, since we have greater ability to supply feedstock for them and produce them.

Recommendations of the Task Force:

1. Exempt cellulosic biofuels from the state's gasoline tax, with a sunset date. An excise tax exemption will encourage fuel distributors to purchase cellulosic ethanol when available, and minimize the risk associated with investment in cellulosic biofuel development.
2. Conduct rigorous benefit-cost analysis of prospective financial support policies for the biofuels industry, comparing benefits (including greenhouse gas reduction, employment gains, energy security, and tax revenues from economic development) with costs (including environmental impacts, state budgetary costs, and consumer/business expenses).
3. Subject to state budget constraints and lifecycle environmental and greenhouse gas criteria, consider the use of production tax credits and other tax incentives targeted at advanced biofuels production and commercialization in those cases where analysis shows that projected benefits exceed costs. To better assist pre-profit firms, study the implications of making tax credits refundable or transferable.
4. Subject to budget constraints, consider the costs and benefits of implementing state tax credits for the production of in-state biofuel and biomass feedstocks from managed forests and the cultivation of energy crops.

Benefits to be considered should include stimulating investment in forestry and agriculture, improving the market demand and competitiveness of these feedstocks relative to residue sources of woody biomass, and maintaining and improving the Commonwealth's working landscapes. (See discussion in Chapter 3)

5. Subject to budget constraints, authorize state funding for research in partnership with private companies and universities to improve existing technologies for converting wastes, including cranberry and other agricultural residues, to carbon-reducing, environmentally beneficial fuels. Before putting such technologies to work on a wide scale, however, subject the diversion of waste products for biofuels to full environmental and economic analysis. (See discussion in Chapter 3)

6. Subject to state budget constraints and lifecycle environmental and greenhouse gas criteria, create a fund that would provide grants and loans to attract advanced biofuels R&D, demonstration, and production facilities to the Commonwealth in those cases where analysis shows that projected benefits exceed costs.

7. Phase out financial incentives for producers and consumers of biofuels with implementation of a Low Carbon Fuel Standard, since the standard will provide durable incentives to achieve greenhouse gas reductions and displacement of petroleum fuels at the lowest cost to consumers on a performance-based, technology-neutral basis. However, R&D incentives may have a longer-term role in state support for the industry.

8. Include biofuels in priorities for state-level research on renewable energy, presumably associated with a state college or university. This educational institution should take the lead in identifying and pursuing federal funding in collaboration with biofuels companies.

Governor Patrick, Senate President Murray, and Speaker of the House DiMasi announced the creation of an Advanced Biofuels Task Force

Chapter 206 of the Acts of 2008

AN ACT RELATIVE TO CLEAN ENERGY BIOFUELS.

Whereas, The deferred operation of this act would tend to defeat its purpose, which is to provide forthwith for the immediate production and use of clean biofuels to reduce oil dependence and greenhouse gas emissions in the commonwealth, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same as follows:

SECTION 1. Chapter 64A of the General Laws is hereby amended by striking out section 1, as appearing in the 2006 Official Edition, and inserting in place thereof the following 2 sections:-

Section 1. As used in this chapter, the following words shall, unless the context otherwise requires, have the following meanings:-

"Appellate tax board", the board established by section 1 of chapter 58A.
"Average price", the weighted average selling price per gallon of fuel exclusive of federal and state motor fuel taxes imposed thereon sold by licensees, as determined by the commissioner on a consistent basis from information furnished by distributors, unclassified exporters and unclassified importers with their monthly returns and from other statistical data reflecting the average level of such prices at the time such determination is made.
"Cellulosic biofuel", fuel that may be used in place of petroleum-based fuel derived from cellulose, hemicellulose or lignin derived from renewable biomass.
"Commissioner", the commissioner of revenue.
"Department", the department of energy resources within the executive office of energy and environmental affairs.
"Distributor", shall include: (1) any person qualified to do business in the commonwealth who produces, refines, manufactures or compounds fuel, as herein defined, or any person who operates a port or pipe line terminal within the commonwealth for the receipt of fuel, as herein defined; and (2) any person who elects to qualify as a distributor by importing into the commonwealth or by receiving within the commonwealth fuel, as herein defined, by pipe line, vessel, tank car or tank truck lots, for resale in pipe line, vessel, tank car or tank truck lots; provided, that no person under clause (2) shall qualify as a distributor unless his facilities is regularly used for the receipt and storage of fuel, as herein defined, are such that not less than 25,000 gallons may be stored in the aggregate, at 1 location within the commonwealth; and provided, further, that at least 75 per cent of the fuel imported or received by him is sold to others for resale exclusive of sales to government instrumentalities.

"Eligible cellulosic biofuel", cellulosic biofuel that yields at least a 60 per cent reduction in lifecycle greenhouse gas emissions relative to average lifecycle greenhouse gas emissions for petroleum based fuel sold in 2005, as determined by the department in consultation with the department of environmental protection and the executive office of energy and environmental affairs.
"Feedstock", raw material used to produce a fuel.
"Fuel", all products commonly or commercially known or sold as gasoline, including casing-head and absorption or natural gasoline, regardless of their classification or uses; and any liquid prepared, for American Society Testing Materials Method D-86, not more than 9 per cent at 176° Fahrenheit, and which have a distillation range of 150° Fahrenheit, or less, or liquefied gases which would not exist as advertised, offered for sale, or sold for use as or commonly and commercially used as a fuel in internal combustion engines, which when subjected to distillation in accordance with the standard method of test for distillation of gasoline, naphtha, kerosene and similar petroleum products (American Society for Testing Materials Designation D-86) show not less than 10 per cent distilled (recovered) below 347° Fahrenheit (175° Centigrade) and not less than 95 per cent distilled (recovered) below 464° Fahrenheit (240° Centigrade); provided, that the term "fuel" shall not include industrial solvents or naphthas which distill, by said American Society liquids at a temperature of 60° Fahrenheit and a pressure of 14.7 pounds per square inch absolute. For the purposes of this chapter, "fuel" shall include products sold or used as fuel for aircraft, except aircraft fuel as defined in section 1 of chapter 64J.
"Lifecycle greenhouse gas emissions", the aggregate quantity of greenhouse gas emissions, including direct emissions and significant indirect emissions such as significant emissions from and use changes, as determined by the department in consultation with the department of environmental protection and the executive office of energy and environmental affairs, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.
"Low carbon fuel standard", a requirement that the average lifecycle greenhouse gas emissions attributable to use of energy in an economic sector are equal to or less than a specified numeric level, or a similar standard or system, such as the requirement contained in California Executive Order S-1-07. The level may be stated as units of greenhouse gas emissions per unit of delivered energy, corrected for differences in the efficiency of the energy in the particular end use; for example the difference between efficiency of a gasoline engine and an electric motor in powering a vehicle. The standard may apply to energy used in motor vehicles or to another energy consuming sector.
"Motor vehicle", shall include any vehicle propelled by any power other than muscular, except boats, tractors used exclusively for agricultural purposes and such vehicles as run only on rails or tracks.
"Purchaser", shall include, in addition to its usual meaning, a distributor and unclassified importer in the case of a transfer of fuel by a distributor or an unclassified importer into a motor vehicle, or into a receptacle from which fuel is supplied by him to his own or other motor vehicles.

"Renewable biomass", non-fossil fuel based material, including: planted crops; crop residues; planted trees and tree residues from sustainably managed forests; waste materials including animal waste, animal by-products, organic portions of municipal solid waste, grease trap waste, construction and demolition debris; and algae, or as otherwise determined by the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs.
"Sale", shall include, in addition to its usual meaning, the transfer of fuel by a distributor or an unclassified importer into a motor vehicle or into a receptacle from which fuel is supplied by him to his own or other motor vehicles.
"Tax per gallon", shall be 21 cents per gallon. For aviation fuel, "tax per gallon" shall mean 7½ per cent of the average price, as determined by the commissioner, for each calendar quarter, computed to the nearest tenth of a cent per gallon; provided, however, that such tax shall not be less than 10 cents per gallon.
"To sell", in all of its moods and tenses, shall refer to a sale as herein defined.
"Unclassified importer", any person who imports or causes to be imported fuel, as herein defined, for use, distribution or sale in the commonwealth, but who does not qualify as a distributor.
"Unclassified exporter", any person licensed as a distributor in another state who exports or causes to be exported fuel, as herein defined, for use, distribution or sale outside the commonwealth, but who does not qualify as a distributor.
"Waste feedstock", previously used or discarded solid, liquid or contained gaseous material with heating value resulting from industrial, commercial or household food service activities that would otherwise be stored, treated, transferred or disposed. Waste feedstock shall include, but not be limited to: waste vegetable oils, waste animal fats, substances derived from wastewater and the treatment of wastewater or grease trap waste. Waste feedstock shall not include petroleum-based waste or waste that otherwise meets the definition of hazardous waste, unless otherwise determined by the department of environmental protection.

Section 1A. Notwithstanding the definition of "tax per gallon" in section 1 and subject to section 2O of chapter 29, for fuel consisting of eligible cellulosic biofuel or of a blend of gasoline and eligible cellulosic biofuel, the tax per gallon shall be reduced in proportion to the percentage of the fuel content consisting of eligible cellulosic biofuel, measured by available energy content, as determined by the department of energy resources, hereinafter referred to as the department.
Manufacturers and wholesale distributors of cellulosic biofuel who seek to have their fuel classified as eligible cellulosic biofuel shall provide documentation satisfactory to the department that such fuel yields at least a 60 per cent reduction in lifecycle greenhouse gas emissions per unit of delivered energy, in comparison to the petroleum-based fuel displaced.

In determining the percentage reduction in lifecycle greenhouse gas emissions relative to petroleum-based fuel achieved by particular supplies of cellulosic biofuel, the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, shall use information and best practices available from other sources, including other states, the federal government, foreign governments, academic research and private and non-profit organizations.

If the department determines through an initial review that a waste feedstock will yield at least a 60 per cent lifecycle greenhouse gas reduction, is free of hazardous materials and hazardous waste and meets any other conditions established by the department, the department may exempt fuel produced from such a feedstock from a full lifecycle greenhouse gas emissions analysis.

The department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, shall promulgate rules and regulations necessary to carry out the provisions of this section.

SECTION 2. Chapter 94 of the General Laws is hereby amended by inserting after section 249H the following section:—

Section 249H1/2. (1) As used in this section, the following words shall, unless the context clearly requires otherwise, have the following meanings:-

"BQ-9000", the National Biodiesel Accreditation Program for producers and marketers of biodiesel fuel, operated by the National Biodiesel Accreditation Commission.
"Commissioner", the commissioner of the department of energy resources.
"Department", the department of energy resources within the executive office of energy and environmental affairs.
"Eligible petroleum distillate substitute fuel", petroleum distillate substitute fuel that yields at least a 50 per cent reduction in lifecycle greenhouse gas emissions relative to average lifecycle greenhouse gas emissions for petroleum distillate fuel sold in 2005, as determined by the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs.
"Feedstock", the raw material used to produce a fuel.
"Lifecycle greenhouse gas emissions", the aggregate quantity of greenhouse gas emissions, including direct emissions and significant indirect emissions such as significant emissions from land use changes, as determined by the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.

"Low carbon fuel standard", a legal requirement that the average lifecycle greenhouse gas emissions attributable to use of energy in an economic sector are equal to or below a specified numeric level, or a similar standard or system, such as the requirement contained in California Executive Order S-1-07. The level may be stated as units of greenhouse gas emissions per unit of delivered energy, corrected for differences in the efficiency of the energy in the particular end use; for example the difference between efficiency of a gasoline engine and an electric motor in powering a vehicle. The standard may apply to energy used in motor vehicles or to another energy consuming sector. "Petroleum distillate substitute fuel", fuel that is derived predominantly from renewable biomass; and meets American Society for Testing and Materials specifications for use in home heating applications, or such other quality certification standards as are approved by the department. For industrial and commercial applications, the department may substitute operational performance requirements that it determines are acceptable. "Renewable biomass", non-fossil fuel based material, including: planted crops; crop residues; planted trees and tree residues from sustainably managed forests; waste materials including animal waste, animal by-products, organic portions of municipal solid waste, grease trap waste, construction and demolition debris; and algae, or as otherwise determined by the department in consultation with the department of environmental protection and the executive office of energy and environmental affairs. "Waste feedstock", previously used or discarded solid, liquid or contained gaseous material with heating value resulting from industrial, commercial or household food service activities that would otherwise be stored, treated, transferred or disposed. Waste feedstock shall include, but not be limited to: waste vegetable oils, waste animal fats, substances derived from wastewater and the treatment of wastewater or grease trap waste. Waste feedstock shall not include petroleum-based waste or waste that otherwise meets the definition of hazardous waste, unless otherwise determined by the department of environmental protection.

(2) Manufacturers and wholesale distributors of petroleum distillate substitute fuel who seek to have their fuel classified as eligible petroleum distillate substitute fuel shall provide documentation satisfactory to the department that such fuel yields at least a 50 per cent reduction in lifecycle greenhouse gas emissions per unit of delivered energy, in comparison to the petroleum distillate fuel displaced.
In determining the percentage lifecycle greenhouse gas reductions achieved by particular fuels, the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, shall use information and best practices available from other sources, including other states, the federal government, foreign governments, academic research and private and non-profit organizations.

If the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, determines through an initial review that a particular waste feedstock will clearly yield at least a 50 per cent lifecycle greenhouse gas reduction, is free of hazardous materials and hazardous waste, and meets any other conditions set by regulations promulgated by the department, the department may exempt fuel produced from such a material from a full lifecycle greenhouse gas emissions analysis.
For supplies that the department determines meet the criteria above for reductions in greenhouse gas emissions, the department shall certify the supplies as eligible petroleum distillate substitute fuel and shall provide documentation or certificates to suppliers of such fuel showing the number of gallons of neat eligible petroleum distillate substitute fuel supplied. The department shall, by regulation, determine which suppliers the documentation shall apply to, and shall create a mechanism for tracking such supplies.

(3) Except as provided in paragraph (4), the following shall apply to all number 2 petroleum distillate fuel and all other liquid fuel sold as a substitute for number 2 distillate fuel, offered for sale to end-users, retail sellers or to any other entity that will be providing such fuel directly to end-users in the commonwealth for use in residential, commercial or industrial heating applications. Such fuel must contain at least 2 per cent eligible petroleum distillate substitute fuel, measured by available energy content or as otherwise provided by the department, no later than July 1, 2010. Except as provided in subsection (4), all such fuel must contain at least 3 per cent eligible petroleum distillate substitute fuel no later than July 1, 2011, 4 per cent eligible petroleum distillate substitute fuel no later than July 1, 2012, and 5 per cent eligible petroleum distillate substitute fuel no later than July 1, 2013.

The department shall study the feasibility of applying the percentage requirements above to number 4 and number 6 petroleum distillate fuel, including whether blends of eligible petroleum distillate substitute fuel with number 4 or number 6 petroleum distillate fuel will operate correctly in applicable heating equipment. If the department determines that doing so is feasible, it shall extend the percentage requirements above to number 4 and number 6 petroleum distillate fuel.

The department may delay these implementation dates for the period of time which it determines, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, that providing sufficient supplies of the required eligible petroleum distillate substitute fuel to end-use consumers is not feasible due to lack of supply, lack of blending facilities or unreasonable cost. If the department delays implementation as provided in the preceding sentence, the commissioner shall file a report within 30 days of such decision with the clerks of the house of representatives and senate who shall forward the same to the house and senate committees on ways and means, the joint committee on telecommunications, utilities and energy, the joint committee on environment, natural resources and agriculture and the joint committee on transportation explaining the reasons for any such decision to delay implementation.

If a low carbon fuel standard or a similar standard or system, that will achieve equal or greater reductions in greenhouse gas emissions to the minimum content requirement for eligible petroleum distillate substitute fuel specified by this section, is adopted by the commonwealth, or a standard applying to the commonwealth is adopted by the federal government; then at least 60 days prior to the effective date of the standard the department of environmental protection shall submit a statement to the general court that the standard will become effective on the particular date, and the department of environmental protection's determination that the standard will achieve the specified reduction in emissions. If the general court takes no action, the minimum content requirement specified by this section shall expire on the date that the regulations implementing the standard or system becomes effective, or at such other date specified by the department, but in any case within 1 year of implementation of the regulations. If the department chooses an expiration date other than the effective date of the regulations it shall submit a statement to the general court explaining its reasons for doing so prior to said effective date.

(4) The department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, shall study the feasibility, benefits and costs, including benefits and costs to consumers, producers and the state government, of making the percentage mandates in subsection (3) apply on a statewide average basis rather than for every gallon of petroleum distillate fuel sold for heating purposes. If the department determines that such a system is feasible and that its benefits substantially exceed its costs, the department shall have the authority to implement such a system. The department shall determine on which entities the percentage requirements shall be applied. If the department implements such a system, the department shall promulgate regulations allowing and tracking sales of certificates or other documentation from the department that show use of eligible petroleum distillate substitute fuel in the commonwealth. Entities may meet their percentage requirements for use of eligible petroleum distillate substitute fuel by purchasing certificates or other documentation, and such certificates may be re-sold.

(5) Manufacturers and wholesale distributors of eligible petroleum distillate substitute fuel, and of fuel blended from petroleum distillate and eligible petroleum distillate substitute, doing business in the commonwealth shall furnish samples of such products to the department, shall permit the entry and inspection by the department or the department of environmental protection of the premises of such manufacturers or distributors, and the inspection and sampling of fuel stored thereon.

(6) Manufacturers of eligible petroleum distillate substitute fuel that is sold in the commonwealth shall meet quality assurance criteria or accreditation requirements determined by the department, in consultation with the department of environmental protection. Manufacturers shall submit documentation of quality assurance or accreditation to the department by November 1, 2009, or at least 3 months prior to the date on which the department certifies their fuel as eligible petroleum distillate substitute fuel, and shall submit documentation to the department showing that their accreditation remains current every 2 years thereafter.

(7) The department shall evaluate the feasibility and desirability of requiring BQ-9000 or other comparable accreditation requirement for producers and wholesale distributors of petroleum distillate substitute fuel and petroleum distillate fuel blended with petroleum distillate substitute fuel operating in the commonwealth. If the department concludes that such accreditation is feasible and desirable in order to protect consumers and the environment, the department shall promulgate regulations to implement an accreditation requirement.

(8) The department shall promulgate regulations to implement the provisions of this section.

(9) No person shall sell or offer to sell petroleum distillate heating fuel in the commonwealth, including eligible petroleum distillate substitute fuel that does not conform to the provisions of this section.

(10) Notwithstanding section 249H, failure to comply with subsection (9) of this section shall constitute an unfair or deceptive act under chapter 93A, and may be enforced as provided therein.

SECTION 3. Said chapter 94 is hereby further amended by inserting after section 295G the following section:—

Section 295G½. (1) As used in this section, the following words shall have the following meanings:-

"BQ-9000", the National Biodiesel Accreditation Program for producers and marketers of biodiesel fuel, operated by the National Biodiesel Accreditation Commission.
"Commissioner", the commissioner of the department of energy resources.
"Department", the department of energy resources within the executive office of energy and environmental affairs.
"Diesel substitute fuel", fuel that is derived predominantly from renewable biomass; that meets American Society for Testing and Materials specifications for use in diesel engines, or that meets such other quality certification standards as are approved by the department for the application involved. For diesel substitute fuel used in on-road motor vehicles, the fuel shall meet the registration requirements for fuels and fuel additives established by the United States Environmental Protection Agency under section 211C of the Clean Air Act, 42 USC section 7545.
"Eligible diesel substitute fuel", diesel substitute fuel that yields at least a 50 per cent reduction in lifecycle greenhouse gas emissions relative to average emissions for petroleum-based diesel fuel sold in 2005, as determined by the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs.
"Feedstock", the raw material used to produce a fuel.

"Lifecycle greenhouse gas emission", the aggregate quantity of greenhouse gas emissions, including direct emissions and significant indirect emissions such as significant emissions from land use changes, as determined by the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.
"Low carbon fuel standard", a legal requirement that the average lifecycle greenhouse gas emissions attributable to use of energy in an economic sector are equal to or below a specified numeric level, or a similar standard or system, such as the requirement contained in California Executive Order S-1-07. The level may be stated as units of greenhouse gas emissions per unit of delivered energy, corrected for differences in the efficiency of the energy in the particular end use; for example the difference between efficiency of a gasoline engine and an electric motor in powering a vehicle. The standard may apply to energy used in motor vehicles or to another energy consuming sector.
"Renewable biomass", non-fossil fuel based material, including: planted crops; crop residues; planted trees and tree residues from sustainably managed forests; waste materials including animal waste, animal by-products, organic portions of municipal solid waste, grease trap waste, construction and demolition debris; and algae, or as otherwise determined by the department in consultation with the department of environmental protection and the executive office of energy and environmental affairs.
"Waste feedstock", previously used or discarded solid, liquid or contained gaseous material with heating value resulting from industrial, commercial or household food service activities that would otherwise be stored, treated, transferred or disposed. Waste feedstock shall include, but not be limited to: waste vegetable oils, waste animal fats, substances derived from wastewater and the treatment of wastewater and grease trap waste. Waste feedstocks shall not include petroleum-based waste or waste that otherwise meets the definition of hazardous waste, unless otherwise determined by the department of environmental protection.

(2) Manufacturers and wholesale distributors of diesel substitute fuel doing business in the commonwealth who wish to have their fuel classified as eligible diesel substitute fuel shall provide documentation satisfactory to the department that such fuel yields at least a 50 per cent reduction in lifecycle greenhouse gas emissions per unit of delivered energy, in comparison to the petroleum-based diesel fuel displaced.

In determining the percentage lifecycle greenhouse gas reductions achieved by particular fuels, the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, shall use information and best practices available from other sources, including other states, the federal Environmental Protection Agency, foreign governments, academic research and private and non-profit organizations.

If the department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, determines through an initial review that a particular waste feedstock will clearly yield at least a 50 per cent lifecycle greenhouse gas reduction, is free of hazardous materials and hazardous waste, and meets any other conditions set by regulations promulgated by the department, the department may exempt fuel produced from such a material from a full lifecycle greenhouse gas emissions analysis.

For supplies that the department determines meet the criteria above for reductions in greenhouse gas emissions, the department shall, by regulation, certify the supplies as eligible diesel substitute fuel and shall provide documentation or certificates to suppliers of such fuel showing the number of gallons of neat eligible diesel substitute fuel supplied. The department shall, by regulation, determine which suppliers the documentation shall apply to, and create a mechanism for tracking such supplies.

(3) Except as provided in subsection (4), the following shall apply to all diesel motor vehicle fuel and all other liquid fuel used in motor vehicle diesel engines, offered for sale to end-users, retail sellers or to any other entity that will be providing such fuel directly to end-users in the commonwealth for use in transportation. All such fuel must contain at least 2 per cent eligible diesel substitute fuel, measured by available energy content or in such other manner as determined by the department no later than July 1, 2010. Except as provided in subsection (4), all such fuel must contain at least 3 per cent eligible diesel substitute fuel no later than July 1, 2011, 4 per cent eligible diesel substitute fuel no later than July 1, 2012, and 5 per cent eligible diesel substitute fuel no later than July 1, 2013.

The department may delay these implementation dates for the period of time which it determines, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, that providing sufficient supplies of the required eligible diesel substitute fuel to end-use consumers is not feasible due to lack of supply, lack of blending facilities or unreasonable cost. If the department delays implementation as provided in the preceding sentence, the commissioner shall file a report within 30 days of such decision with the clerks of the house of representatives and senate who shall forward the same to the house and senate committees on ways and means, the joint committee on telecommunications, utilities and energy, the joint committee on environment, natural resources and agriculture and the joint committee on transportation explaining the reasons for any such decision to delay implementation.

If a low carbon fuel standard or a similar standard or system, that will achieve equal or greater reductions in greenhouse gas emissions to the minimum content requirement specified by this section is adopted by the commonwealth, or a standard applying to the commonwealth is adopted by the federal government, then at least 60 days prior to the effective date of the standard, the department shall submit a statement to the general court that the standard shall become effective on the particular date, and the department of environmental protection's determination that the standard will achieve the specified reduction in emissions.

If the general court takes no action, the minimum content requirement specified by this section shall expire on the date that the regulations implementing the standard or system becomes effective, or at such other date specified by the department, but in any case within 1 year of implementation of the regulations. If the department chooses an expiration date other than the effective date of the regulations it shall submit a statement to the general court explaining its reasons for doing so prior to said effective date.

(4) The department, in consultation with the department of environmental protection and the executive office of energy and environmental affairs, shall study the feasibility, benefits and costs, including benefits and costs to consumers, producers and the commonwealth, of making the percentage mandates in subsection (3) apply on a statewide average basis rather than for every gallon of diesel motor fuel sold. If the department implements such a system, the department shall promulgate regulations allowing and tracking sales of certificates or other documentation from the department that show use of eligible diesel substitute fuel in the commonwealth. Entities may meet their percentage requirements for use of eligible diesel substitute fuel by purchasing certificates or other documentation, and such certificates may be re-sold.

(5) Manufacturers and wholesale distributors of eligible diesel substitute fuel, and of fuel blended from petroleum diesel and eligible diesel substitute, doing business in the commonwealth shall furnish samples of such products to the department, shall permit the entry and inspection by the division and department of the premises of such manufacturers or distributors and the inspection and sampling of fuel stored thereon.

(6) Manufacturers of eligible diesel substitute fuel that is sold in the commonwealth shall meet quality assurance criteria or accreditation requirements determined by the department, in consultation with the department of environmental protection. Manufacturers shall submit documentation of quality assurance or accreditation to the department on or before November 1, 2009, or at least 3 months prior to the date on which the department certifies their fuel as eligible diesel substitute fuel, and must submit documentation to the department showing that their accreditation remains current every 2 years thereafter.

(7) The department shall evaluate the feasibility and desirability of requiring BQ-9000 or other comparable accreditation requirement for producers and wholesale distributors of diesel substitute fuel and petroleum-based motor fuel blended with diesel substitute fuel operating in the commonwealth. If the department concludes that such accreditation is feasible and desirable in order to protect consumers and the environment, the department shall promulgate regulations to implement an accreditation requirement.

(8) The department shall promulgate regulations to implement the provisions of this section.

(9) No person shall sell or offer to sell heating fuel, including eligible diesel substitute fuel, that does not conform to this section.

(10) Notwithstanding section 249H, failure to comply with subsection (9) shall constitute an unfair or deceptive act under the provisions of chapter 93A, and may be enforced as provided therein.

SECTION 4. The division of energy resources, in consultation with the department of revenue, shall promulgate regulations concerning the timing and form of documentation that will enable the department to determine the appropriate tax revenue to be collected pursuant to this act.

SECTION 5. There is hereby established a special commission to study the feasibility and effectiveness of various forms of incentives to promote the development and use of advanced biofuels in the commonwealth including, but not limited to: production credits, the production and harvesting of woody biomass or woody residue, feedstock incentives and direct consumer credits for the use of advanced biofuels in various applications. The commission shall be comprised of 11 members: 3 of whom shall be appointed by the speaker of the house of representatives, 1 of whom shall be the house chair of the joint committee on telecommunication, utilities and energy, who shall serve as co-chair; 1 of whom shall be appointed by the house minority leader; 3 of whom shall be appointed by the senate president, 1 of whom shall be the senate chair of the joint committee on telecommunication, utilities and energy, who shall serve as co-chair; 1 of whom shall be appointed by the senate minority leader; and 3 of whom shall be appointed by the governor, 1 of whom shall be the secretary of the executive office of energy and environmental affairs, or his designee, and 1 of whom shall be employed by a company that works in the field of advanced biofuels. In conducting its investigation and study, the commission shall consider biofuel incentive programs in other states and the commonwealth's relative competitiveness in the field.

The commission shall report to the general court the results of its investigation and study and its recommendations, if any, together with drafts of legislation necessary to carry its recommendations into effect, by filing the same with the clerks of the house of representatives and the senate, who shall forward the same to the joint committee on telecommunications, utilities and energy and the house and senate committees on ways and means on or before March 31, 2009.

SECTION 6. The governor and the secretary of energy and environmental affairs shall develop and enter into, to the extent possible, an agreement among those states participating in the Regional Greenhouse Gas Initiative, for the purpose of implementing a low carbon fuel standard hereinafter referred to as LCFS, for transportation fuels; provided, however, that when possible:

(1) the LCFS shall be measured on a full fuels cycle basis;
(2) the LCFS may be met through market-based methods by which providers exceeding the performance required by an LCFS shall receive credits that may be applied to future obligations or traded to providers not meeting the LCFS;
(3) the agreement shall establish a declining standard for greenhouse gas emissions measured in CO2-equivalent grams per unit of fuel energy sold, sufficient to achieve a 10

per cent reduction in the carbon content of all passenger vehicle fuels sold in participating states; and

(4) the commonwealth shall, with the other states participating in the agreement, examine the regulations and implementation of a low carbon fuel standard in California and other states and shall consider ways to coordinate and issue public findings on both such matters, and shall, if applicable, use in the agreement the life-cycle analysis methods employed by the California Air Resources Board to determine the carbon intensity of fuel.

SECTION 7. There shall be a special commission to investigate and develop a strategy to increase the use of advanced biofuels as alternatives to conventional carbon-based fuels by the commonwealth, its agencies and political subdivisions and regional transit authorities.

The commission shall consist of the secretary of administration and finance or his designee, the secretary of energy and environmental affairs, who shall serve as the chair, the commissioner of energy resources, commissioner of the department of public utilities, the commissioner of revenue or his designee, the general manager of the Massachusetts Bay Transportation Authority or his designee, and 6 members to be appointed by the governor, 2 of whom shall represent the Massachusetts Municipal Association, 2 of whom shall represent regional transit authorities, 1 of whom shall represent environmental organizations in the commonwealth, and 1 of whom shall represent suppliers of motor fuels in the commonwealth.

The commission shall develop strategies to increase the use of advanced biofuels by the commonwealth, its agencies and political subdivisions and regional transit authorities and methods to advance those strategies. Methods to be considered shall include, but not be limited to: financing mechanisms including grants, loans and other incentive programs for group procurement of advanced biofuels, vehicles using advanced biofuels and distribution infrastructure and technical assistance.

The commission shall file a report detailing its strategies and methods and its recommendations, if any, and cost estimates together with drafts of legislation necessary to carry those recommendations into effect by filing the same with the clerks of the senate and house of representatives on or before April 15, 2009.

SECTION 8. Section 1 shall be effective for tax years beginning January 1, 2009 and ending December 31, 2017.

Approved July 28, 2008

Heating New York With Biodiesel, A Bad Idea.

The New York City Council is currently considering legislation that would require heating oil include biodiesel – a fuel primarily derived from vegetable oils. Bioheat proponents claim that substituting biodiesel for petroleum can reduce oil imports, improve air quality, and reduce greenhouse gas emissions.

In reality, a biodiesel mandate will increase heating oil costs by 15-30 cents a gallon, do little to improve air quality beyond what can be achieved with ultra low sulfur diesel, encourage environmentally destructive farming practices, have no impact on foreign oil consumption, drive up food prices, devour millions of dollars in taxpayer subsidies, and increase greenhouse gas emissions (see the latest report from *Science,* "Land Clearing and the Biofuel Carbon Debt"[1] and *The New York Times* coverage, "Biofuels Deemed a Greenhouse Threat"[2]).

Rather than require biodiesel, **City Council should authorize an ultra low sulfur diesel (ULSD) heating oil mandate**. ULSD will improve air quality in the city dramatically and reduce heating oil consumption without raising the cost of home heating or requiring government subsidies.

One million households and thousands of businesses in New York City consume approximately 500 million gallons of high sulfur heating oil annually. Because the sulfur content of fuels is directly related to emissions of fine particulate matter ($PM_{2.5}$), heating oil ranks as the largest source of $PM_{2.5}$ in the city.[3] Able to penetrate into the deepest portions of the lungs, $PM_{2.5}$ contributes to premature death from heart and lung disease, cardiac arrhythmias, heart attacks, asthma attacks, and bronchitis.[4]

By mandating ULSD we can remove sulfur from our heating oil thereby reducing $PM_{2.5}$ emissions by more than two-thirds.[5] In addition, ULSD improves furnace efficiency, decreasing fuel consumption and reducing maintenance.[6] Onroad vehicles are already required to fill up with ULSD; why should our homes be an exception?

Biodiesel is a renewable fuel made from non-renewable resources

Biodiesel can be refined from a wide variety of vegetable oils and animal fats, but in the US, subsidies and tariffs make soybean oil the dominant feedstock. Soybeans may be a renewable resource but America's industrial-scale farms devour and destroy enormous quantities of non-renewable and irreplaceable resources.

Powering the machines that plow, plant, harvest, cast fertilizers, spray pesticides, pump irrigation water, etc. is energy intensive. The fossil fuels consumed by on-farm operations release significant quantities of greenhouse gases and toxic air emissions.

Adding to soybean agriculture's formidable fossil fuel tally, large amounts of natural gas are needed to produce the nitrogen based fertilizers that promote their growth. These fertilizers break down in fields releasing nitrous oxides, a global warming agent hundreds of times more potent than CO_2. When these fertilizers leach from farm fields they poison drinking water and ravage marine ecosystems. Run-off from Midwestern farm fields ends up in the Gulf of Mexico where it contributes to a New Jersey-size "dead zone" almost entirely absent of marine life.[7]

A toxic rainbow of pesticides are sprayed on soybeans in an effort to combat weeds and insects. Making matters worse, 91 percent of the US soybean acreage planted in 2007 was genetically engineered to tolerate herbicides,[8] a development that has boosted glyphosate applications several fold.[9] Glyphosate, a powerful weed killer, is the third most common cause of pesticide illness in farm workers; exposure has been linked to rare cancers, miscarriages, and premature births.[10]

Biodiesel will increase greenhouse gas emissions & raise food prices

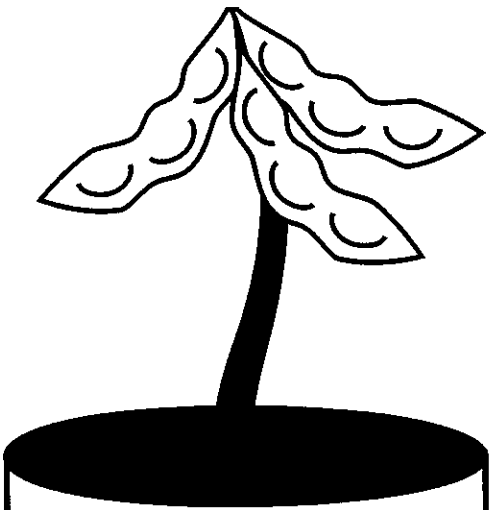
The US is on track to produce 3.3 billion gallons of biodiesel in 2009.[11] A quantity of fuel that would consume nearly every acre of US soybeans, yet meet only 6 percent of our diesel demand.[12] That 6 percent is not going to secure our energy independence but it will increase greenhouse gas emissions and raise food prices.

Clearing new land for energy crops releases up to 420 times more CO_2 than the fossil fuels they displace.[13] Low-income countries offer cheap land and labor and tropical crops such as palm can yield eight times more oil per acre than soybeans. If we continue to mandate the consumption of biodiesel we will exhaust domestic soybean acreages and the economics of vegetable oil will shift production to the tropics. Grasslands, wetlands, and forests will be cleared to make way for palm plantations destroying wildlife habitat and releasing millions of tons of greenhouse gases.[14]

Switching land from food to fuel raises food prices. In late 2006, the US demand for corn based fuels contributed to a dramatic spike in the price of corn, pushing up the cost of corn-intensive foods such as dairy, eggs, and meat.[15] And in Europe, the enormous demand for biodiesel stimulated by the 2003 Biofuels Directive has pushed up the cost of palm oil in Southeast Asia threatening the food security of millions living on less than a dollar a day.[16]

And we're paying for all this?

Hundreds of government programs have been created to support virtually every stage of production and consumption relating to biodiesel. Everyone from soybean farmers to biodiesel distributors get handouts compliments of the taxpayer. Every year grants, tax breaks, cheap credit, and regulatory mandates funnel hundreds of millions of dollars into promoting biodiesel, doling out around $2.00 for every gallon consumed.[19]



If New York City mandates bioheat, we will consume approximately 100 million gallons of biodiesel annually by 2013. With an average yield of 58 gallons of biodiesel per acre of soybeans,[17] heating our homes and businesses would require 1,724,138 acres of soybeans which in turn would require:[18]

- 9,120,690 gal. of diesel
- 5,362,069 gal. of gasoline
- 655,172 gal. of propane
- 120,690 c.f. of natural gas
- 7,931,035 kwh of electricity
- 161,551,731 lbs. of fertilizer
- 7,000,000 lbs. of pesticides.

What we can do

Contact your City Council Member and Mayor Bloomberg today in support of a ULSD heating oil mandate that does not include biodiesel. Let them know that by simply switching to ULSD heating oil we can dramatically improve the quality of the air we breathe daily while reducing oil consumption, and we can do it without raising the cost of home heating or depending on unsustainable and environmentally destructive biodiesel!

Notes

1 Fargione, J. et al. "Land Clearing and the Biofuel Carbon Debt". *Science*. February 7, 2008. <http://www.sciencemag.org/cgi/content/abstract/1152747v1>

2 *The New York Times*. February 8, 2008. <http://www.nytimes.com/2008/02/08/science/earth/08wbiofuels.html?scp=1&sq=biofuels&st=nyt>

3 PlaNYC. p. 120. <http://www.nyc.gov/html/planyc2030/downloads/pdf/report_air_quality.pdf>

4 Synapse Energy Economics, Inc. *Quantifying and Controlling Fine Particulate Matter in New York City*. August 8, 2007. p. 1-1. <http://www.synapse-energy.com/Downloads/SynapseReport.2007-08.NRDC.NYC-PM2.5-.03-19.pdf>

5 Synapse Energy Economics, Inc. p. 6-28.

6 PlaNYC. p. 128.

7 *National Geographic*. "Gulf of Mexico 'Dead Zone' Is Size of New Jersey". May 25, 2005. <http://news.nationalgeographic.com/news/2005/05/0525_050525_deadzone.html>.

8 USDA National Agricultural Statistical Survey. *Acreage*. June 29, 2007. p. 25. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2007/Acre-06-29-2007.pdf>

9 Benbrook, Charles. *Genetically Engineered Crops and Pesticide Use in the United States: The First Nine Years*. BioTech InfoNet, October 2004, Technical Paper No. 7. <http://www.biotech-info.net/Full_version_first_nine.pdf>

10 Organic Consumers Association. "Monsanto's Toxic Herbicide Glyphosate: A Review of its Health and Environmental Effects". May 17, 2007. <http://www.organicconsumers.org/articles/article_5229.cfm>

11 Koplow, Doug. *Biofuels – At What Cost: Government support for ethanol and biodiesel in the United Sates: 2007 Update*. Global Subsidies Initiative of the International Institute for Sustainable Development. October 2007. p. 2. <http://www.globalsubsidies.org/IMG/pdf/Brochure_-_US_Update.pdf>

12 Hill, J. et al. *Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuels*. PNAS, July 25, 2006, vol. 103, no.30, p. 11206-11210. p. 11207. <http://www.cedarcreek.umn.edu/hilletal2006.pdf>

13 Fargione, J. et al.

14 Clean Air Task Force. *Leaping Before They Looked: Lessons from Europe's Experience with the 2003 Biofuels Directive*. October 2007. p. 1. <http://www.catf.us/publications/reports/Leaping_Before_They_Looked.pdf>

15 Clean Air Task Force. *Biofuels: The Climate-Related Threats and Opportunities, and the Need to Develop Policies Based on a Comprehensive Assessment of Their Direct and Indirect Impacts*. October 2007. p. 2. <http://www.catf.us/publications/factsheets/CATF_Biofuels_Position_Paper-December_2007.pdf>

16 *The New York Times*. "A New, Global Oil Quandary: Costly Fuel Means Costly Calories". January 19, 2008. <http://www.nytimes.com/2008/01/19/business/worldbusiness/19palmoil.html?_r=1&scp=8&sq=biofuel&st=nyt&oref=slogin>

17 Hill, J. et al. p. 11207.

18 Sheehan, J. et al. *Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus*. Natl. Renewable Energy Lab, May 1998, Publ. No. SR-580-24089. p. 101. <http://www.nrel.gov/docs/legosti/fy98/24089.pdf>

19 Koplow, Doug. p. 1.

On behalf of the National Oilheat Research Alliance, I am happy to be able to provide you and the committee with some information on bioheat and the future of the oilheating industry.

The oilheating industry has had a long history of working to improve its environmental record. Over the years, the industry has adopted modern technology to improve the efficiency and emissions from oilheating equipment. The industry has also adopted an aggressive approach to improving equipment. Recently, the industry has decided to support the efforts of the Mid Atlantic Northeast Visibility Union's effort to reduce sulfur in heating oil to 15 ppm. We believe that this will significantly reduce the particulate emissions from heating oil combustion, and will lead to the next generation of ultra-efficient equipment.

As part of this effort to improve the environmental record and develop a better future for the industry and its customers, the oilheating industry began to look into biodiesel as a blendstock for heating oil. Early on, we found that the addition of biodiesel to heating oil improved its emissions of sulfur dioxide, nitrous oxides and particulate matter. Additionally, we saw it as beneficial if we could increase the domestic content of our fuel, and simultaneously reduce emissions of carbon dioxide. We believe that this strategy coupled with the industry's integration of solar technology will allow us to continue to be a very environmentally friendly fuel and pave the way for a continued role in America's energy future.

As the first phase of this strategy, we worked to ensure that bioheat, a mixture of biodiesel and heating oil could be used in existing heating oil equipment. Essentially, this would allow our existing customers to move to a greener fuel with no investment in technology.

After significant effort, we were able to establish a standard for heating oil that provides for 5 percent of biodiesel to be mixed with heating oil. This allows us to begin selling this fuel to many of our customers. We believe this turn to a greener fuel will benefit them and our society.

This hearing is examining many areas regarding the efficiency and life cycle of bioheat. The issues are very complicated and attempting to understand the primary, secondary and tertiary impacts of our activities are important and will provide guidance to our future. However, at the same time we examine these implications, people in the industry are moving forward. Additionally, we are seeing continuous advances in the technology and efficiency of biodiesel production and the crops that are used in it. There is no perfect solution, but as an industry we are working to develop alternatives and continue to pursue the most effective and environmentally friendly solutions.

Testimony of Gene Pullo, President of Metro Terminals and Metro Biofuels Before the New York City Council Environmental Protection Committee February 25, 2009

Good morning Chairman Gennaro and members of the Environmental Protection Committee. I'm Gene Pullo, President of Metro Terminals and Metro Biofuels. Metro is a 66-year old family-owned energy services provider specializing in heating oil, diesel fuel and most recently, biodiesel.

Metro is currently the largest marketer of biodiesel and bioheat in the New York Metropolitan Area. We are in the process of building the region's largest biodiesel processing facility adjacent to our terminal on the Newtown Creek in Greenpoint, Brooklyn. Our facility will be equipped to handle numerous biodiesel feedstocks including soy, recycled restaurant grease and algae, to name a few. Our facility will directly create 30 green collar jobs and 50 construction jobs right here in New York City. While other companies are fleeing the manufacturing business in Brooklyn, we are expanding ours. We see the biodiesel industry in New York City and New York State as a vital tool for economic growth during a time when we need it the most.

I would first like to thank Chairman Gennaro for his leadership in promoting the use of cleaner and more responsible biofuels in New York City. I have traveled to biofuels conferences all around the country and Jim is regarded as somewhat of a legend and a visionary. In my travels, I am inspired by the success of biodiesel mandates and initiatives in other cities and states such as San Francisco, Minnesota, Massachusetts, Pennsylvania and Florida, but when I arrive back in New York, I am frustrated. I am frustrated because my family and I believe that as a country, we need to improve air quality, fight global warming and reduce our dependence on foreign oil. For someone who makes his living in the petroleum business, these could be hard concepts to digest, let alone preach. But my firm belief is that the status quo is unacceptable, and in a small way, I feel like we have the power to change that.

The question is, why has New York City's bioheat mandate legislation stalled? Has air quality improved dramatically? Has global warming subsided? Has our dependency on foreign petroleum suddenly ceased? I think we all know the answers to these questions. But it bears repeating why there has been a global movement for biofuels and biodiesel in the first place.

- Biodiesel has no sulfur – that means none of the soot or particulate matter that has been linked to asthma, cardiovascular disease and respiratory disease. It's simple – biodiesel blends of B20 reduces overall sulfur and particulate matter emissions by 20%. That, in and of itself, should compel every air quality advocate and every environmental justice advocate to fight with everything they have to mandate a fuel with 20% less sulfur – that is available; that is affordable; that

requires no expensive changes to oil refineries; and that requires no special equipment.

- If that wasn't reason enough, replacing diesel and home heating oil with biodiesel blends will substantially lower our city's carbon footprint – B100 reduces carbon dioxide by 78%.

- And biodiesel reduces our dependency on foreign oil. It is made from diverse and plentiful domestic products which include agricultural crops like soy as well as recycled restaurant grease, animal fats and next generation feedstocks like algae.

- Biodiesel has been proven, in federal studies, to have a positive energy balance of 3.5 to 1 – meaning the amount of carbon it takes to make biodiesel is far, far outweighed by the amount of carbon that is displaced by using that biodiesel instead of 100% petroleum products like home heating oil and diesel fuel.

In fighting for biodiesel in New York State, I have found many allies in the environmental and health advocacy communities – leaders like the American Lung Association and the League of Conservation Voters. Numerous other leading groups joined Metro and the New York Oil Heating Association in our fight to restore the bioheat tax credit in Albany.

Since this is an oversight hearing on the sustainability of biofuels, I would like to address this issue as someone who has dedicated his life to learning about, and promoting biodiesel – precisely because of its sustainability.

Our dependence on petroleum is not sustainable. It is not sustainable to keep importing oil from foreign governments in the Middle East and Latin America that seek to do our country harm. It is not sustainable to burn fossil fuels when a much cleaner, affordable domestically produced alternative that contains significantly less fossil fuels is available and New Yorkers can breath easier. And it is not sustainable to talk about global warming, but ignore one of the most significant ways to fight it right here in our own backyard. If by unsustainable, we mean, we can't continue doing what we're doing because it will dig us further into the hole we are already in, then delaying a bioheat mandate is the definition of unsustainable.

The fact is, "sustainability" has only become the latest tool to thwart progress toward a greener, more politically stable country and a cleaner New York City. Few people can even articulate what "sustainability" means; how to achieve a sustainability standard that is viable; or provide any better alternative.

There are always those who resist change because it costs too much, or because it's too complicated. Miraculously, biodiesel does not have to cost too much and it is pretty uncomplicated. But for some, if we don't have the perfect fuel, they'd rather stay with the status quo. Well, as the saying goes, the perfect is the enemy of the good.

There is no perfect fuel. Every renewable or alternative fuel has its unanswered questions. But our job should not be to wait indefinitely for those answers. We all want the perfect fuel but sometimes we need to work with what's right there in front of our eyes and then work to make it a better. That is exactly what is happening with biodiesel right now. We know that there are good and sustainable feedstocks available today. We also know that even better feedstocks are just a few years out – like algae and jatropha. If the country doesn't embrace bioheat and biodiesel now, it runs the risk of losing the kind of green industry that most states are struggling to attract.

It is essential that the New York City Council enact a bioheat mandate that we can all live with. Mayor Bloomberg has already pledged his support of biodiesel and bioheat by converting many city fleets and city buildings to biodiesel and bioheat. Now we are asking the Mayor, the Speaker and other city leaders to get behind a sensible bioheat mandate that will make an even greater impact on the quality of life for New Yorkers.

Thank you. I will be happy to answer any questions you may have.

New York Oil Heating Association, Inc.

Est.1939

Supporters of:

EMPIRE STATE PETROLEUM ASSOCIATION, INC.
NATIONAL ASSOCIATION FOR OILHEAT RESEARCH & EDUCATION
NATIONAL OILHEAT RESEARCH ALLIANCE, INC.
PETROLEUM MARKETERS ASSOCIATION OF AMERICA
TRI STATE OILHEAT CONSUMER EDUCATION ALLIANCE

Today's Oil Heat,
It's Better Than Ever!

CARLA ROMITA, PRESIDENT
JAMES CORETTI, VICE PRESIDENT
MICHAEL PROSCIA, SECRETARY
DAVID SCHILDWACHTER, TREASURER
LAWRENCE SCUDER, IMMEDIATE PAST PRESIDENT

JOHN D. MANISCALCO, EXECUTIVE VICE PRESIDENT

Testimony of John Maniscalco, Executive Vice President
New York Oil Heating Association
Before the New York City Council Environmental Protection Committee
February 25, 2009

Good Morning Mr. Chairman and Members of the Environmental Protection Committee. My name is John Maniscalco and I am the Executive Vice President of the New York Oil Heating Association, a trade association comprised of mostly family-owned heating oil distributors and terminal operators located throughout the City of New York. Thank you for the opportunity to testify today.

As you know from past hearings, the New York Oil Heating Association fully supports the increased use of Bioheat in New York City and has testified in favor of Intro 594 as it pertains to a phased-in Bioheat mandate. It is time we made this happen. We have more than enough information to move forward with a sensible strategy to make our heating oil more renewable, cleaner, greener and more sustainable for our city.

As an industry we still have logistical concerns about Bioheat, in particular, concerns addressing immediate supply outlets, product quality control and adequate ramp-up time for terminals to retrofit the storage of Bioheat into their terminals. However, we have placed aside our hesitations and we stand with environmental organizations and health advocacy groups like the League of Conservation Voters and the American Lung Association to support a Bioheat mandate because it is the right thing to do for our city, for our industry, and for this country. It's the first step toward a cleaner and greener future.

Mandating a B5 Bioheat blend could displace as much as 40 million gallons of distillate # 2 oil every year. As we ramp up to a B20 Bioheat blend, the displacement of # 2 oil could be as much as 160 million gallons. These are incredible numbers! Bioheat will enable our city to upgrade to a cleaner, more renewable fuel with impressive air quality benefits without requiring major equipment upgrades for our customers.

The industry supports Bioheat. Environmental groups and health advocates support Bioheat. Mayor Bloomberg has already switched many city truck fleets to biodiesel, and city buildings to Bioheat. And there is no greater Bioheat advocate than Chairman Jim Gennaro ... but we're still waiting – 2 years later – for a Bioheat mandate to pass, and it all seems to hinge on the issue of "sustainability," which is the topic of today's hearing.

There are people here today that are much more qualified to speak to this very complicated issue than I, and we've heard, or we are yet to hear from many of them today. I am here to say that there will always be more questions raised than answered. Sometimes it is wiser to wait for further studies or a better political or economic climate to emerge before pursuing a major initiative. This is not the case with Bioheat. To indefinitely delay an initiative with such clear benefits like reducing our dependence on foreign oil, improving air quality and fighting global warming because we're waiting for a low carbon fuel standard or because questions have been raised about indirect land use change is, in a word, ludicrous. More than 1 million city housing units use heating oil to heat their living space, and millions more gallons of heating oil are used in the commercial and industrial sectors. Heating oil is here to stay. So why not make it better? That is what Bioheat does – it makes a good product better for New Yorkers, and with a mandate it will be done across the board on a level playing field. We need to move forward with the good information we have now and adjust accordingly as new issues emerge. New York City should be leading the way – but right now we appear to be lagging behind.

I again thank you for the opportunity to testify here today, and would be happy to answer any questions you may have.

Testimony on the Supply of Biodiesel for the New York City Area

First let me thank the Counsel for the opportunity to speak on behalf of this very important piece of legislation and help advance the use of a clean burning renewable fuel. My name is Daniel Falcone, I am the owner of Total Fuel Services Corporation, a retail and wholesale distributor of Diesel and Bio-diesel blended fuels. My retail company has been supplying a B20, Bio-heat fuel to my customer base for the last two years, approximately 2 1/2 million gallons of bio-diesel blended fuel. I can honestly and safely report no negative issues have been generated from the use of this fuel. Ever since September 11th 2001, I have become very passionate in the alternative fuel industry and believe strongly in supplementing our dependency on foreign fuel not only for national security but for reinvesting in our economic independence. I became a member of the Clean Cities Program, a member of the Environmental Business Association, was elected Vice-Chair of Policy for the Bio-Fuels Industry Committee and a Board member of the Connecticut Bio-diesel and Bio-heat Association. I have taken a very active role in advocating Bio-diesel to the public and private sectors. I am working with my constituents in the petroleum markets by expanding our opportunity to available bio-diesel product in a very economical and sustainable fashion. I believe Bio-diesel not only needs to be environmentally sustainable but economically sustainable. I have taken the position as the North East Wholesale Manager with one of the largest regional distributors of Bio-diesel, Ultra Green Energy Services. Ultra Green distributes a bio-diesel produced from non-food resources such as recycled oils and reclaimed fats from industrial processing. To help mature the markets for bio-diesel to be implemented with traditional heating oil and diesel fuel, Ultra Green offers risk managed programs to wholesale fuel terminals and retail distributors. They price contracts against market indexes such as Platts, Opis and Nymex.

These are the very markets the current petroleum distributors uses to purchase and sell fuels daily. By pricing against these markets, Ultra Green helps the petroleum markets acclimate to utilizing a renewable fuel in a very familiar, mature and economically sensible way. They take inventory positions with terminal storage facilities and offer financing for the implementation of proper storage, blending and distributing equipment. I am proud to have aligned myself with a company that has decided to invest in renewable fuels. Ultra Green is prepared to help with the growth of this renewable fuel to the New York metropolitan area and to assure the City Council and the Mayor's office that it will maintain economical sustainability with this renewable fuel. Now, no one here today has been spared from the recent financial crisis, our economic fears and insecurities are at an all time high. My goal here today is not to sell bio-diesel but to be a part of something historic, something bigger then me, as far as I am concerned New York is one of the cornerstones of our planet, it is a direct reflection of our society's consciousness. Today we have an opportunity to rise above the status quo and above our current situation and help by reinvesting in ourselves. Bio-diesel is just one piece of the alternative energy puzzle for us to work with. We need start today, we can always do better but need to start somewhere, Bio-heat fuel works, it is sustainable and it is available today. Please, let us not lose this opportunity to reinvest in ourselves. I want to thank the Council again for this opportunity and look forward for the advancement of a Bio-heat mandate in New York.

Sincerely,

Daniel Falcone

TSB | TRI-STATE BIODIESEL

36 East 23rd Street, 9th Floor
New York. NY 10010
Phone: 646-432-5759
Fax: 212-677-1367
info@tristatebiodiesel.com
www.tristatebiodiesel.com

2-25-09

Brent Baker
CEO
Tri-State Biodiesel
Testimony for oversight hearing on biofuels

My name is Brent Baker and I am a life-long environmental activist who has been actively promoting biodiesel use in the United States for over 14 years. For many of those 14 years I was the director of a non-profit organization that educated the public on the dangers of global warming and about things like solar panels and biodiesel as ways they could stand up and fight against it.

I now am the CEO of one of New York Cities leading biodiesel companies, Tri-State Biodiesel(TSB). My company collects cooking oil from well over 2000 NY city restaurants, recycles it into biodiesel fuel and sells it to local trucking fleets and heating oil consumers. I didn't begin TSB in order to make a quick buck, but rather I started the company as the next logical step in a lifelong mission dedicated to bringing this amazing low carbon diesel fuel to wide use and availability.

In preparing these words I looked back at the speeches I made before this body, on the subject of biodiesel in early 2005, 2007, 2008 and today. In all those years there has been a lot of talk about biodiesel, but unfortunately very little action.

Still today, 11 years after the release of a comprehensive Department of Energy study showing that biodiesel use would yield a 78% reduction in carbon emissions and 3 and give us back 3 half times the amount of energy used to create it, there is very little biodiesel use in this city.

Its been 6 years now since NYSERDA released a study showing that New York State had the ability, land and infrastructure to host a large biodiesel industry, and that it would create huge clean air benefits and a robust green collar economy, and still there is not a single biodiesel fueling station in the city.

It has been four years now since the Clean Air Task Force released a study pointing out that New York City lead the nation in premature deaths resulting from diesel emissions

and in the same year the American Lung Association in Washington DC, released a finding that biodiesel exhaust was 90% less toxic for people to breathe and yet still to this day the city has taken no action on getting biodiesel into school busses or school boilers.

As you have and will hear today, the science is overwhelmingly supportive of biodiesel being better for our health and environment, and even the local petroleum industry has embraced a biodiesel mandate, but still the Mayor of this city, who has been a great champion on of health and environment in the past, sits on his hands on this issue. I implore this administration that the time is now to take decisive action on this issue, and pass the Bioheat Mandate today.

Pennsylvania and Massachusetts have already taken steps forward with blending requirements but without the population center of the Northeast on board with biodiesel, our region will continue to lag behind the rest of the country and our children and environment will continue to suffer.

Consider this. According to the EPA, each gallon of biodiesel we burn instead of diesel will displace about 17 pounds of Carbon Dioxide. If we blend 20% biodiesel into all the heating oil in the city, as the bioheat bill proposes, we could be potentially reducing petroleum diesel consumption by about 200 million gallons. That's a carbon reduction of about 3.4 billion pounds, or the equivalent of taking 280,000 cars off the road in NYC....every year.

How anyone could call themselves an environmentalist and oppose taking 280,000 cars off the road each year in favor of doing nothing baffles my mind. We have a great opportunity here and we must take it.

Thank You,
Brent

Testimony on the Supply of Biodiesel for the New York City Area

First let me thank the Counsel for the opportunity to speak on behalf of this very important piece of legislation and help advance the use of a clean burning renewable fuel. My name is Daniel Falcone, I am the owner of Total Fuel Services Corporation, a retail and wholesale distributor of Diesel and Bio-diesel blended fuels. My retail company has been supplying a B20, Bio-heat fuel to my customer base for the last two years, approximately 2 1/2 million gallons of bio-diesel blended fuel. I can honestly and safely report no negative issues have been generated from the use of this fuel. Ever since September 11th 2001, I have become very passionate in the alternative fuel industry and believe strongly in supplementing our dependency on foreign fuel not only for national security but for reinvesting in our economic independence. I became a member of the Clean Cities Program, a member of the Environmental Business Association, was elected Vice-Chair of Policy for the Bio-Fuels Industry Committee and a Board member of the Connecticut Bio-diesel and Bio-heat Association. I have taken a very active role in advocating Bio-diesel to the public and private sectors. I am working with my constituents in the petroleum markets by expanding our opportunity to available bio-diesel product in a very economical and sustainable fashion. I believe Bio-diesel not only needs to be environmentally sustainable but economically sustainable. I have taken the position as the North East Wholesale Manager with one of the largest regional distributors of Bio-diesel, Ultra Green Energy Services. Ultra Green distributes a bio-diesel produced from non-food resources such as recycled oils and reclaimed fats from industrial processing. To help mature the markets for bio-diesel to be implemented with traditional heating oil and diesel fuel, Ultra Green offers risk managed programs to wholesale fuel terminals and retail distributors. They price contracts against market indexes such as Platts, Opis and Nymex.

These are the very markets the current petroleum distributors uses to purchase and sell fuels daily. By pricing against these markets, Ultra Green helps the petroleum markets acclimate to utilizing a renewable fuel in a very familiar, mature and economically sensible way. They take inventory positions with terminal storage facilities and offer financing for the implementation of proper storage, blending and distributing equipment. I am proud to have aligned myself with a company that has decided to invest in renewable fuels. Ultra Green is prepared to help with the growth of this renewable fuel to the New York metropolitan area and to assure the City Council and the Mayor's office that it will maintain economical sustainability with this renewable fuel. Now, no one here today has been spared from the recent financial crisis, our economic fears and insecurities are at an all time high. My goal here today is not to sell bio-diesel but to be a part of something historic, something bigger then me, as far as I am concerned New York is one of the cornerstones of our planet, it is a direct reflection of our society's consciousness. Today we have an opportunity to rise above the status quo and above our current situation and help by reinvesting in ourselves. Bio-diesel is just one piece of the alternative energy puzzle for us to work with. We need start today, we can always do better but need to start somewhere, Bio-heat fuel works, it is sustainable and it is available today. Please, let us not lose this opportunity to reinvest in ourselves. I want to thank the Council again for this opportunity and look forward for the advancement of a Bio-heat mandate in New York.

Sincerely,

Daniel Falcone

Interstate Biofuels

Fredric V. Giffords
Chairman

Charles H. Allison, Jr.
Chief Executive Officer

Kenneth E. Campbell
Chief Sales & Marketing Officer

Michelle L. Henderson
Chief Technology Officer
& Director of Planning

STATEMENT OF FREDRIC V. GIFFORDS
Chairman

INTERSTATE BIOFUELS LLC

Before the

NEW YORK CITY COUNCIL COMMITTEE ON THE ENVIRONMENT

Int. No. 594 In Relation to the Use of Clean Heating Oil in New York City and
Int. No. 599 the "Bioheat Act of 2007"

February 25, 2009

Council Chamber, City Hall

New York, NY 10007

62 Glen Cove Road, 2nd Fl • Roslyn Heights, NY 11577-1738 • Tel: (516) 216-4503 • Fax: (516) 216-4229
Five Penn Plaza •New York, NY 10001-1810 • Tel: (212) 694-7577 • Fax: (212) 202-3982

Good morning Chairman Gennaro and Members of the Committee on Environmental Protection. My name is Fred Giffords. I am chairman of Interstate Biofuels (hereafter, referred to as "Interstate"). I would like to thank the chairman and members of this committee for the opportunity to testify on the benefits of biofuel as it relates to Int. No. 599, the "Bioheat Act of 2007," and Int. No. 594 regarding the use "of clean heating oil in New York City."

Background

Interstate is a project development company that is in the process of building, owning, and operating four biofuel production facilities in New York, Massachusetts, Connecticut, and Virginia. Interstate's facilities will each produce about 15 million gallons of biofuel, at a total project cost of about $115 million. Interstate will utilize biodiesel production technology that is feedstock flexible with the focus on using non-food feedstocks: poultry fat, choice white grease, by-product corn oil, jatropha oil, and algae oil.

By the way, when I use the term "biofuel" I am referring to the non-petroleum-based product that can be used alone or blended with heating oil or conventional petroleum diesel, respectively, in residential and commercial furnaces and boilers and diesel-engine vehicles, including trucks, buses, trains, ferries, construction equipment, aircraft and in diesel generators used to generate electricity. The amount of biofuel blended with heating oil or petroleum diesel is referred to as "BX", where "X" is the percentage of biofuel blended with traditional heating oil or petroleum diesel: fuel containing 20% biofuel is labeled B20, pure biofuel is referred to as B100. Bioheat® refers to blending B100 with No. 2 heating oil to create a blend ranging from B5 up to B20. In June of 2008, ASTM International (formally known as the "American Society for

62 Glen Cove Road, 2nd Fl • Roslyn Heights, NY 11577-1738 • Tel: (516) 216-4503 • Fax: (516) 216-4229
Five Penn Plaza •New York, NY 10001-1810 • Tel: (212) 694-7577 • Fax: (212) 202-3982

Testing and Materials") approved the inclusion of a B5 blend of biofuel in heating oil; other ASTM standards for Bioheat® are expected.

Bioheat® as a Viable Fuel for Residential and Commercial Boilers

Older furnaces and boilers may contain rubber parts that would be affected by biofuel's solvent properties, but can otherwise burn biofuel up to a B20 blend and maybe higher without any conversion required. Care must be taken since biofuel is a cleansing agent and the residue left behind by petroleum diesel will be released and can clog filters and pipes. Fuel filtering and prompt filter replacement is required. Thanks to its strong solvent properties, once the residue is removed the furnace continues to burn cleaner, requires less service calls and becomes more efficient.

Comments on Int. No. 594 and Int. 599

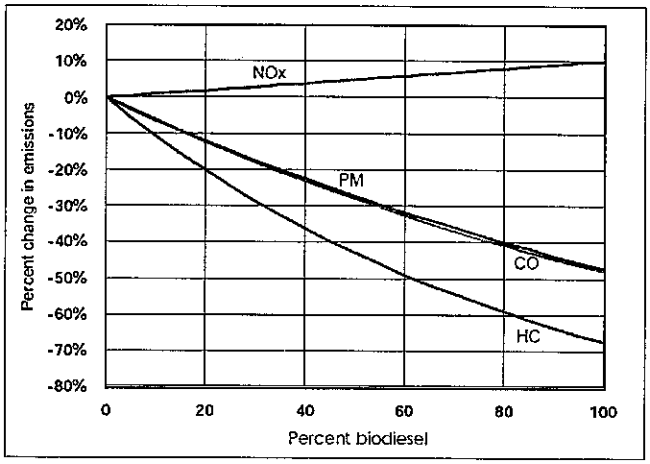
Interstate supports the approval of Int. No. 594 and Int. No. 599. Using the document titled, "Briefing Paper of the Infrastructure Division and Committee on Environmental Protection" dated January 24, 2008, and taken from the Committee on Environmental Protection's webpage as our point of reference, we made some minor changes to Section III of the briefing paper, which is titled "Background and Intent of Int. No. 594 and Int. 599". The changes involved various implementation dates. This information is contained in Appendix A.

Benefits of Biofuel

I have divided Interstate's comments today on the benefits of biofuel, or more specifically biodiesel, into four topic areas: Air Quality, Global Warming, Energy Security and Biodiesel Sustainability.

I. Air Quality

There are significant health and air quality benefits by using biodiesel.[1] Residential and commercial furnaces and boilers and diesel vehicles using biofuel emit less air pollution than those using regular heating oil and diesel fuel. Recent studies conducted by the US Environmental Protection Agency (US EPA) and the Department of Energy's National Renewable Energy Laboratory (NREL) show that pure or blended biodiesel can reduce emissions of the following:



- PM – Diesel and heating oil particulate matter, toxic air pollutants;
- HC – Hydrocarbons such as volatile organic compounds, the precursors to ozone formation; and
- CO – Carbon Monoxide, a pollutant that many scientists believe has a significant impact on global warming.

As the percentage of biodiesel in the fuel mix increases, so do reductions in particulate matter (PM), hydrocarbons (HC), and carbon monoxide (CO) as summarized in the EPA graph above.[2]

The increase in nitrogen oxide (NOx) emissions are not material in most cases where the blend is B10 or less. Some NOx exhaust after-treatment devices that have been

successfully tested in transportation vehicles might be able to be modified for furnace and boiler use.[3]

Particulate Matter. Biodiesel blends and pure biodiesel can reduce PM by approximately 10% to 50%, respectively. EPA evaluated 39 studies of diesel fuel emissions using various blends of biodiesel and found reductions up to 50%.[4,5] Similar studies conducted by NREL found PM emissions were reduced from 10% to 55% from diesel trucks and buses using B20 and pure biodiesel, respectively.[6,7] Reducing PM is a priority of the EPA because of its serious health effects. Sensitive individuals such as the elderly or those with compromised immune systems are at higher risk than the general public. Adverse health effects from ambient PM include: increased respiratory diseases such as chronic obstructive pulmonary disease; decreased lung function; and increased mortality rates (premature death).[8,9,10,11] In addition, diesel and heating oil PM is classified as a probable human carcinogen by the US EPA, California's Environmental Protection Agency, and the World Health Organization. [12,13,14]

Hydrocarbon Emissions. Biodiesel can also reduce hydrocarbon (HC) emissions, including volatile organic compounds (VOCs), the precursors to ozone formulation.[15] Ozone can exacerbate asthma and increase hospital visits and sick days among sensitive individuals.[16] US EPA and NREL studies show biodiesel can reduce HCs and VOCs from 20% to over 60%, respectively.[17]

Nitrogen Oxide Emissions. Older US EPA and NREL studies show relatively smaller increases from 2% to 10% in NOx emissions from blended and B100 in diesel trucks. More recent analyses conducted by NREL show a 4% reduction in NOx tailpipe emissions with nine buses using biodiesel in the Denver Colorado area.[18] Similarly, Montreal's Biobus study reports neutral impacts on NOx emissions in 20 urban buses using B20, with a slight reduction of 3% in NOx for buses equipped with electronic fuel

injection systems.[19] NREL analysis also showed several options to adjust fuel properties that can effectively reduce NOx emissions.[20] In general, various mitigation techniques may prove to be effective, and working with the US EPA on some variance is an option.

II. **Global Warming**

Biodiesel can reduce greenhouse gas (GHG) emissions, the pollution that causes global warming, by up to 78%. A comprehensive study conducted jointly by US Department of Agriculture and the US Department of Energy compared the overall CO_2 emissions of a bus using pure biodiesel to one using regular diesel. The analysis included all aspects of the life cycle of the fuel, from the extraction of raw materials from the environment to the final end-use. The authors found the bus using B100 reduced CO_2 emissions by 78% when compared with regular diesel. Similarly, buses using B20 reduce their overall CO_2 emissions by 16%.[21] California EPA specifically states that 1 gallon of diesel fuel produces 28 lbs of CO_2 whereas 1 gallon of B100 produces 6 lbs of CO_2.[22] PM reductions from biodiesel may also protect our climate, as PM has been shown to act as a greenhouse gas and may contribute to global warming.[23]

III. **Energy Security**

One of the main drivers for adoption of biofuel is United States energy security. This means that the US's dependence on foreign oil is reduced, and substituted with use of locally available renewable energy sources. Thus significant benefits can accrue to the US from adoption of biofuel, even if there was not a substantial reduction in greenhouse gas emissions. While the total energy balance is debated, it is clear that the dependence on foreign oil is reduced. The US National Renewable Energy Laboratory has stated that energy security is the number one driving force behind the US biofuel program[24].

President Obama and Vice President Biden have characterized the importance of energy security as a major reason for promoting biofuel as follows: "The energy challenges our country faces are severe and have gone unaddressed for far too long. Our addiction to foreign oil doesn't just undermine our national security and wreak havoc on our environment -- it cripples our economy and strains the budgets of working families all across America." President Obama and Vice President Biden have a comprehensive plan to invest in alternative and renewable energy, end our addiction to foreign oil, address the global climate crisis and create millions of new jobs.

IV. **Biodiesel Sustainability**

Every country and region has the need for new, improved and appropriate oil seed crops to use as feedstocks for biodiesel production. We believe that the emphasis should be on sustainable agricultural practices using marginal land that does not require extensive irrigation or fertilization, and does not disrupt food supplies. There should be support for an aggressive international cooperative effort involving government, academia and business. We agree with many experts that have testified about this topic over the years, that in the 21st century, we as a nation are facing unprecedented energy challenges as we transition from petroleum to more readily available and sustainable sources of energy. If we are to make the right choices as a society, we must avoid the pitfalls of polarized debates in which opponents turn to sound bite experts to address conflicting points of view about our energy future. We encourage, instead, an open and honest debate about energy security and how to provide a sustainable energy supply for the future. No option is without its downside. The reality is that heating oil and diesel fuel have a negative energy balance. Let us engage in an intelligent and informed

dialogue about energy so that we can make sound choices. We owe that to ourselves as a nation, to our children and to future generations.[25]

Interstate is focusing on second and third generation feedstocks such as animal fats, choice white grease, jatropha oil, by-product corn oil and algae oil:

1. Animal fat and choice white grease is already widely available and that which isn't used for animal feed is sent to landfills.
2. Jatropha is a plant that can grow on marginal land in many harsh, almost desert-like locations. For example, jatropha is now being grown on one third of the land owned by India Railways, the Jatropha oil is then processed and mixed with diesel to run trains. If land otherwise considered useless in America, Africa, Northern Brazil, etc. where there are millions of acres of marginal land, was ploughed up for jatropha plantations, output could total millions of barrels a day and could go a long way to meeting global biofuels commitments.
3. By-Product corn oil is readily available and a proven biofuel feedstock. Most existing biofuel manufacturing facilities are not feedstock flexible and cannot presently use it.
4. Algae is still in its infancy. Although being used in test facilities, commercial production is still a few years away but showing great promise as a sustainable product.

The biofuels industry in the U.S. is relatively new and evolving very quickly in both the design of the manufacturing facilities and the feedstocks used to make the product. New York City has the opportunity to become the leader in renewable energy in the 21st century.

Conclusion

New York City policymakers must pass the Bioheat Act of 2007 to guarantee the creation of a local market that will:

- Jumpstart a local biodiesel industry that will generate a substantial number of jobs and considerable investment in the City.
- Justify the huge financing, design, permitting, and construction of the infrastructure necessary to produce and distribute biodiesel, all of which takes years to accomplish.

As a businessperson, I can tell you with certainty that any further delay in establishing the mandates will push the timeline for local infrastructure development out further, perhaps jeopardizing it altogether, and will increase petroleum consumption and GHG (greenhouse gases) emissions in the interim. So, in summary, we view the bioheat mandates as critical, and we recommend they be implemented without a sunset provision. Biodiesel is the only biofuel ready for prime time that can have positive tangible measureable results in a short time frame. As policymakers, the New York City Council, and we, as business people, must act prudently on the information we have. We must avoid analysis paralysis. Doing nothing amounts to losing ground, and the stakes are way too high. Accordingly, Interstate Biofuels supports Int. No. 594 and Int. No. 599 to encourage actions that most reasonable people agree will lower GHG and toxic emissions, improve health, improve local economies through the expansion of manufacturing business, reduce the consumption of imported oil, and improve national security.

Please allow me to end my testimony with some words from Franklin D. Roosevelt, "One thing is sure. We have to do something. We have to do the best we know how at the moment... If it doesn't turn out right, we can modify it as we go along."

Thank you.

62 Glen Cove Road, 2nd Fl • Roslyn Heights, NY 11577-1738 • Tel: (516) 216-4503 • Fax: (516) 216-4229
Five Penn Plaza •New York, NY 10001-1810 • Tel: (212) 694-7577 • Fax: (212) 202-3982

APPENDIX A

The following information is from Section III. Background and Intent of Int. No. 594 and Int. 599", as it appeared in Briefing Paper of the Infrastructure Division and Committee on Environmental Protection, dated January 24, 2008. Prepared by Samara Swanston, Shadawn Smith, Finance and Anthony Hogrebe, Communications.

Int. No. 594 and Int. No. 599 are the beginning of a move towards a more sustainable way to heat out homes and buildings in the future.

Int. No. 594 would require the use of biodiesel and ultra low sulfur diesel for heating purposes in city-owned and privately-owned buildings but has earlier implementation dates for city-owned buildings. It also calls for a clean heating oil study and a clean heating oil promotion strategy. Int. No. 599 calls for the use of biodiesel for heating purposes for private use and in city-owned buildings as well.

Section 1 of Int. No. 594 amends Section 6-302 of the Administrative Code of the City of New York to add five new paragraphs with key definitions of "biodiesel", "bioheating fuel", "heating oil", "heating system" and "ultralow sulfur diesel fuel".

Section 2 amends chapter 3 of Title 6 of the Administrative Code of the City of New York to add a new subchapter 7 which contains new section 6-317 through 6-319.

Section 6-317(a)(1) requires that as of July 1, 2008 [change to 2010], all heating oil purchased for use in City-owned buildings must contain not less than 5% biodiesel and no more than 500 parts per million of sulfur.

Paragraph (a)(2) requires that as of July 1, 2010 [change to 2011], all heating oil purchased for use in City-owned buildings must contain not less than 10% biodiesel and no more than 500 parts per million of sulfur.

Paragraph (a)(3) requires that as of July 1, 2012, all heating oil purchased for use in City-owned buildings must contain not less than 20% biodiesel and no more than 15 parts per million of sulfur.

Subdivision (b) permits the Director of the Environmental Purchasing (Director) in conjunction with of the Director of the Office of Long Term Planning and Sustainability (Office) to issue a waiver for the biodiesel or sulfur concentrations if a City agency finds that a sufficient quantity of bioheating fuel or sulfur concentration is not available

provided that the greatest percentage of biodiesel and the lowest concentration of sulfur that is available is used. This section further provides that should a waiver be issued, it would expire after three months but may be renewed.

Subdivision (c) calls for the preparation and submission of a report by the Director of the Office, no later than March 1, 2009 and no later than March 1 every year thereafter, indicating the quantity of fuel used, the emissions reductions achieved, all waivers issued and renewed and specific information regarding the availability of bioheating fuel and the agency's efforts to obtain such fuel. This report is to be submitted to the Mayor and the Speaker of the Council.

Subdivision (d) requires the Director, in coordination with the Director of the Office, to complete a list of standards applicable to biodiesel that is produced in a sustainable manner and to direct that the biodiesel that is purchased for use in City-owned buildings meet such standards. This list must be prepared by May 1, 2008 and will be reviewed every six months and revised as needed.

Subdivision (e) provides that subdivision (b) of section 6-303 of Chapter 6 shall not apply to this subchapter.

Section 6-318(a)(1) calls for a clean heating oil study to be no conducted no later than July 1, 2009 by the Director, in coordination with the Director of the Office, that shall include publishing and implementing a plan for the testing and evaluation of the use of bioheating fuel containing twenty percent biodiesel and fifteen parts per million sulfur. Such plan shall be submitted to the Mayor and the Speaker of the Council and shall include, but not be limited to, an assessment of the technical feasibility of using such fuel in different heating systems, including in residential and commercial buildings.

Paragraph (a)(2) calls for the Director, in coordination with the Director of the Office, to make a determination no later than January 1, 2011 regarding the feasibility of using such bioheating fuel in different heating systems, based on the study conducted pursuant to paragraph one of this subdivision, and submit a report detailing the results of such study and the basis for such determination, including to the process, criteria and specific analyses used for such study, to the mayor and the speaker of the council.

Paragraph (a)(3) allows for a waiver of the requirement to use twenty percent biodiesel and 15 parts per million of sulfur if the Director, in coordination with the Director of the Office, makes a determination, pursuant to paragraph two of this subdivision, that

the use of heating oil that is bioheating fuel containing twenty percent biodiesel and fifteen parts per million sulfur is not technically feasible. Where such waiver is issued, the Director, in coordination with the Director of the Office, shall review the waiver and the determination on which it is based every six months and shall rescind or amend such waiver as appropriate. Paragraph (3) also calls for the Director, in coordination with the Director of the Office, to submit a report regarding the details of each review and determination to the Mayor and the Speaker of the Council no later than five days after the completion of such review and determination.

Subdivision (b) calls for the creation of a Clean Heating Oil Technical Advisory Committee (Advisory Committee), by no later than January 1, 2008, to provide advice and recommendations to the Director and the Director of the Office regarding the development and implementation of the study required conducted pursuant to subdivision (a) of this section and the list of standards completed pursuant to subdivision (d) of section 6-317 of this subchapter. The Advisory Committee will be comprised of seven members, three of whom shall be appointed by the Speaker of the Council and four of whom shall be appointed by the Mayor. Its members, who serve without compensation, must have technical, scientific or other relevant experience regarding the procurement or use of biodiesel or ultra low sulfur diesel fuel. The Advisory Committee will select a chairperson. Members serve at the pleasure of the appointing official and any vacancy shall be filled in the same manner as the original appointment. The Advisory Committee serves until July 1, 2011, after which time such committee shall cease to exist. The Director and the Director of the Office may provide staff to assist the advisory committee.

Section 6-319 calls for the development of a clean heating oil promotion strategy by January 1, 2009 [change to 2010] which shall include, but not be limited to (i) an assessment of possible financial and non-financial incentives that could be provided by the City, and (ii) an education campaign for consumers regarding such fuels. No later than ten days after its completion, such strategy shall be submitted to the mayor and the speaker of the council and posted on the city's website.

§3 provides that Subchapter 5 of Chapter 4 of Title 20 of the Administrative Code of the City of New York is amended by adding a new section 20-673.4 pertaining to the sale of clean heating oil. Section 20-673.4 a. provides five key definitions for the use of clean heating oil.

Paragraph (5)(b)(1) requires that no later than July 1, 2009, any person who delivers heating oil for use in buildings in New York City shall ensure that such heating oil is bioheating fuel containing not less than ten percent biodiesel and not more than five hundred parts per million sulfur.

Paragraph (5)(b)(2) requires that no later than July 1, 2011, any person who delivers heating oil for use in buildings in New York City shall ensure that such heating oil is bioheating fuel containing not less than twenty percent biodiesel and not more than five hundred parts per million sulfur.

Paragraph (5)(b)(3) requires that, no later than July 1, 2013, any person who delivers heating oil for use in buildings in New York City shall ensure that such heating oil is bioheating fuel containing not less than twenty percent biodiesel and not more than fifteen parts per million sulfur.

Subdivision (c) allows for the Director of the Office to issue a waiver of the biodiesel percentage or sulfur concentration requirements of paragraph one, paragraph two or paragraph three of subdivision (b) of this section where such Directors jointly make a written finding that a sufficient quantity of bioheating fuel containing the applicable biodiesel percentage or sulfur concentration is not available to meet such requirements. Any waiver issued pursuant to this subdivision shall expire after three months but could be renewed in writing.

Subdivision (d) provides that the requirements of paragraph (3) of subdivision (b) of this section shall not apply to the extent of any waiver in effect pursuant to paragraph (3) of subdivision (a) of section 6-318 of this Code (Clean Heating Oil Study).

§4 amends subdivision (b) of section 20-674 of the Administrative Code of the City of New York. To provide that any person who violates the provisions of section 20-673.1 or section 20-673.4 of this subchapter or any rules or regulations promulgated thereunder, shall be liable for a civil penalty of not less than five hundred dollars nor more than ten thousand dollars.

§5 is a severability provision.

§6 provides that Int. No. 594 will take effect immediately upon its enactment.

Int. No. 599 would enact the "Bioheat Act of 2007" relating to the use of "bioheat" in both privately-owned and city-owned buildings.

§2 amends Subchapter 5 of chapter 4 of title 20 of the Administrative Code of the City of New York adding a new §20-673.4 relating to the sale of heating oil for private use.

Subdivision (a) of §20–673.4 includes definitions of "biodiesel", "bioheat", "heating oil", "heating oil retailer" and "heating system".

Subdivision (b) would prohibit the sale by a heating oil retailer after May 31, 2009 [change to 2010] and before June 1, 2011 of heating oil that does not contain at least five percent biodiesel.

Subdivision (c) would prohibit the sale after May 31, 2011 and before June 1, 2013 of heating oil that does not contain at least ten percent biodiesel.

Subdivision (d) would prohibit the sale after May 31, 2013 of heating oil that does not contain at least twenty percent biodiesel.

§3 amends subdivision (b) of section 20-674 of the Administrative Code of the City of New York. to provide that any person who violates the provisions of section 20-673.1 or section 20-673.4 of this subchapter or any rules or regulations promulgated thereunder shall be liable for a civil penalty of not less than five hundred dollars nor more than ten thousand dollars.

§4 amends Section 6-301 of the Administrative Code of the City of New York by adding new paragraphs (36) through (39) to include definitions for biodiesel, bioheat, heating oil, and heating system.

§5 amends Chapter 3 of title 6 of the administrative code of the city of New York to add a new Subchapter 7 entitled "Bioheat", which contains a new §6-317.

§6-317(a)(1) requires that beginning on January 1, 2009, all heating oil purchased for use in any building owned and operated by the City shall be bioheat containing not less than ten percent biodiesel.

Paragraph (a)(2) requires that beginning on January 1, 2011, all heating oil purchased for use in any building owned and operated by the city shall be bioheat containing not less than twenty percent biodiesel.

Subdivision (b) of new section 6-317 provides that section 6-303 of this chapter shall not apply to this subchapter.

§6 provides that this local law shall take effect immediately upon its enactment.

---

[1] Air Quality Benefits of Biodiesel Fact Sheet. Puget Sound Clean Air Agency. Form No. 20-10-1 LS 1/23/06

[2] US EPA, 2002. "A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions", Draft Technical Report, Office of Transportation and Air Quality. EPA420-P-02-001. October 2002.

[3] See the California Air Resources Board (CARB), South Coast Air Quality Management District for a discussion of how the Longview System is CARB-verified to reduce PM emissions by at least 85 percent and NOx emissions by 25 percent at http://www.aqmd.gov/hb/2005/05066a.html

[4] USEPA. 2002

[5] The analysis did not evaluate engines equipped with exhaust gas recirculation, NOx absorbers, or PM traps. These devices may reduce emissions even further, although no data are currently available.

[6] Morris RE and Y Jia. *Impact of Biodiesel Fuel on Air Quality and Human Health: Task 5 Report. Air Toxics Modeling of the Effects of Biodiesel Fuel Use on Human Health in the South Coast Air Basin Region of Southern California.* Produced by ENVIRON International Corporation for the Dept of Energy National Renewable Energy Laboratory (NREL). May 2003.

[7] Proc K, R Barnitt, and RL McCormick. *RTD Biodiesel (B20) Transit Bus Evaluation: Interim Review Summary.*

Technical Report NREL/TP-540-38364. August 2005.

[8] Pope et al. Lung Cancer, Cardiopulmonary Mortality, and Long –Term Exposure to Fine Particulate Air Pollution. *Journal of the American Medical Association.* 287: 1132-1141. March 6, 2002.

[9] Gauderman et al. The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age. *The New England Journal of Medicine.* Volume 351:1057–1067. Number 11. September 9, 2004.

[10] Park et al. Effects of Air Pollution on Heart Rate Variability: The VA Normative Aging Study. *Environmental Health Perspectives.* Volume 113, 3. pp 304–309. March 2005.

[11] Kunzli et al. Ambient Air Pollution and Atherosclerosis in Los Angeles. *Environmental Health Perspectives.* Volume 113,2: 201-206. February 2005 http://ehp.niehs.nih.gov/members/2004/7523/7523.pdf

[12] USEPA. *Health Assessment Document for Diesel Engine Exhaust.* Office of Research and Development. EPA/600/8-90/057F. Washington DC, May 2002.

[13] CalEPA/OEHHA. *For the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Part B: Health Risk Assessment for Diesel Exhaust.* May 1998.

[14] International Agency for Research on Cancer (IARC). *IARC Monograph on the Evaluation of Carcinogenic* Risks to Humans. Vol. 46: Diesel and Gasoline Engine Exhausts. 1989.

[15] USEPA, 2002.

[16] EPA AirNow Smog Health Effects. www.epa.gov/airnow/health/smog1.html#3.

[17] USEPA. *NOx: How nitrogen oxides affect the way we live and breathe.* Office of Air Quality Planning and Standards. EPA 456/F 98-005. Sept 1998.

[18] Proc K et al., 2005

[19] Biodiesel Demonstration and Assessment with the Societe de transport de Montreal (STM). *Biobus Project* Final Report. May 2003.

[20] National Renewable Energy Laboratory. *NOx Solutions for Biodiesel, Final Report. Report 6 in a series of 6.* RL McCormick, JR Alvarez, and MS Graboski. February 2003. NREL/SR-510-31465.

[21] National Renewable Energy Laboratory. *Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus.* Final Report, May 1998. NREL/SR-580-24089 UC Category 1503.

[22] Air Resources Board, California EPA, Update to the Board on Biodiesel Use in California, June 2005.

[23] Hansen J et al. *Efficacy of Climate Forcings.* J Geophysical Research. Vol. 110, D18104. 2005.

[24] John Sheehan, Terri Dunahay, John Benemann, Paul Roessler (July 1998) (PDF (3.7 Mb)). A look back at the U.S. Department of Energy's Aquatic Species Program: Biodiesel from Algae. Close-out Report. United States Department of Energy. http://www.nrel.gov/docs/legosti/fy98/24190.pdf. Retrieved on 2009-02-21.

[25] John Sheehan, NREL, NREL Responds to Flawed Pimentel Study.

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

Biofuels *Date:* 2/25/07

(PLEASE PRINT)

Name: Michael Seilback

Address: 116 John St, NY NY

I represent: American Lung Assn in NY

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 2/25/08

(PLEASE PRINT)

Name: Pierre Bull

Address: 4237 39th St #1 1, Rego Park, NY

I represent: Nat Resource Def Council NRDC

Address: 40 W 20th St 11th NY NY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 2/25/09

(PLEASE PRINT)

Name: Michael Heimbinder

Address: 107 S. Elliott, #2

I represent: Habitat Map

Address: 107 S. Elliott, #2

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 2/25/09

(PLEASE PRINT)

Name: Shelby Neal

Address: 512 Cayuga View Dr. Columbia, MO 65201

I represent: National Bobcat Board

Address:

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 25 Feb 09

(PLEASE PRINT)

Name: KELLY ROBINSON

Address: 205 3rd St

I represent: New York League of Conservation Voters

Address: 30 Broad St 30th Fl NY NY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: RICHARD NELSON

Address: MANHATTAN KS

I represent: NBB

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: C. R. KRISHNA

Address: UTICA, NY 11973

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: JUDY JARNEFELT

Address: NYSERDA, 17 COLUMBIA CIR.

I represent: ALBANY, NY 12203

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

Date: 2/25/09

(PLEASE PRINT)

Name: JOHN MANISCALCO

Address: 14 PENN PLAZA #1102 NY NY

I represent: NEW YORK OIL HEATING ASSN

Address: 14 PENN PLAZA NY NY 10122

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Rocco D'Ricco

Address: 52-07 58th St

I represent: DSNY

Address: Same

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Christina Schiavoni

Address: 209 Bennett Ave, 6C, NY NY 10040

I represent: World Hunger Year (WHY)

Address: 505 8th Avenue Suite 2100 NY NY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Carter Strickland

Address: Mayor's Office

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: BRENT BAKER

Address: 36 E 23rd ST

I represent: TRI-STATE BIODIESEL

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 2-24-09

(PLEASE PRINT)

Name: Don Scott

Address: PO 104898 Jefferson City, MO 65110

I represent: National Biodiesel Board

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Bernardo Rossel

Address: 25 Washington

I represent: myself

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: John Nettleton

Address: 50 W. 17 St., NY NY

I represent: Cornell University

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☑ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Gene V Fallo

Address: 5 Riverview Terrace N.Y. NY.

I represent: Metro Bio Fuels LLC

Address: 500 Kingsland Ave Brooklyn NY.

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: John Hurka

Address: 600 Cameron, Alx VA

I represent: NORA

Address: 600 Cameron

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 2-25-09

(PLEASE PRINT)

Name: PAUL NAZZARO

Address: 162 Park St. Suite 301

I represent: MASSACHUSETTS Oil Heat Council

Address: National Biodiesel Board

Please complete this card and return to the Sergeant-at-Arms