

# MASS BIOFUEL .com

Bob Warren and Elizabeth Warren

280 Milton Street • Dedham, MA  
(888) Mass Bio

# MASS BIOFUEL

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## SEPTEMBER NEWSLETTER

SEPTEMBER 1, 2007



### Letter From Elizabeth

Hello,

I hope this newsletter finds you and yours well and everyone is having a relaxing summer so far. There are a couple of events happening here that I would like to mention.

Most importantly, I would like to graciously announce my best wishes to Heather here in the office. She will be leaving us to pursue her teaching career. Everyone at Mass Biofuel / Fisher-Churchill will miss her greatly and we wish her all the happiness one could receive.

With that said, I would like to welcome Jasmy. She will be assuming Heather's position. She comes highly recommended and is well aware of the importance and care that goes into a family owned business.

BIODIESEL MONDAY's are here. Come on down and fill up your diesel vehicles or buy a pail. Please call me with any questions.

Fall is upon us and before we know it, it will be

the winter. Just as a reminder: PLEASE get your heating systems tuned-up before the winter time. We are more flexible with times and dates this time of year, and it is less likely that your appointment will get bumped due to inevitable winter emergency calls.

Also, I will be mailing out information regarding our cap prices for this coming season as soon we come out with one. Prices (for all fuel types) are still much too high to purchase and offer a worthwhile cap price. I expect prices to lower in the next couple of months. As soon as this happens I will notify all customers.

Stay cool!  
Elizabeth Warren



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#### Special points of interest:

- Refer a Friend Sept. 1st thru Sept. 30th and **SAVE \$50**
- Hear what Amy and Jeff have to say in our **Customer Corner**.
- **BIODIESEL MONDAY's** 9am-3pm



### REFER A FRIEND; SAVE \$50

At Mass Biofuel / Fisher-Churchill, we know that the most effective form of publicizing a product is word of mouth.

We pride ourselves on providing you with the most honest, personable customer care possible, and have since 1854.



Your continued satisfaction has in turn helped us to grow our business.

As a way to show our gratitude, receive \$50 off your next delivery when you refer a friend to Mass Biofuel September 1st thru the 30th of 2007. Please call us for details.

### MASS BIOFUEL

MASS BIOFUEL, a FISHER-CHURCHILL and Wilson Street Company, Inc. www.massbiofuel.com 508-469-0000 www.fisherschurchill.com

#### Thank You

Most days it's a challenge to ask to my dear friends and neighbors to support local business. In fact, the only time I feel so grateful and proud of what we have accomplished...

October 2004 we ventured away from regular home heating oil into a new world of natural gas. We've been the first retailer with seven customers, low delivery loads and our energy covered for the price on energy for the day time. Nevertheless, keep reading, more heating has been the to us and getting that thing right is critical as to how it will be done that we never the last!

How do 2006 heating oil market seems to busy? Customers getting "too hot" - don't seem to worry.

Customers there is all of our customers who have believed in us throughout the year. Thank you all those who are making a difference in our lives. We are proud to be a part of this winter so we could take care of the emergency that so conveniently come along with the winter months.

#### WINDY THIS YEAR

Thank you for the information of your letter about the weather this year.

We wish because of you that we were able to keep everyone warm this winter it is windy season. This year was definitely a year with high prices, especially cold spells and the 10-15 day hurricanes this fall. Unfortunately, even you will be just as much a challenge. With prices now at record highs for all types of fuel, people are already bracing themselves for a tough winter season.

Also, with us being players in the market, we are the ones for the last energy, it seems to be finally going off. More and more companies are finally showing around the possibility of implementing fuel oil in their company. It is a real challenge to see a product that we believe in so much get the attention it so greatly deserves.

Each and every one of our customers has helped to build our foundation from which we are based. In writing this, we thank you very much.

Elizabeth and the Mass Biofuel team

#### Why Use Low Sulfur?

Why not? Sounds like I know. But really, why not use a product that is cleaner for your heating system, home and environment? Our low sulfur fuel contains 10% of the sulfur that is found in regular home heating oil. This means you'll be saving on the cost of your heating system. Compared to regular home heating oil at 1000 parts per million of sulfur, low sulfur diesel fuel (LSD) has only 100 parts per million of sulfur. That's a big difference!

**A Little Fuel:** If you had to create an offering out of 100 lbs. of fuel, you would need to use 100 lbs. of sulfur. So, when you use low sulfur diesel fuel, you are saving on the cost of your heating system. This means you'll be saving on the cost of your heating system. Compared to regular home heating oil at 1000 parts per million of sulfur, low sulfur diesel fuel (LSD) has only 100 parts per million of sulfur. That's a big difference!

**Another Fuel Fact:** If you had to create an offering out of 100 lbs. of fuel, you would need to use 100 lbs. of sulfur. So, when you use low sulfur diesel fuel, you are saving on the cost of your heating system. This means you'll be saving on the cost of your heating system. Compared to regular home heating oil at 1000 parts per million of sulfur, low sulfur diesel fuel (LSD) has only 100 parts per million of sulfur. That's a big difference!

#### On A Greener Note

As of March 21, 2006 you have been able to keep 20,000.0 gallons of important oil from being used. So far you have burned 20,000.0 gallons of renewable, sustainable and low-sulfur diesel!

Let's think about it this way: About 4.2 gallons of oil is used to produce one gallon of diesel. So, if you have burned 20,000.0 gallons of low-sulfur diesel, you have saved 84,000.0 gallons of crude oil from being burned and refined to heating oil diesel fuel.

Also, for every gallon of Bioheat (Biodiesel) you burn at 100% low sulfur diesel, you are saving 15 lbs. of sulfur. So, according to my calculations, as of March 21, 2006, you have been able to save 2,100,000.0 lbs. of sulfur.

I think that is something to be very proud of!

## Massachusetts Energy Watch

IMPORTANT NEWS FOR MASSACHUSETTS DILigent CONSUMERS

### Massachusetts - Leading By Example

Governor Patrick has set ambitious energy goals for state buildings, mandating higher efficiency standards and greater use of renewable energy, including bioheat, throughout the government.

Aiming to decrease the use of electricity across the board and reduce carbon dioxide emissions, and putting these changes into effect immediately, the governor had youth volunteers replace the incandescent light bulbs in his office with fluorescent ones as he issued his Executive Order, "Leading by Example - Clean Energy and Efficient Buildings."

Currently state agencies consume 22 million gallons of heating oil per year. The new initiative requires the use of bioheat for 3 percent of their heating oil this winter (approximately 660,000 gallons), and 5 percent in 2008-09 (1,100,000 gallons). In addition, the state will be remodeling larger buildings with energy efficient products, programmable thermostats, and Energy Star rated appliances.

We can help you incorporate these same changes into your home. Please call us about high-efficiency heating systems, Energy Star rated products, programmable thermostats and the emergence of bioheat for home heating. Look inside this issue for even more energy and money saving tips.

**Bioheat® and the Heating Oil Industry**  
Bioheat is a blend of traditional heating oil and a fuel derived from plants and animals, is more than just an idea. It is an emerging home heating source that is renewable, sustainable, helpful to cutting our use of fossil fuels, benefited by American agriculture and great for our heating system. However, even though the Oilheat industry has embraced Bioheat's not all oilheat dealers offer the blend at this point because bioheat production and distribution systems still need to be strengthened and expanded. As more bioheat gets produced and more fuel terminals offer the product, more heating oil dealers will begin to offer this important new energy source.

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Redefining Home Heating Oil

Every day  
more oil is imported

Every day  
more toxins are emitted

Every day  
it is thought something  
should be done

So we are.

**MASS BIOFUEL**  
Redefining Home Heating Oil



FOR MORE INFORMATION PLEASE CONTACT US AT:

Phone: (888) 627-7246  
Fax: (781) 326-0194  
e-mail: info@massbiofuel.com  
visit our website at: www.massbiofuel.com  
Please contact: Bob Warren  
Brian Fernandes  
Elizabeth Warren

To read some more information on biofuel, please feel free to visit:

www.nbio.org/askben/  
www.biodiesel.org

INTRODUCING:

- Cleaner
- Smarter
- Healthier

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Redefining Home Heating Oil

THE TIME HAS COME  
THE TECHNOLOGY IS READY  
THE FUEL OF THE FUTURE IS HERE

**MASS BIOFUEL**  
Redefining Home Heating Oil

MASS BIOFUEL was started by Bob Warren and his daughter, Elizabeth, as a division of Warren Enterprises (better known as Fisher Churchill). Located in Dedham, Fisher Churchill has been in the home heating business and energy related products since 1954.

The agenda for MASS BIOFUEL is to provide heating oil that is cleaner, healthier, renewable and will help decrease our dependency on foreign oil imports. We are "Redefining Home Heating Oil".

Biofuel in its pure form is derived from soybean oils, agricultural products and even from the highly developed forms of recycled cooking oils. This gives the fuel the unparalleled qualities of being non-toxic, biodegradable and renewable.

Although biofuel is operable in its purest form, it's most beneficial when used along with today's heating oil.

MASS BIOFUEL has carefully blended a special low sulfur heating oil with refined soybean oil. We have found this blended fuel to be most operable, cost effective and energy efficient for home heating equipment.

Blending biofuel with our special low sulfur heating oil helps to produce cleaner and safer combustion results. Since MASS BIOFUEL has gone that extra step by using low sulfur heating oil, we are able to cut the content of the sulfur by 3/4 as well as reduce emissions like carbon monoxide and nitrogen oxide that are exhausted into the atmosphere. Because it is a cleaner product, it will burn cleaner (which we all know is better for our environment) plus will help extend the life of your heating system.

Every new product has to go through its testing cycles. Biofuel is no different. Both laboratory and in-home testing have been done using different blends of biofuel. In virtually every instance, biofuel blends have proven to be better at achieving cleaner and

improved combustion results. Our blended fuel can be used in almost every home without any additions or modifications to your current oil fired heating system. We do, however, inspect all equipment prior to our first delivery. The strict guidelines that we follow allow us to monitor the before and after effects of your system.

Not only are the rewards environmentally positive, there are also domestic benefits to using this fuel. Biofuel has the flexibility to blend with both domestic and foreign oils. Replacing even 10% of regular heating oil with biofuel plays a huge part in strengthening the U.S. economy which in turn helps to give us a little bit more stability with the fluctuating prices. Also, the United States is one of the leading nations in soybean production. We have the ability to keep our farmers at work, reduce foreign imports and safely fuel the future of this country.




Biofuel Brochure


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• Cleaner  
• Smarter  
• Safer

## BIODIESEL



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EVERYDAY  
more oil is imported

EVERYDAY  
more toxins are emitted


EVERYDAY  
it is thought something  
should be done


So we are.

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## BIODIESEL



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THE TIME HAS COME  
THE TECHNOLOGY IS READY  
THE FUEL OF THE FUTURE IS HERE

## BIODIESEL

MASS BIOFUEL presents diesel fleets with a cleaner, healthier alternative to regular petroleum diesel.

Biodiesel is derived from soybean oils, agricultural products and even highly developed forms of recycled cooking oils.

Biodiesel is non-toxic, biodegradable and renewable.

Although Biodiesel is operable in its purest form, it's most beneficial when used with regular diesel fuel.

FOR MORE INFORMATION PLEASE CONTACT US AT:

Phone: (888) 627-7246  
Fax: (781) 326-0194  
e-mail: [elizabeth@massbiofuel.com](mailto:elizabeth@massbiofuel.com)  
visit our website at: [www.massbiofuel.com](http://www.massbiofuel.com)  
Please contact: Bob Warren  
Brian Fernandes  
Elizabeth Warren

To read some more information on Biodiesel, please feel free to visit:

[www.biodiesel.org](http://www.biodiesel.org)

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ENERGY SECURITY

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12% LESS PARTICULATE MATTER  
20% LESS SULFATES



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Bumper Stickers

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Every day  
more oil is imported  
Every day  
more toxins are emitted  
Every day  
it is thought that something should be done about it

So we are.

We're delivering a cleaner,  
healthier heating oil.

- Burns cleaner - less maintenance
- Cuts foreign imports
- Reduces harmful emissions
- 24 hour emergency burner service
- Automatic oil deliveries

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## ADVERTISER PROFILE

Become a part of  
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alternative fuel in America

Mass Biofuel is Changing Face by Redefining  
Traditional Home Heating Oil

Lately, no news is new news when it comes to high prices on home heating. Whether it is gas or heating oil, home owners are already bracing themselves for next year. The time has come to get our heads out of the sand and take a look around. Times are changing, imports are growing, and more and more dirty pollutants are being exhausted. Something needs to change. Someone needs to step up.

One local company has taken a fresh approach to heating homes in today's communities. Mass Biofuel, a subsidiary of Fisher-Churchill Oil Company, of Dedham, MA, has been delivering Biofuel to homes since 2004. Fisher-Churchill has been in the heating and energy related products since 1854. In the '70s they opened a solar heating department hoping to open up the world of heating. Now, in 2006 they have Mass Biofuel which is "Redefining Home Heating Oil."

### Home Heating

Mass Biofuel delivers B10 (90% low sulfur diesel blended with 10% refined soybean oil) to residential homes in the Dedham area with a delivery radius of about 35-40 miles.

This specific product has 75% less sulfur\*, 12% less nitrogen oxide and 10% less carbon dioxide. Its wonderful characteristics are less likely to cause acid rain, global warming and respiratory problems. No modifications are needed in order to burn this cleaner, healthier fuel. All you need is an oil fired heating system and the craving to make a difference.

"For every unit of fossil energy needed to make biodiesel, 3.2 units of energy are gained. In contrast, society uses 1.2 units of fossil resources to produce 1 unit of petroleum diesel."

Life Cycle study done by the U.S. Department of Energy and the U.S. Department of Agriculture.

### Diesel Cars And Trucks

Also, starting April 1, 2006, Mass Biofuel will start delivering BIODIESEL to truck fleets in the Dedham area. Biodiesel can be used in any diesel powered vehicle. It has similar horsepower and torque as well as fuel economy. Using this product in your vehicle delivers superior lubricity over traditional diesel fuel. Just like Biofuel, there are no modifications that need to be made to your vehicle in order to run. Have a truck fleet but don't have a filling tank? No problem. Mass Biofuel does complete installations of tanks to supply your trucks with convenient fueling.

### \*THE TRUTH ABOUT SULFUR:

1/32 of an inch of soot equals 60.8% efficiency loss. 1/32 of an inch of soot in your heating system equals 1.62% efficiency loss. Reducing the sulfur content in the heating oil makes for cleaner combustion resulting in less soot, soot being a by-product of combustion.

Having less sulfur in the fuel means it will be less harsh on your equipment, thus resulting in less degradation and replacement of parts.

### FOR MORE INFORMATION

Biofuel is the leading alternative energy in America and we are proud to be a part of it. You can be part of it too. Make a difference. Please contact: Elizabeth Warren at 781-407-0088 or Elizabeth@massbiofuel.com

## POWERED BY BIODIESEL. ARE YOU?

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## Mass Biofuel is riding the wave of change by redefining traditional home heating oil and diesel fuel

**Who They Are:** Mass Biofuel is a division of Fisher-Churchill Oil Co., established since 1854, and has been delivering a cleaner burning heating oil to homes in the Norfolk County and Greater Boston areas since 2004. They have 24-hour burner service, automatic oil deliveries, price protection programs and full heat/air conditioning service and installations. Using Biofuel aids in lessening foreign imports, therefore strengthening the U.S. economy, and it burns cleaner therefore creating less emissions and increasing the life of your burner.

**Their Progress:** Mass Biofuel went into their first winter in 2004 with a total of seven customers and one delivery truck. Currently more than 330 customers and three delivery trucks are riding the wave of change. They have also doubled their Biofuel usage this past year. From October 2004 through March 2006 they delivered 20,817.6 gallons of Biofuel and from April 2006 through December 2006 they delivered 21,986.7 gallons of Biofuel. If you put all the gallons of Biofuel they have delivered into barrels (typical crude barrel = 42 gallons) they have saved 1,019.2 whole barrels of crude oil from being imported, refined and burned.

**Their Products:** Pure Biodiesel, or "neat" Biodiesel, is made from natural oils, namely soybean oil, and when blended with petroleum it is consid-

ered a biodiesel blend. Biodiesel blends can be used in homes for heating (referred to as Biofuel or "Bio-heat") and as fuel for diesel vehicles (referred to as Biodiesel) with little or no modifications.

**PRODUCTION OF BIODIESEL CREATES 95% LESS HAZARDOUS WASTE THAN PETROLEUM DIESEL PRODUCTION!**

Mass Biofuel delivers two products:  
80/20 Green Blend  
90/10 Premium Green Blend

The 80/20 Green Blend is 80% traditional home heating oil blended with 20% refined soybean oil. This blend reduces CO2 (Global Warming) by about 15%, particulate matter (respiratory problems) by 12%, Sulfur Oxides (acid rain) by 20%, Nitrogen Oxides (smog) by 2% and hydrocarbons (smog, asthma, cancer) by 20%.

The 90/10 Premium Green Blend is 90% low sulfur diesel blended with 10% refined soybean oil. This blend reduces CO2 (Global Warming) by 10%, Sulfur Oxides (acid rain) by 75% and reduces Nitrogen Oxides (smog) by 10%.

**30% OF THE CO2 (CARBON DIOXIDE) IN NEW ENGLAND IS CAUSED BY HOME HEATING OIL!**

Low Sulfur diesel contains 75% less sulfur than traditional home heating oil. Lowering the sulfur con-

tent in the oil you burn aids in reducing the emissions that are exhausted into your home and atmosphere as well as aids in lessening soot buildup inside the burner. Reduced sulfur content in heating oil makes for cleaner combustion resulting in less soot which is a by-product of combustion.

**77% OF THE PARTICULATE MATTER PRODUCED IN AN OIL FIRED HEATING SYSTEM IS RELATED TO SULFUR CONTENT!**

Mass Biofuel also delivers B20 (80% diesel fuel and 20% biodiesel) and B5 (95% diesel and 5% biodiesel) to truck fleets. In addition, they have 5 gallon pails of B100 ("neat" biodiesel) available at the office.

**Check them out:** Biodiesel is the leading alternative energy in America. Mass Biofuel is proud to be a part of it. You can be a part of it too. Make a difference. For more information please contact Elizabeth Warren at 781-407-0088 or Elizabeth@MassBiofuel.com

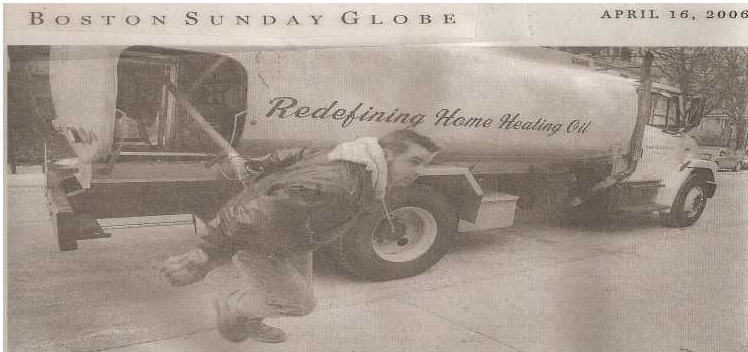
<sup>1</sup> Union of Concerned Scientists (www.ucsusa.org)  
<sup>2</sup> EPA Environmental Protection Agency Draft Technical Report EPA/200-P-02-001  
<sup>3</sup> Brookhaven National Laboratories  
<sup>4</sup> Union of Concerned Scientists (www.ucsusa.org)

ADVERTISER

2006 and 2007 PROGRESS Ad and company profile.

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Mike Costello makes a delivery of biofuel, a mix of diesel and soybean oil, for Mass. Biofuel Co.

JAMAICA PLAIN

## The secret is soybeans

Biofuel is saving money and oil

By Ron DePasquale

Boston's bioheat users might be a small minority of energy consumers, but the new blend of soybean oil and low-sulfur diesel fuel they buy from a Jamaica Plain nonprofit puts them at the forefront of the search for clean, sustainable, and affordable heating fuel.

Homeowners who used the blend in their home furnaces, through a cooperative buying program of JP's nonprofit Massachusetts Energy Consumers Alliance, grew from 40 in 2004 to nearly 200 this winter.

"I'm very concerned about our dependence on oil. I believe it's why we're in Iraq and making trouble around the world," said Carl Nagy-Koechlin, a Dorchester resident. "I've got two kids and I'm very concerned about their environmental future, so we'll do our small part."

The cost of "bioheat" is higher than for regular heating oil — 10 to 20 cents more per gallon. But because Mass. Energy receives a

volume discount, the cost to users usually ends up being 5 or 10 cents cheaper per gallon than regular oil, said Phil Lindsay, the program's manager.

No physical adjustments are required for furnaces, which will see less wear and tear in the long run, and there's no oil smell, Lindsay said. Bioheat produces a little over a quarter of the pollution that regular oil does, he said.

Tax incentives could help offset the higher cost of bioheat, said Stephen Bird, president of Mass. Energy's board of directors. Having a soybean oil refinery in the Northeast would also help, he said. Midwestern soybeans must take a detour through Florida to be refined, and the extra leg of the journey to New England adds cost, not to mention pollution.

Another fuel that Mass. Energy might one day offer is recycled vegetable oil, which could be collected locally, Bird said. Vegetable oil used in making french fries, for example, already fuels some cars and heats a Watertown diner.

"We would love to see recycled vegetable oil become an option," he said. "I don't know if the supply will be large enough. A lot depends on suppliers and what new

incentives the government offers."

Both fuels present challenges. Soybean oil congeals in pure form at low temperatures. So the bioheat fuel that Mass. Energy buys is only 10 percent soybean oil and 90 percent low-sulfur diesel. Recycled vegetable oil must be strained, filtered, and burned in a special furnace.

Mass. Energy expects its program's speedy growth to continue. Participants in the cooperative's green electricity program have gone from 400 just a few years ago to 6,000 now. "The hope is we'll have the same number for this program," Bird said.

While alternative energy consumers weigh the costs and benefits of different fuels, the cost of heating oil continued its upward march this winter. It roughly doubled compared with 2002, according to the state Division of Energy Resources. The cost of natural gas went up 30 to 50 percent compared with last winter.

Business has been brisk at Mass. Biofuel, said Elizabeth Warren, general manager of the Dedham-based subsidiary of Fisher Churchill Oil. Mass. Biofuel, a Mass. Energy supplier, began delivering bioheat in October 2004.

Every day  
more oil is imported

Every day  
more toxins are emitted

Every day  
it is thought that something should be done about it

**So we are.**

We're making a cleaner, healthier oil — right here in the US.

Mass Biofuel is proud to be one of the first companies to deliver a better fuel oil to homes in Massachusetts.

We have carefully blended a special low sulfur heating oil with refined soybean oil. The resulting blend reduces sulfur, carbon monoxide and nitrogen oxide emissions. Biofuel burns cleaner, so it reduces soot build up and can actually increase the life of your heating equipment.

Because it's made from the soy crop plentiful on our land, biofuel plays an important role in lessening our reliance on foreign imports. It boosts American farm production and creates more jobs for our farmers.

Biofuel is the fastest growing fuel alternative in America and we are proud to be a part of it.

You can be a part of it too. Make a difference. Call 1.888.MassBio or visit [www.massbiofuel.com](http://www.massbiofuel.com) today.

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The Secret is soybeans- BOSTON GLOBE April 2006 \* BOSTON GLOBE ad 2006

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## Mass. could become a leader in biofuel industry

By Keith Howard  
DAILY NEWS CORRESPONDENT

Could Massachusetts become the nation's 21st century version of Texas when it comes to energy production?

It could if legislative leaders, venture capitalists and researchers have their way. But instead of black crude, the state's energy wealth may be hidden in wood chips, cranberry bogs and yard waste.

The state's efforts are part of a national competition to lead the country in the biofuel market. Among the competitors are New York, California and, of course, Texas, along with current leaders Minnesota and Iowa.

According to the state's Executive Office of Energy and Environmental Affairs,

several local businesses are preparing to compete in this arena. Three biodiesel refineries are in the planning stages in Pittsfield, Greenfield, and Quincy. The refinery in Greenfield expects to produce about 5 million gallons of biodiesel a year, primarily from waste oil.

But there's more to the push for a state biofuel industry than simple economic competition. Massachusetts consumes about 4.5 billion gallons of petroleum per year, costing roughly \$10 billion. That's the third highest energy price in the country, behind only Hawaii and Washington, D.C., according to the U.S. Department of Energy.

Petroleum fuels are the largest single source of energy expenditures in the state, BIOPUELS, Page A8

## Mass. a biofuel leader?

BIOPUELS, From A1

accounting for roughly half of total annual residential and commercial energy spending. Over one-third of homes in the state (86 percent) use home heating oil, well beyond the national average of 9 percent, according to the same report.

"In a world where Massachusetts is 100 percent dependent on petroleum, they [the companies] can in effect hold state consumers hostage to high oil prices. In essence, they can charge whatever they want," said Brook Coleman, spokesman for the Northwest Biofuels Collaborative.

"If your oil company says, 'You're going to pay \$3.25 for oil, what are you going to do? Are you going to buy a wood-burning stove? You're stuck,'" said Coleman.

Massachusetts may seem an unlikely producer of biofuels. It doesn't grow large crops of corn, sugar or oil seed used to make ethanol. But the U.S. Department of Energy says these crops comprise 37 percent of biomass used in the country while forest residues, primary and secondary mill waste along with urban wood-wastes from paper mills, saw cutting and cardboard account for 59 percent.

Scientists say wood chips, algae and cranberry biomass are readily available resources for biofuels in the state. According to Coleman, there is a tremendous amount of waste from the leaves and stems of cranberries along with acres of unused cropland.

Margherita Bezanilla, a cell biologist at the University of Massachusetts, just received a \$625,000 grant to make a biofuel a reality. Her research uses moss to search for genes that might make other plants such as switch grass grow better.

"Five to six years from now we might be able to discover the genes that alter genetic makeup that makes [switch grass] grow faster and bigger," said Bezanilla.

The advantage to crops such as switch grass is that less energy is required to break down the plants into ethanol.

"Right now corn seems to be the most high profile, but it actually takes a lot of energy input

to convert corn into ethanol. [That's] not the best solution. Cellulosic ethanol doesn't require as much energy input to get out a good amount of ethanol," Bezanilla said.

Companies aren't waiting for a research breakthrough. Berkeley Biosciences has plans to set up a \$50 million biodiesel production facility in Pittsfield and Dalton, which is expected to produce 30 million gallons of biodiesel a year from virgin feedstocks such as soy, according to Robert Kough, spokesman for the state environment office.

"We certainly think it will be a significant boon to the agricultural industry here. We think this will have additional crops that can be raised for biofuels as well," said Kough.

The state's three top politicians are taking steps to nurture these industries by supporting mandates that diesel and home fuel providers use alternative energy sources in their blends.

Gov. Deval Patrick, Senate President Thomas Murray and House Speaker Salvatore DiMasi support a bill requiring the use of biodiesel in all blends of transportation and heating fuels, starting at 2 percent biodiesel in 2010 and increasing to 5 percent in 2012.

If that legislation passes, Massachusetts would be the first state to require a minimum amount of bio-ingredients in all fuels. The bill would also provide a gas tax exemption for cellulosic ethanol.

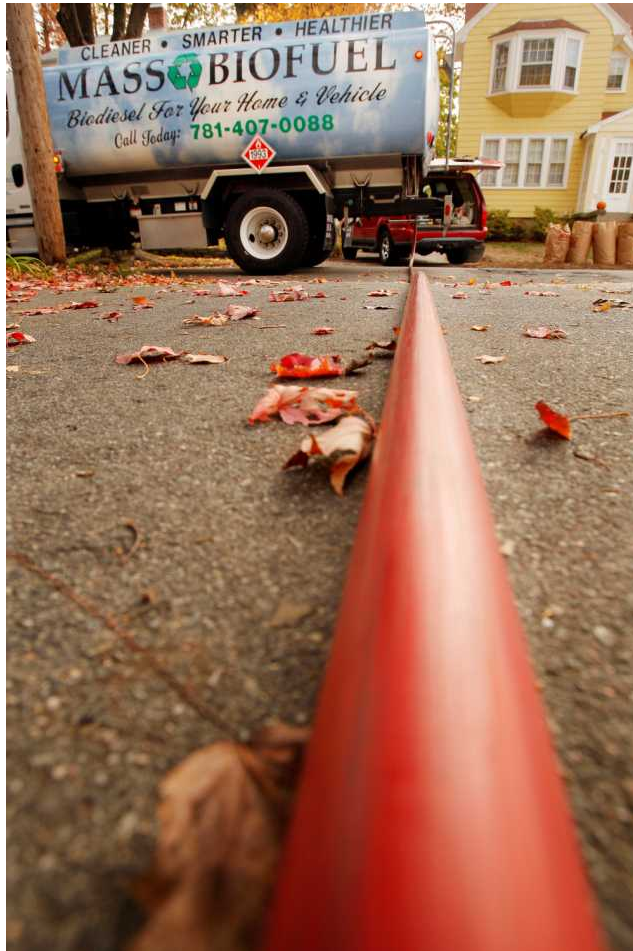
According to sponsors of the bill, cellulosic ethanol could create 3,000 new jobs in Massachusetts and pour \$20 million into the economy. BioEnergy International, Vermont, Massachusetts, Agriviva, SunBhusani, and GreenFuel Technologies are some of the leading companies in the state vying to bring this next generation fuel source to the market.

The headquarters for World Energy, one of the largest biodiesel distributors in the country, can be found in Chelsea. Mass Biofuel, another major biodiesel supplier, is located in Dedham.

(Keith Howard is part of the Boston University State House Program.)

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Pictures by Brian Snyder from *Reuters*

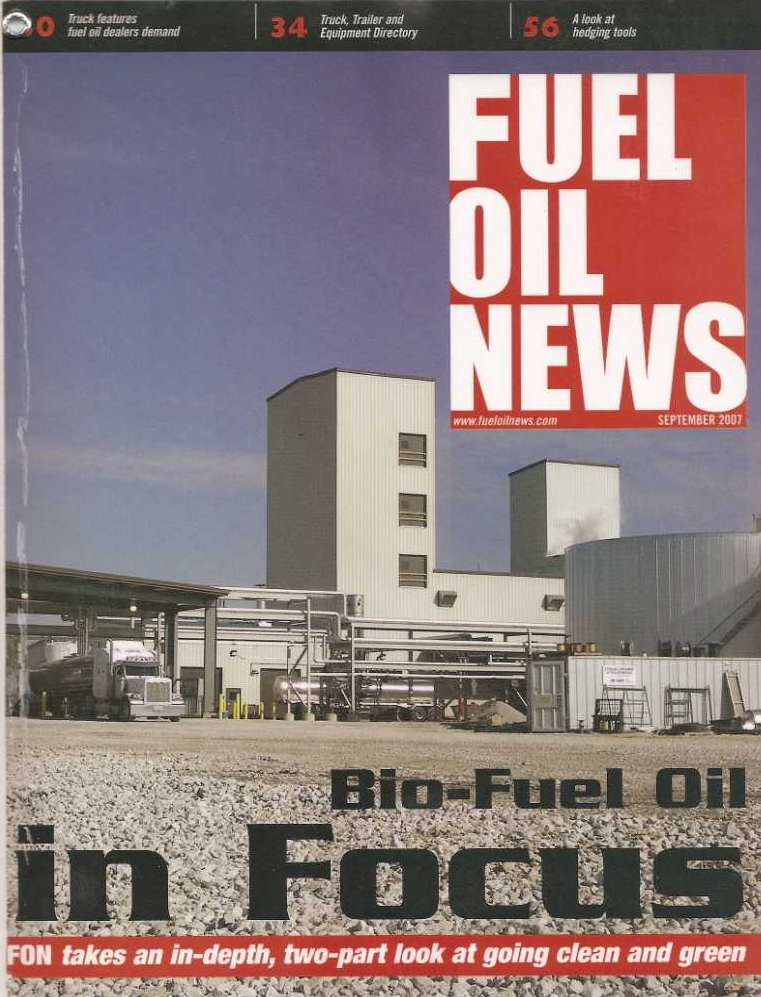
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## BIOHEAT

### CASE STUDY

#### MASS BIOFUEL

Mass Biofuel is a division of Fisher-Churchill Oil Company, based in Dedham, Mass. Fisher-Churchill is a full service home heating oil company that has been in existence since 1854.

"Back in around 2003, both my son and daughter came to work for me and my daughter Elizabeth came up with some ideas about how we could make a difference with pollution — making a cleaner, better product," said Bob Warren, Mass Biofuel president. "She did a lot of research, and we came up with bio-fuel. So we started to market it to our existing customers, and some of them decided they wanted to try it. We began in October of 2004. We had, probably 15 to 30 customers by the end of December. Then we really started to market it outside of our existing customers, and started getting a lot of people."

Warren noted that his customers had two main reasons for choosing a biofuel solution — split about evenly. Half wanted to make a difference to the environment, and the other half was seriously interested in impacting the importation of foreign oil. These customers ranged from war veterans to environmentalists, along with regular homeowners who just wanted to do their part. "So

many people wanted to jump on board on this thing," he said. "Over the last couple of years we've grown to have about 400 customers. So it definitely increased our customer base."

This growth did not significantly come from his existing customers — perhaps only 100 total with the rest being new to his business. "I think dealers are a little skeptical about turning their whole customer base on to biofuel, but if they look at it a little differently you're pretty much securing your existing customer base. You may not be adding to it at the moment, but you're securing it away from somebody else, another competitor, because you offer this product."

Mass Biofuel uses a soy based biodiesel supplied by several companies. Warren splash blends it himself using careful heating and mixing. While the process is manageable, Warren is waiting for more infrastructure development before he makes a major switchover throughout his entire operation. "We will go to all biofuel when the infrastructure, the wholesalers, start carrying it at the terminals," he said. "Whether it's B5, B10, B30 — it really won't matter — because we'll be able to go into the terminal and select. But until we can get the biofuel easily into our trucks with a minimum of effort, we can't change all of our customers over. I don't think anyone could, unless

## BIOHEAT

they had their own terminal. And that's the only thing holding us back right now because it does take an extra hour to load bio. Doing two loads a day, you have to splash blend the bio, and it takes time. And in the middle of winter, you don't always have that luxury."

Mass Biofuel offers two primary heating oil blends. There is the "80/20" Green Blend — 80 percent home heating oil with 20 percent biodiesel, and the "90/10" Premium Green Blend — 90 percent ultra-low sulfur diesel with 10 percent biodiesel. Customers show perhaps a 10 percent greater interest in the 80/20 option.

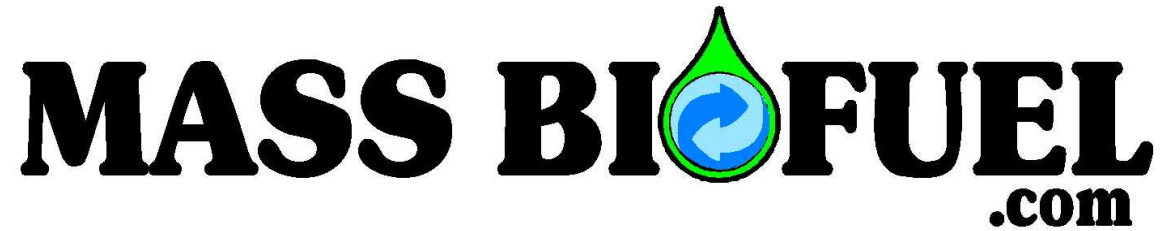
So far there have been no customer maintenance issues. "The oil is much cleaner, the oil filters are much cleaner and the nozzles are much cleaner," Warren said. "As a matter of fact, we do a survey when we first get a customer. We go out, change the nozzles, filter, strainer, check inside the boiler and make a report. And a year later, when we go back to do a clean-out, we have a special form that my techs fill out. We pay very careful



Mass Biofuel makes its presence known with its attractively branded trucks.

attention to what everything looks like, and the results are phenomenal. A lot of times, some of these systems aren't even going to have to get cleaned for two or three years because the fuel is just so good. By eliminating sulfur, you eliminate all your sooting problems, and the majority of the problems we have in the boiler are sooting. The people using the ULSD — you open that boiler and there's nothing there. The industry really has to start going that way." **FON**

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