

# BIODIESEL

M A G A Z I N E

The World of Biodiesel at Your Fingertips

From the January 2010 Issue

## Reinventing Oilheat

**Oilheat leaders convened in September and resolved to clean their industry's image by greening its fuel. Ultra-low sulfur fuel oil and biodiesel blends are the tools prescribed to get the job done.**

by Ron Kotrba

Imagine a heating oil standard of ultra-low sulfur diesel (ULSD) and 20 percent biodiesel. This is heating oil's future if the oilheat industry's initiative to move toward ULSD in tandem with a mandatory, incrementally increasing biodiesel component, comes to fruition. In September, oilheat leaders and representatives convened in Baltimore to discuss the future of their industry. John Huber, president of National Oilheat Research Alliance, says the meeting was akin to a corporate strategy meeting, pulling leaders together to address challenges and to define—or redefine—itsself in this new era of environmental policy and change. "The oilheat industry views itself in a timeframe in which it needs to reinvent itself, what with legislation on climate change, global warming and carbon caps," Huber says. The executive director of the Vermont Fuel Dealers Association, Matt Cota, says the idea behind the September congress was to come up with a framework to push the oilheat industry into the next generation. "We care about handing our companies off to our sons and daughters, and how to survive the next 25 years in this political environment," Cota says, referring to the push in Washington to reduce the carbon footprint of our society. The result of the Baltimore meeting was an industry commitment to reach 2 percent biodiesel saturation in the nation's heating oil supply by July, stipulating to steadily increase it in the years to come, and significantly lowering the amount of sulfur in heating oil.

Today, the sulfur content in heating oil can be greater than 3,000 parts per million and, even though some distributors are selling Bioheat, very little biodiesel overall is blended into the nation's heating oil supply. While U.S. EPA regulations for 2007 and 2010 brought about ULSD requirements for on- and off-road diesel fuel, respectively, sulfur content in heating oil is virtually unregulated and varies from location to location.

### Increasing Bio Content

When asked if the decision to incorporate 2 percent biodiesel beginning in July was tailored around the Massachusetts biodiesel mandate, which has the same start date, Jim Townsend of Danvers, Mass.-based Townsend Oil and Propane, says the timing was coincidence.

"At the summit, no dots were connected between the Massachusetts mandate and this resolution," Townsend says. In April 2009, Townsend Oil and Propane introduced Biopure, heating oil with 2 percent biodiesel blended by its supplier, which is BQ-9000-certified, he says, adding that Biopure is delivered to between 12,000 and 13,000 accounts in Massachusetts and New Hampshire. "In our company alone we've replaced 250,000 to 300,000 gallons of heating oil on an annualized basis by going to 2 percent biodiesel heating oil," Townsend says. As a Massachusetts fuel dealer, Townsend Oil and Propane would have eventually moved to 2 percent biodiesel to comply with the state regulations.

Michael Devine, formerly with Devine Bioheat and now CEO of the Earth Energy Alliance, spoke at the meeting on behalf of the National Biodiesel Board. He says the B2 figure came about because it's a conservative jumping off point. "It gives people the ability to look at the infrastructure, how to integrate it, make sure there's sufficient distribution, and allows entrepreneurship to develop further," he says, adding that the goal is to begin with B2 but to move to B5 "as soon as possible." The heating oil spec, ASTM D396, already allows for up to 5 percent biodiesel without notice.

"I ran an oilheat company for a number of years, and it's no small thing to get a chapter to come together on an issue," Devine tells Biodiesel Magazine. "So to get 24 states to come together on a resolution to improve its fuel, to improve its image, is an impressive accomplishment."

Despite how impressive this resolution is, almost everyone agrees that such a private industry commitment cannot be fulfilled without mandates—either many individual state mandates or one overarching federal standard. Some say the federal route would be the simplest way to achieve a uniform, across-the-board bioheat mandate, but the federal red tape

rigmarole of congressional approval plus the mire of EPA implementation as evidenced most recently for RFS2 leads stakeholders to believe that state mandates are really the only practical way to go.

After the Baltimore meeting in which the resolution to incorporate increasing amounts of biodiesel in heating oil was drafted, those in attendance were expected to go back to their respective states to build coalitions and lay the groundwork for expediting a bio mandate. Cota says the goal is for each state to draft its own bill, but many states appear to be working with others to draft the language. "We all made a commitment to go back to our states and make this happen," he says.

Ed Burke with the Chelsea, Mass.-based Burke Oil says he's heard that many states will hop on the mandate wagon as soon as three other states implement one. In an area such as the Northeast, which is geographically compact yet densely populated, this is an important concept. Townsend says Massachusetts oil dealers can pick up fuel in New Hampshire, Rhode Island, Connecticut or New York, so if any one of those supply points does not have the available mandated fuel (e.g., B2 heating oil), this could mean trouble logistically. "We would need the [Massachusetts] mandated fuel available outside of Massachusetts," Townsend says. Cota elaborates on this by saying, "We all have our own issues—local and state—but we cannot be an island, especially in Vermont, because then we can't go out to Massachusetts or New York to receive fuel. We all have to have similar standards. In Vermont, we have 140,000 oilheat customers who use 100 MMgy of heating oil. If we created specs or standards that are different than others, it would be foolish." He says that the likelihood of any mandates in the Northeast being passed by July 2010 is slim to none, except for Massachusetts, which already has one in place—a contentious one, at that.

After EPA released its proposed rule for RFS2 implementation, in which soy biodiesel was raked over the coals with respect to its lifecycle GHG emissions, Massachusetts made the move to only allow waste-based biodiesel to qualify under its mandate. Burke says, "It was nuclear war here when the state announced only waste-based biodiesel would qualify." He adds that biodiesel from waste material is cheaper for him and for his customers though. The state is moving forward with July implementation of its biodiesel mandate, using "early action credits," and once EPA does release its final RFS2 rule, state leaders may revise its "waste-only" policy. If the state doesn't change, however, then it may be tricky to get other Northeast states on the same page if their legislators don't feel the same way. "It will make for some interesting supply situations for a while until everyone is onboard," says Bob Hedden, executive director for the oilheat manufacturers association, educational director for NORA and independent industry consultant. "Distribution systems are not set up to respect state lines at all. A lot of Vermont dealers pick up fuel in Albany, N.Y., so if New York State passes a bill but Vermont doesn't, it can create some problems."

## Lowering Sulfur

Incrementally raising the biodiesel component in heating oil is one important part of the oilheat industry's new charge, but the other aspect is the drive to lower sulfur content. On fuel cleanliness and systems efficiency, the effect of reducing sulfur content in heating oil is nothing short of tremendous. "At 3,000 ppm, we're putting a lot of SO<sub>2</sub> in the air," Burke says. Also, nearly all of the carcinogenic particulate matter (2.5 micron) strewn into the air from oilheat chimneys populating the Northeast and elsewhere is a result of sulfur content. Another issue is sulfuric acid production. "Sulfuric acid condenses at 200 degrees," Hedden says. "One of the problems is that we have to keep the exhaust temperature so high at the top of the chimney [to prevent sulfuric acid from condensing], and there's a cost to that," meaning heat loss via the flue and the monetary and energy loss associated with it. "If we can get rid of sulfur, we can do some pretty creative things to lower the exhaust temperature of the exhaust gas."

When the burner of an oil furnace starts, there is sulfur in the heat exchanger, which results in scaling. "Scale decreases efficiencies," Hedden says. "ULSD won't have that degradation of efficiencies, which is about 2 percent per year, and that would save money on maintenance and there'll be a gain in efficiency." The 15 ppm sulfur will not contribute to system degradation and therefore less fuel will be needed to do the same amount of heating.

Huber points out that sulfur is a real obstacle for equipment design. "With ULSD you can use lower-grade steel for components, for example," he says. New oil systems such as wall-hung on-demand boilers, which are used in Europe and are so small they can be cleaned in a dishwasher, are not compatible with high sulfur fuel oil.

Another aspect to consider is that virtually all on- and off-road diesel fuel will soon be ULSD, so transporting high sulfur heating oil via pipeline will be restricted because of sulfur trail-back. So, while ULSD is slightly more expensive to produce, it may be cheaper to move to a uniform ULSD fuel for all middle distillate applications due to the complications associated with transporting what was once the norm but now is a rather "boutique" fuel—high sulfur diesel.

Burke says the counter argument to pushing for ULSD heating oil is that if it gets really cold in the Northeast, it may be impossible to import enough 15 ppm fuel in quantities large enough to satisfy demand while staying in regulatory compliance. However, he notes that in extreme circumstances a state governor could waive the spec temporarily. "Right now, there's a ton more ULSD stocks than ever before," Burke says, due to the recession and drop in diesel demand.

It's important to note that a B5 heating oil mandate nationwide would create the demand for 450 MMgy of B100. But the oilheat industry is looking beyond B5. A standard of 15 percent biodiesel content and ULSD would give heating oil a better carbon footprint than natural gas, Devine says. "Heating oil associations, they're very excited about biodiesel," he adds. "It's the first innovation to come into their industry in 30 years. They see biodiesel as the piece that makes them contemporary."

The natural gas industry is trending toward using more liquid natural gas (LNG), which Hedden says has a greater carbon footprint than regular natural gas. "If they rely more on LNG and we rely more on biodiesel, then we're trending in the right direction and they're trending in the wrong direction." □

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