What's Cooking in Alternative Fuels, by Carla L. Romita
The Mann Report, January 2007

These are exciting and challenging times in the heating fuel and motor fuel markets. The intersection of increased environmental awareness, concerns about the geopolitical consequences of high petroleum demand, and the progress of technology have combined to produce some interesting changes in fuel composition and the availability of alternative fuels.

For example, in October 2006 newly-effective EPA rules changed the bulk of the nation's supply of diesel fuel used for transportation purposes to ultra-low sulfur diesel (15 parts per million), representing a 97% sulfur content reduction from the previous low-sulfur standard of 500 parts per million. Combustion of ultra-low sulfur diesel dramatically reduces the emission of air pollutants. Over the next several years, virtually the entire on-road diesel market will convert to this improved product. Refiners and distributors spent several years and invested billions of dollars to ensure a sufficient supply in time to meet the EPA deadline.

The heating oil market is also in transition. The industry is moving toward adopting low-sulfur heating oil (500 parts per million) as the standard no. 2 oil. The existing standard for no. 2 oil sold in New York City is 2,000 parts per million sulfur content. Studies conducted by the Brookhaven National Laboratory indicate substantial savings in oil burner service costs and higher reliability the low-sulfur no. 2 oil is used.

An even more dramatic development is in its infancy. Bioheat® (a registered trademark of the National Biodiesel Board) is the name for any product that results from blending conventional no. 2 oil or diesel fuel with a percentage of biodiesel. Pure biodiesel, which is made from vegetable oils, recycled cooking greases, or animal fats, is known as "B100." The blend commonly used for space heating purposes consists of 80% conventional no. 2 oil and 20% biodiesel. It's called "B20."

A report issued by the United States Department of Energy in March 2006 described several advantages of using biodiesel or a blend of biodiesel and petroleum. First, use of biodiesel—a domestically produced renewable agricultural resource—extends the supply of petroleum and partially displaces petroleum barrels that would otherwise be imported from unstable or unfriendly countries. Second, combustion of biodiesel-containing fuel reduces the release of global warming gases into the atmosphere and lowers the emission of particulates, hydrocarbons, and carbon monoxide. Third, use of B20 as a heating fuel does not require new equipment or modifications to existing no. 2 oil burning equipment (although this conclusion is based largely on tests conducted on residential, as opposed to commercial, equipment). Fourth, biodiesel and biodiesel blends qualify for certain federal and state tax incentives, although the net effect of those is to lessen the cost differential between biodiesel/Bioheat® and conventional petroleum products, not to make the former cost less than the latter.

After reading about these advantages, you may be asking yourself why the heating oil market has not rushed to embrace B-20. The reason is that using B-20 raises issues which, at least at this point, may make it impractical for some heating oil consumers.

To begin with, the BTU content of B-20 is slightly (about 2%) less than conventional no. 2 oil. Therefore, a gallon of B-20 will not produce quite as much heat as a gallon of no. 2 oil. This shortfall is exacerbated by the fact that B-20 commands a price premium over no. 2 oil. In addition, blending 20% biodiesel into no. 2 oil or diesel fuel lowers the cold weather performance characteristics of the resulting blend. The product may be unsuitable in some environments unless it treated with additives or blended with kerosene, both of which increase its cost.

An equally important consideration is that the supply of biodiesel and B-20 is not, at least yet, abundant. Current United States annual production of biodiesel for all purposes is only about 75 million gallons and there is no well-established distribution system. Although B-20 is available in the New York metropolitan area, and is gaining some popularity among homeowners, it is not yet available in the quantities that would be necessary to meet the needs of large buildings on a regular basis. The supply of biodiesel and Bioheat® is likely to expand in the next few years as demand increases. For example, New York State recently moved to stimulate demand when Governor Pataki issued Executive Order 142, directing state agencies to increase their percentage use of biodiesel each year until 2012.

In short, biodiesel-petroleum blends for space heating hold considerable promise for extending the nation's fuel supply and reducing the emission of harmful pollutants. The market is not yet sufficiently mature to support heavy commercial demand, but wise property owners will keep an eye on developments in this field as they look for ways to improve the overall energy use profile of their buildings.