

## Biodiesel is Working Hard in Kentucky

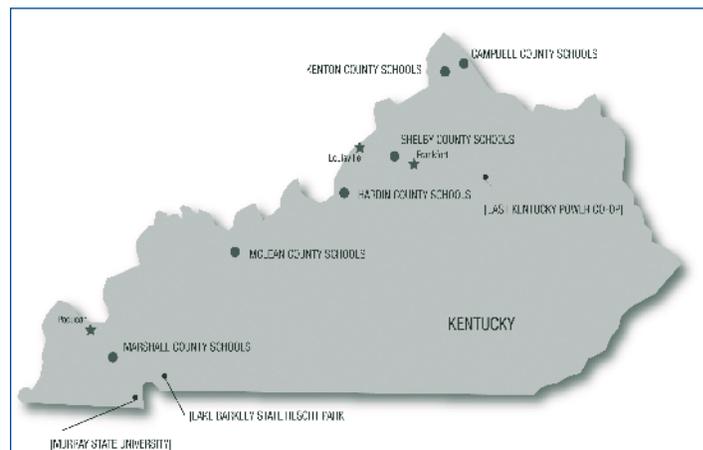
In recent years, the use of biodiesel in medium-duty and heavy-duty vehicles has received significant attention, due to its low cost relative to other alternative fuels (considering vehicle, fuel, and infrastructure costs). Biodiesel is especially interesting as an alternative fuel for school districts, who can achieve emissions reductions and petroleum displacement benefits without significant vehicle or infrastructure investments.

In Kentucky, biodiesel use increased by 1,100 percent between 2002 and 2004. Production, storage, and distribution sites for biodiesel have been increasing in number, which makes Kentucky a leader in use of this alternative fuel. The projects outlined below to demonstrate use of biodiesel have helped significantly in this regard.

In 2002, the Kentucky Division of Energy provided grant funding to offset the incremental cost of biodiesel for several school districts within Kentucky as part of a pilot study on using biodiesel blends in Kentucky schools. Initial funding amounted to \$45,000 for this project. Six school systems located throughout Kentucky have signed on to use biodiesel fuel, either in a 20% blend with regular diesel (B20) or in a 2% blend with regular diesel (B2). The project began in October 2002 and continued through October 2003.

As the location map shows, these school systems are distributed throughout Kentucky. The Campbell County and Kenton County Schools are located in the northern part of Kentucky near Cincinnati, Ohio, while Marshall County Schools are located in western Kentucky near Paducah. McLean County Schools are in north-central Kentucky near Owensboro and Evansville, Indiana. Hardin County Schools are located just southwest of Louisville.

A total of 300 buses in this project are using B20, and a total of 50 buses are using B2. These buses serve a total of 35,500 students, transported daily by the fleets in these five school systems. Facts about each school



Location of Pilot Biodiesel Fleets in Kentucky

district's biodiesel activities are listed in the table on the next page.

These biodiesel school bus demonstrations are part of a larger demonstration program that also includes a state park (Lake Barkley State Resort Park), a university (Murray State University), and an electric co-op (the East Kentucky Power Cooperative). According to Melissa Howell, Executive Director of the Kentucky Clean Fuels Coalition (the Clean Cities Coalition in Kentucky), the full demonstration program will displace approximately 60,000 gallons of diesel fuel, resulting in emissions reductions of about 150 pounds of particulate matter, 160 pounds of sulfur dioxide, 200 pounds of hydrocarbons, and 1,800 pounds of carbon monoxide.

The biodiesel fuel is sourced from two suppliers. One is Griffin Industries (a Kentucky company), providing biodiesel fuel made from yellow grease, and the other supplier is the Kentucky Soybean Board, supplying soy-based biodiesel. The biodiesel fuel is approximately \$0.75 to \$1.00 more expensive per gallon of biodiesel than conventional diesel fuel, making the B20 blend approximately \$0.15 to \$0.20 per gallon more expensive than diesel (\$0.75 times 20% or \$1 times 20%), and the B2 blend about \$0.02 per gallon more expensive than diesel (\$0.75 times 2% or \$1 times 2%). The grant



School District Participation in Biodiesel Pilot Project

District	Size of Total Bus Fleet	Size of Biodiesel Bus Fleet	Biodiesel Mix Used	Total Daily Ridership
Campbell County	65	65	B20	5,000
Hardin County	181	25	B20	10,500
Kenton County	160	160	B20	13,000
Marshall County	50	50	B2	3,500
McLean County	50	50	B20	3,000
TOTAL	506	350		35,500

funding has been provided to offset this cost for the school systems for one year.

To date, the school systems have been very pleased with their biodiesel projects, and drivers have nothing but good things to say about the switch. They are especially thrilled with the performance of the vehicles on biodiesel. Operators have also mentioned that the fuel has fewer odors than regular diesel, and that odors from fuel spills on the drivers' hands tend to linger less than regular diesel. At least two of the school systems have indicated they will continue to use biodiesel in their fleet after the expiration of the grant funding.

Earl Melloy, superintendent of the McLean County School District, was quite happy with the results of his district's participation in the program. "This fuel blend is cleaner, provides greater engine lubricity, reduces harmful emissions, and will greatly benefit students," said Melloy. "I believe the greater lubricity factor will enable our engines to run longer and also reduce maintenance costs."

The Kenton County director of transportation, Tom Bach, also was pleased with progress in the project. "Fuel mileage was equal to regular diesel fuel, and we did not experience any problems with fuel filters clogging or performance problems." He went on to note, however, "The additional cost - 15 cents per gallon for a 20 percent blend of biodiesel - was the only disadvantage to using the fuel, and I suspect that tight budgets will prevent many districts from using biodiesel without grant funds."

Johnny Herndon of Murray State University also felt that the biodiesel demonstration has been successful. "We have been working with and looking for alternative fuels to use in our vehicles at Murray State University for a few years now. Our original goal was to

find alternative fuels that would clean the environment and would come from renewable sources. We look forward to expanding on these programs in the future."

Melissa Howell indicated that other fleets considering the use of biodiesel should work to educate drivers and mechanics about the fuel and its characteristics. Because of its solvent properties, biodiesel has the effect of cleaning out fuel lines and fuel tanks, both in the vehicle and in the dispensing and storage equipment, and will result in more frequent fuel filter replacements (depending on the condition of the bus and the engine).

## For More Information

For more information on this alternative fuel activity, please contact the local Clean Cities Coordinator:

Melissa Howell  
Coordinator  
Commonwealth Clean Cities Partnership  
P.O. Box 5174  
Louisville, KY 40255  
(502) 452-9152 (phone)  
(502) 452-9152 (fax)  
kcfc@aol.com  
<http://www.kentuckycleanfuels.org/>

Alternatively, you can contact the fleets directly:

Mike Dawson  
Campbell County Schools  
101 Orchard Lane  
Alexandria, KY 41001  
(859) 635-2161 (phone)  
mdawson@campbell.k12.ky.us  
<http://www.campbell.k12.ky.us>

Larry Fohl  
Transportation Director  
Hardin County Schools  
65 W.A. Jenkins Road  
Elizabethtown, KY 42701  
(270) 769-8800 (phone)  
(270) 769-8888 (fax)  
lfohl@hardin.k12.ky.us  
<http://www.hardin.k12.ky.us>

Tom Bach  
Transportation Director  
Kenton County Schools  
20 Kenton Lands Road  
Erlanger, KY 41018  
(859) 356-5164 (phone)  
tbach@kenton.k12.ky.us  
<http://www.kenton.k12.ky.us>

John Ward  
Marshall County Schools  
86 High School Road  
Benton, KY 42025  
(270) 527-8628 (phone)  
<http://www.marshall.k12.ky.us>

Earl Melloy  
Superintendent  
McLean County Schools  
P.O. Box 245  
283 Main Street  
Calhoun, KY 42327  
(270) 273-5257 (phone)  
<http://www.mclean.k12.ky.us>

Dr. Leon Mooneyhan  
Superintendent  
Shelby County Schools  
P.O. Box 159  
Shelbyville, KY 40006-0159  
(502) 633-2375 (phone)  
(502) 633-1988 (fax)  
lmooneyhan@shelby.k12.ky.us  
<http://www.shelby.k12.ky.us>

Darrel Ishmael  
Manager  
East Kentucky Power Cooperative  
4775 Lexington Road  
Winchester, KY 40391  
(859) 744-4812 (phone)  
darrel@ekpc.com  
<http://www.ekpc.com>

**For More Information (continued)**

Bill Stevens  
Assistant Superintendent  
Lake Barkley State Resort Park  
P.O. Box 790  
Cadiz, KY 42211  
(270) 924-1130 (phone)  
bill.stevens@mail.state.ky.us  
<http://www.state.ky.us/agencies/parks/lakebark.htm>

Johnny Herndon  
Director of Transportation  
Murray State University  
200 Transportation Building  
Murray, KY 42071  
(270) 762-4770 (phone)  
phyllis.anderson@murraystate.edu  
<http://www.murraystate.edu>

For more information on the biodiesel suppliers listed here, visit:

Griffin Industries  
<http://www.griffinind.com/>

Kentucky Soybean Board and Association  
<http://www.kysoy.org/>

Sponsored by the U.S. Department of Energy  
Energy Efficiency and Renewable Energy  
Office of Weatherization and Intergovernmental Programs

**A Strong Energy Portfolio for a Strong America**

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

DOE/GO-102004-1872  
April 2004

Neither the United States government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States government or any agency thereof.

Printed with a renewable-source ink on paper containing at least 50% wastepaper, including 20% postconsumer waste