

# Alternative Fuels

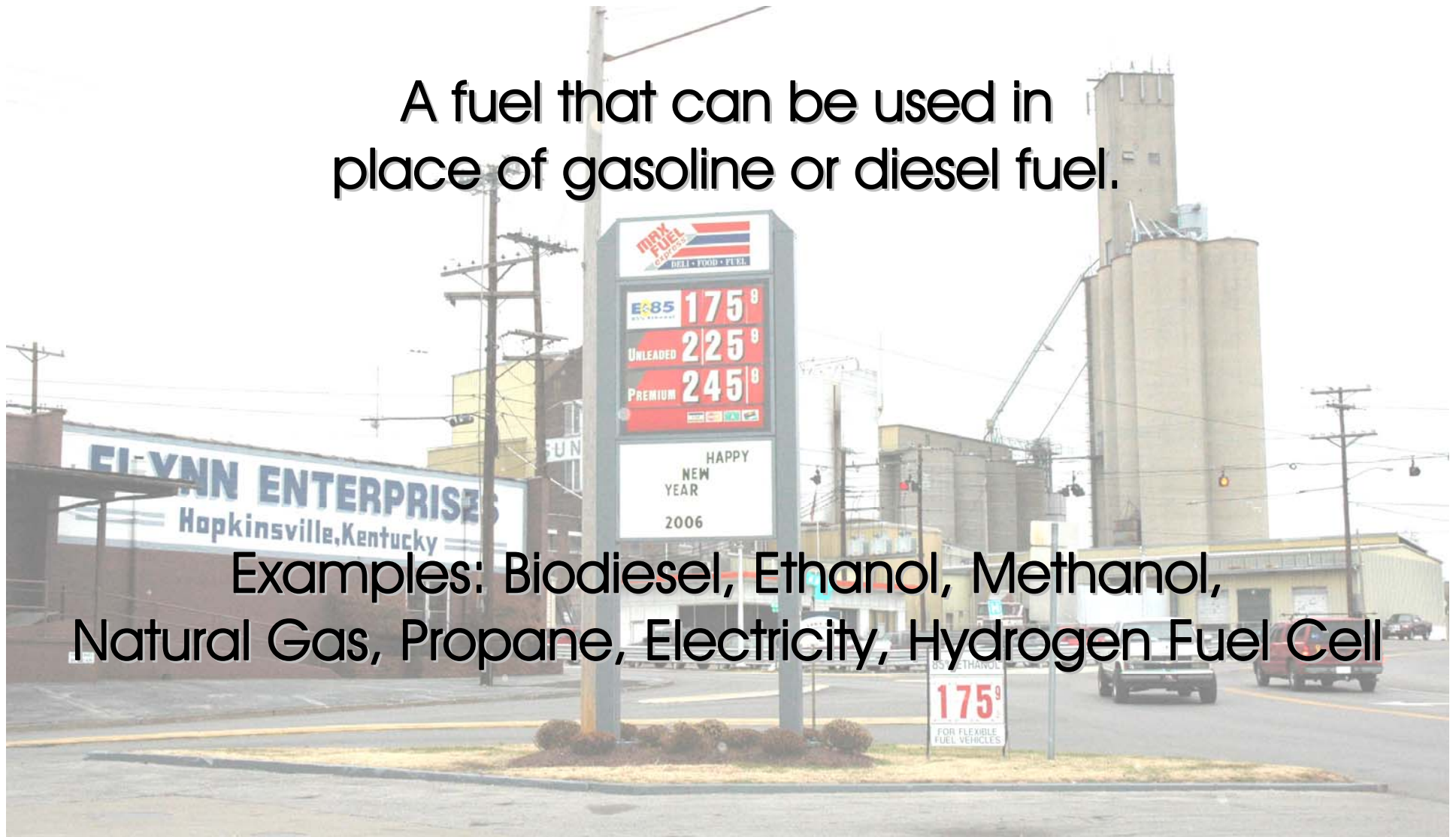


**UK** COOPERATIVE EXTENSION SERVICE  
University of Kentucky – College of Agriculture

Photo used with permission from KY Soybean Board.

# What are Alternative Fuels?

A fuel that can be used in place of gasoline or diesel fuel.

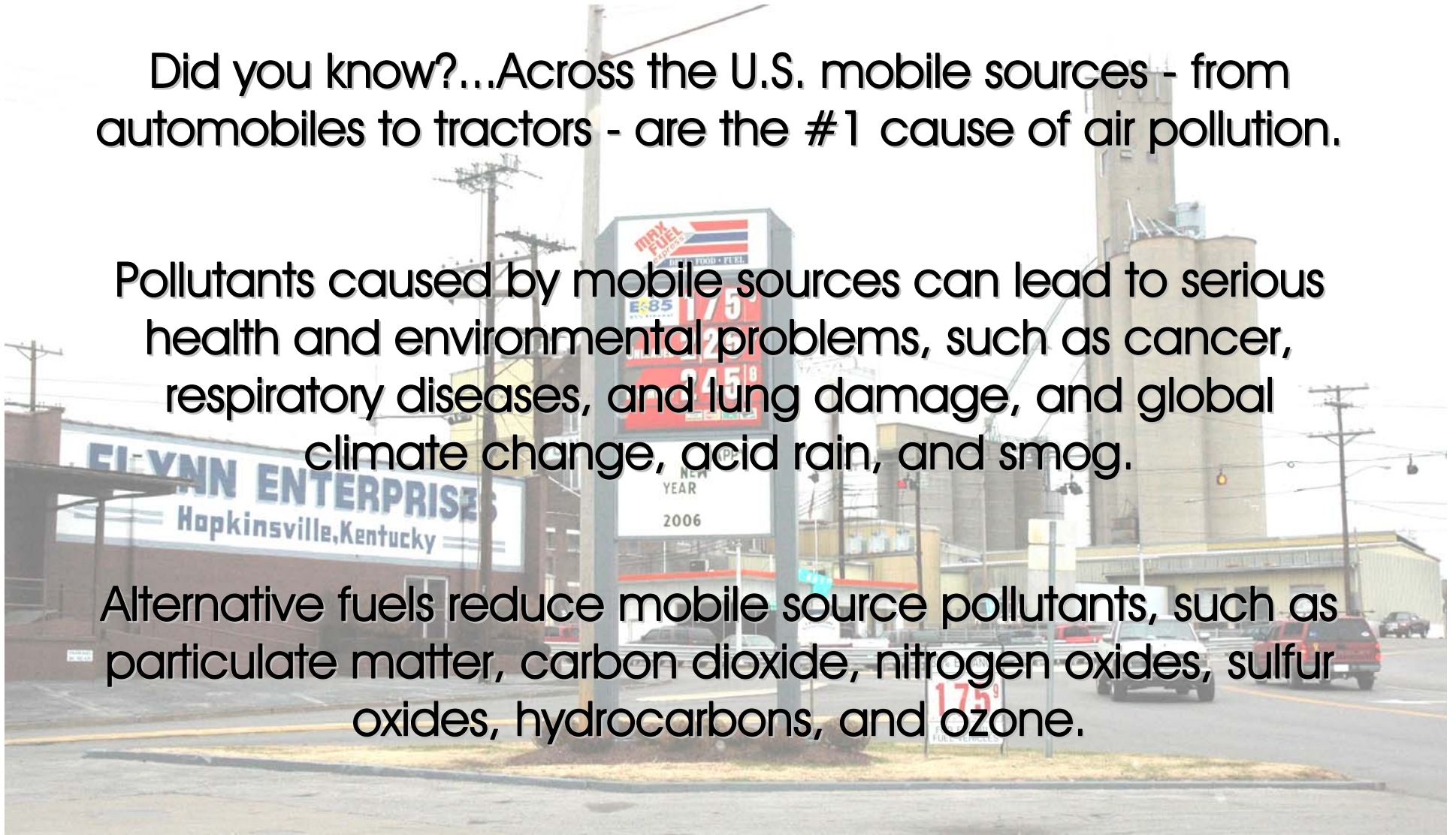


# Why Alternative Fuels?

Did you know?...Across the U.S. mobile sources - from automobiles to tractors - are the #1 cause of air pollution.

Pollutants caused by mobile sources can lead to serious health and environmental problems, such as cancer, respiratory diseases, and lung damage, and global climate change, acid rain, and smog.

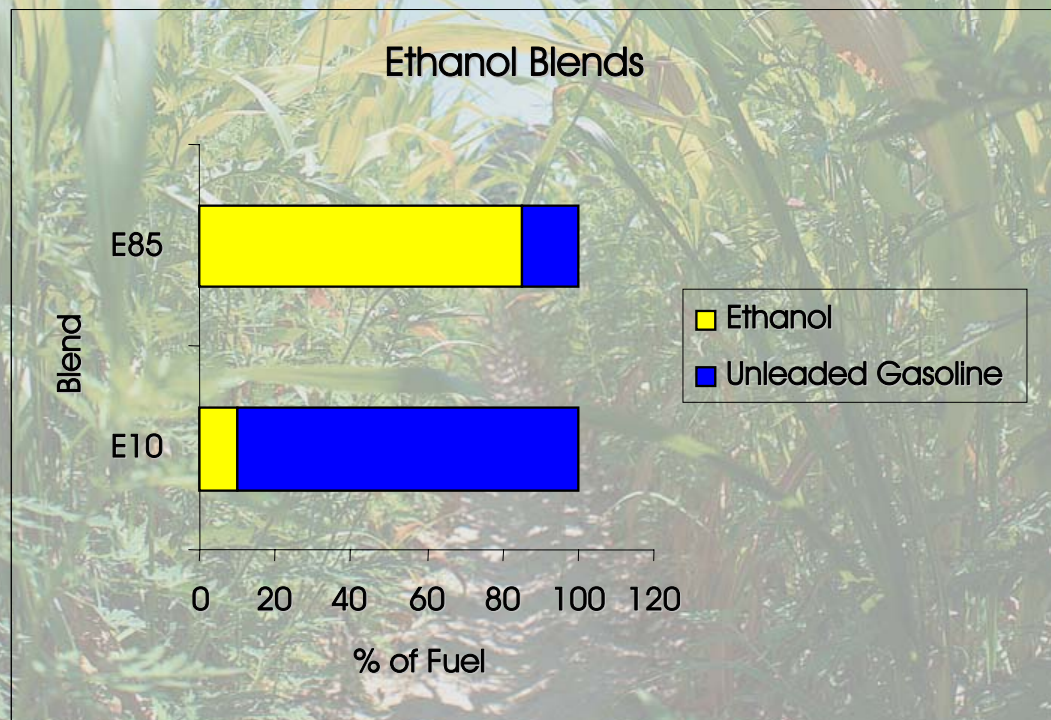
Alternative fuels reduce mobile source pollutants, such as particulate matter, carbon dioxide, nitrogen oxides, sulfur oxides, hydrocarbons, and ozone.



# Ethanol is ...

...an alcohol-based, clean burning fuel made from renewable agricultural products, such as corn.

...combined with unleaded gasoline to produce blends which decrease gasoline emissions. In the U.S., two forms of ethanol blends are commonly available, E10 and E85.



# Ethanol Users in KY

Commonwealth of Kentucky  
Fort Knox Military Reservation  
Louisville Metro Government  
Kentucky Corn Growers Association  
Mammoth Cave National Park  
Murray State University  
Transit Authority of River City (TARC)  
United States Postal Service  
University of Kentucky

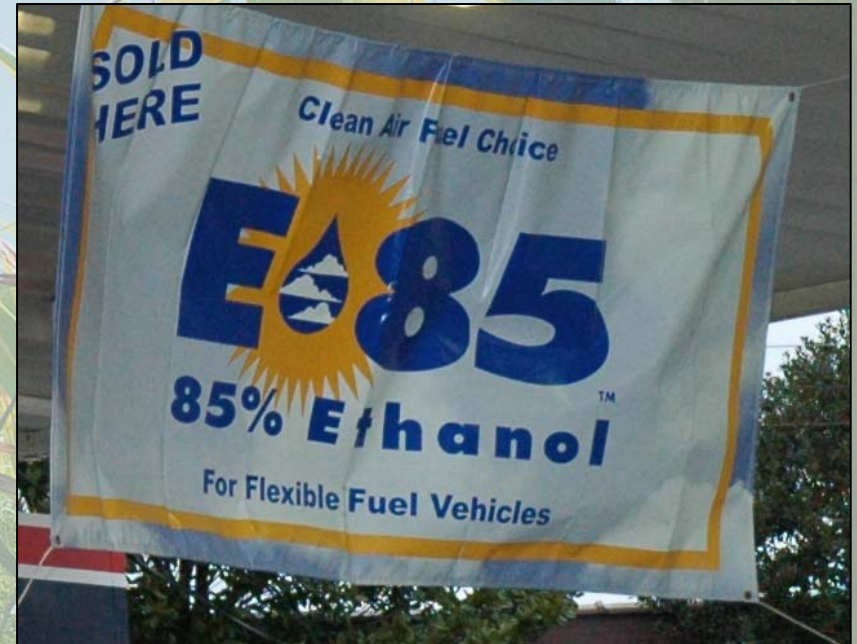


Photo used with permission from Warren Gretz and DOE/NREL.

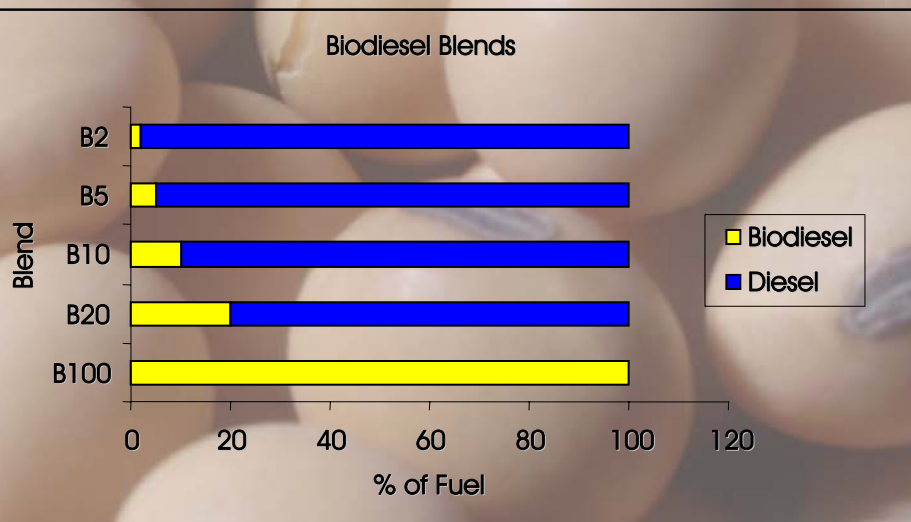
The University of Kentucky has used  
170,000 gallons of ethanol since 1996.  
~ UK News, November 7, 2005

# Biodiesel ...

...is made from vegetable oils, such as soybean oil, recycled cooking greases or oils, or animal fats. Because these oils, greases, and fats are mostly from plants and animals they are considered renewable.

...can be used with petroleum-based diesel fuel in any concentration.

...use reduces pollutants such as total unburned hydrocarbons, carbon monoxide, and particulate matter.



<u>Emission Type*</u>	<u>B100</u>	<u>B20</u>	<u>B2</u>
Total Unburned Hydrocarbons	-67%	-20%	-2.2%
Carbon Monoxide	-48%	-12%	-1.3%
Particulate Matter	-47%	-12%	-1.3%
Oxides of Nitrogen (NOX)	+10%	+2%	+2%

\*Pollutant reduction from biodiesel. This data was obtained from the United Soybean Board.

# Biodiesel Users in KY

Mammoth Cave National Park

Kentucky State Resort Parks

Murray State University

University of Kentucky

Bernheim Arboretum & Research Forest

East Kentucky Power Co-Operative

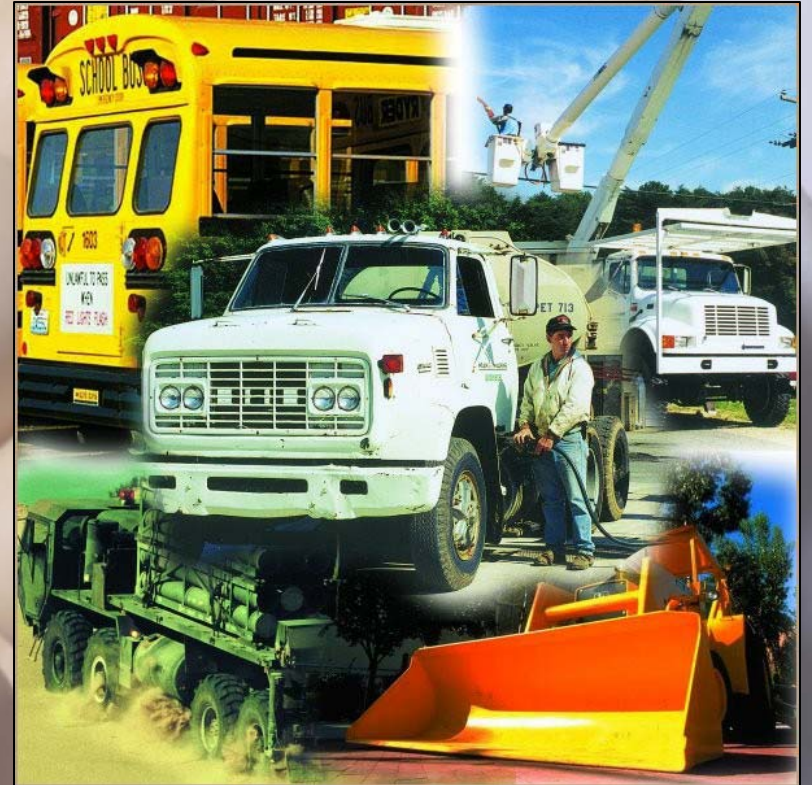
Cincinnati/Northern Kentucky Airport

Louisville Metro Parks

Various County & Local Governments

Various School Systems

Various Aspects of Ag Community



The University of Kentucky has used  
55,000 gallons of biodiesel since 1996.

~ UK News, November 7, 2005

# Alternative Fuels in KY

Did you know...Mammoth Cave was awarded the USDOE National Partnership Award for Leadership in using alternative fuels-BIODIESEL. ~ KY Soybean Board

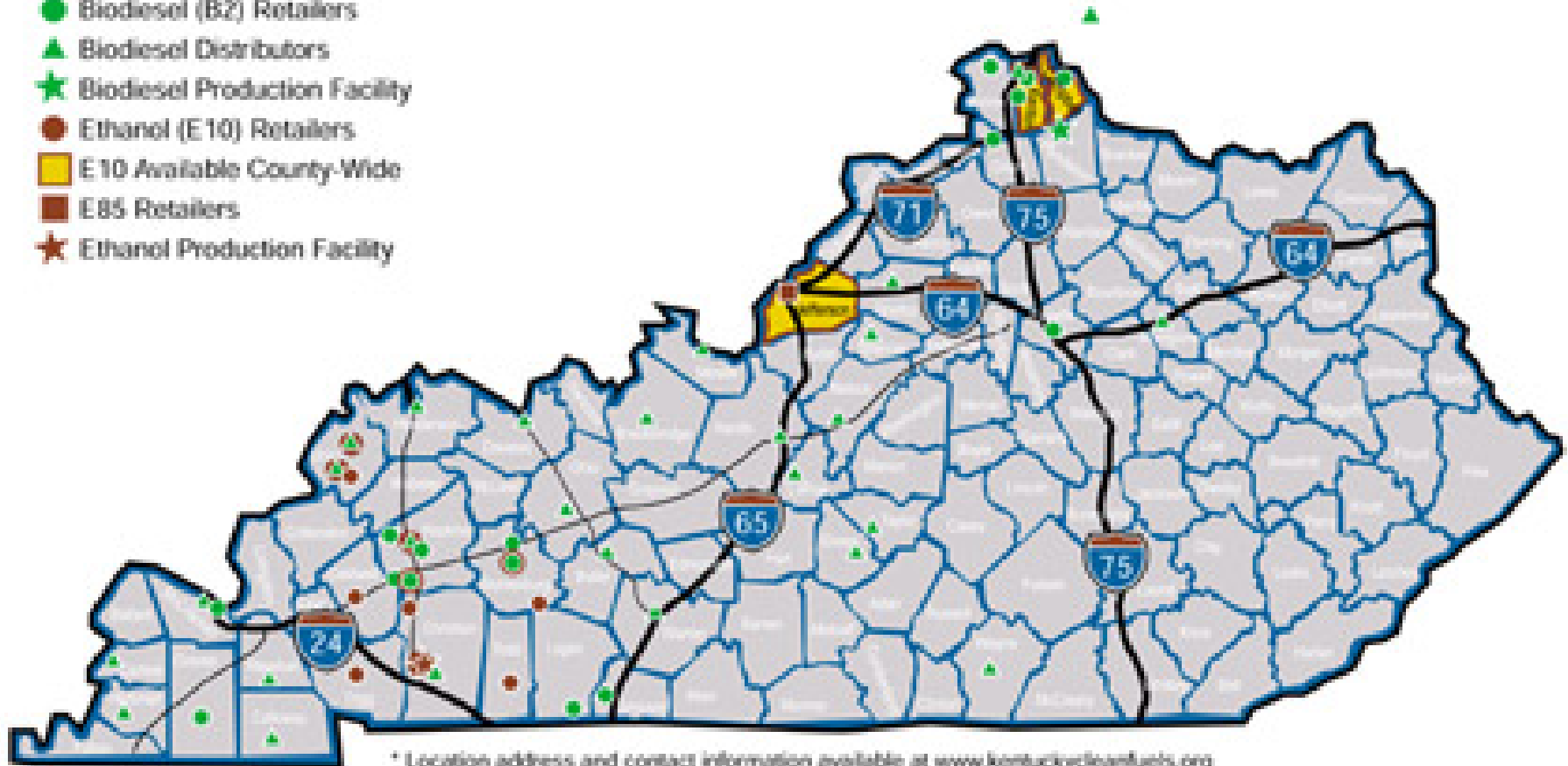
Year	Alternative Fuel Vehicles in KY
2001	4,676
2002	5,718
2003	6,298

For more information, visit

- [www.kentuckycleanfuels.org](http://www.kentuckycleanfuels.org)
- [www.kycorn.org/](http://www.kycorn.org/)
- [www.kysoy.org/](http://www.kysoy.org/)
- [www.ca.uky.edu/air](http://www.ca.uky.edu/air)

# Where to Buy Renewable Fuels in Kentucky

- Biodiesel (B2) Retailers
- ▲ Biodiesel Distributors
- ★ Biodiesel Production Facility
- Ethanol (E10) Retailers
- E10 Available County-Wide
- E85 Retailers
- ★ Ethanol Production Facility



\* Location address and contact information available at [www.kentuckycleanfuels.org](http://www.kentuckycleanfuels.org)



Map obtained at KCFC Website.  
Accessed 7/10/2006

# Issues to Consider at the Pump...



Ethanol Production: Volatile Organic Compounds\*

Biodiesel Use: Nitrogen Oxide Emissions\*\*

\*Ethanol Production:

While the use of ethanol in fuels can reduce air pollution from the combustion of those fuels, the production of ethanol can release large amounts of Volatile Organic Compounds (VOCs), a precursor to ozone formation.

\*\*Biodiesel Use:

While the use of biodiesel reduces hydrocarbons, particulate matter, carbon monoxide emissions, and toxic air pollutants, biodiesel use has resulted in an increase in nitrogen oxide emissions in several engines. Nitrogen oxide emissions increase as the biodiesel blend level is raised. Additional nitrogen oxide emissions may, in some circumstances, increase the possibility of ground level ozone formation – nitrogen oxides are a precursor to ground level ozone.