

# U.S. DEPARTMENT of ENERGY ALTERNATIVE FUEL NEWS

An Official Publication of the Clean Cities Network and the Alternative Fuels Data Center

From the Office of Energy Efficiency and Renewable Energy

## Alternative Fuel School Buses Earn High Marks



**PLUS:**

**Biodiesel Expands Availability**  
**National AFV Day**

**INSIDE:**

**AFVs for '02**



ear Readers,

For nearly eight years, Clean Cities stakeholders have rallied behind the notion that we must increase the use of alternative fuel to reduce U.S. dependence on imported oil and strengthen our national energy security. I think it's accurate to conclude that for eight years, building a national, sustainable market for alternative fuels and alternative fuel vehicles has been an uphill climb. After the events of September 11, our call to action has never been more urgent, our cause has never been more important, and our success has never been more critical.

Oil is one of the cornerstones of our economy and our national security. Our country now depends on other nations for 56 percent of the oil we use. What's more, transportation accounts for about two-thirds of the oil we consume. How's that for an Achilles Heel? This situation leaves our economy dangerously vulnerable to price shocks, and the potential for supply disruptions influences our options while we respond to terror.

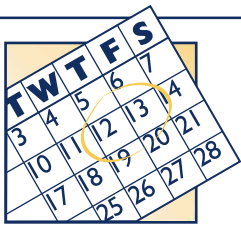
Increasing the use of domestically produced, clean alternative fuels in our vehicles is not the sole solution, but it is an important part of our nation's overall security strategy. As Clean Cities stakeholders, you understand this, and you are demonstrating the important role that alternative fuels can play in our transportation system. In this issue of Alternative Fuel News, we feature many of your efforts to build alternative fuel niche markets and highlight particular efforts to increase the use of a home-grown, renewable fuel—biodiesel.

Thank you for your hard work, resolve, and continued commitments to increase the use of alternative fuels and alternative fuel vehicles.

Best wishes, and as usual, enjoy the issue.

**Shelley Launey, Director**

Clean Cities Program  
U.S. Department of Energy



## Upcoming Conferences and Events

### **Electric Transportation Industry Conference 2001**

Dec. 11–14, 2001  
Sacramento, Calif.  
Contact: EVAA/Pam Turner, 408-741-5872  
firstopt@aol.com

### **Second Annual Clean Heavy-duty Vehicles for the 21st Century: Exploring Trends in Advanced Technologies and Fuels**

Feb. 20–22, 2002 Tempe, Ariz.  
Contact: Susan Romero, WestStart-CALSTART,  
626-744-5686  
sromero@calstart.org

### **Seventh Annual National Ethanol Conference: Policy and Marketing**

Feb. 27–Mar. 1, 2002  
San Diego, Calif.  
Contact: BBI International, 800-567-6411

### **Eighth Annual National Clean Cities Conference**

May 12–15, 2002  
Oklahoma City, Okla.  
Contact: Clean Cities Hotline  
800-224-8437  
International: 703-934-3069

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U.S. Department of Energy

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# ALTERNATIVE FUEL NEWS

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### Earning High Marks

Buses fueled by alternatives help school kids breathe easier

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Join in on April 11, 2002

**Correction:** The previous edition of *AFN* (Vol. 5, No. 2) included a story on Oregon's carbon-offset trading program, on page 8. The story stated that greenhouse gas emissions are believed to "cause ozone depletion, which contributes to global warming." The statement is inaccurate. It should have said that such gases increase the so-called "greenhouse effect" on the atmosphere, which is widely known as global warming. Ozone depletion is a separate issue.

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LPG-powered pickup serves the Bush ranch





# Alternative Fuel School Buses Earn High Marks

So how do schools ensure a safe, clean environment? Power buses with alternative fuels, say the authors. The report suggests, “alternative fuel technologies represent the cleanest available options for heavy-duty applications,” and recommends that alternative fuel buses “play an integral part in our emission-reduction strategy.”

INFORM, a New York-based nonprofit organization, agrees. INFORM examined nine major emission studies comparing conventional diesel buses with natural gas buses and published its findings in “Bus Futures: New Technologies for Cleaner Cities.” Specifically, INFORM reports that natural gas buses emit 40 to 86 percent less particulate matter and 38 to 58 percent less nitrogen oxides than diesel buses. Moreover, according to “Bus Futures,” natural gas is “virtually toxic-free, while diesel exhaust contains more than 40 toxic constituents, about half of which are known or suspected carcinogens.”

In addition to the clean air benefits, buses powered by domestically produced alternative fuels such as biodiesel, electricity, ethanol, natural gas, or propane can contribute significantly to our nation’s energy security. “School buses consume more than twice the amount of fuel used by the average passenger car,” said Shelley Launey, Director of the U.S. Department of Energy’s (DOE’s) Clean Cities Program. “Collectively, when powered by alternative fuel, they can make a big difference in reducing our nation’s petroleum consumption,” she said. “School buses are also highly visible to the community, which can generate good publicity for the school district or local government—they make an excellent alternative fuel niche market,” she said.

Niche markets, according to the Clean Cities definition, are “targets” or opportunities for which alternative fuels make sense. They include fleets with high mileage, high fuel-use vehicles that can reap the cost-savings benefits of

using a less expensive alternative fuel. Niche vehicles also travel predictable routes and are capable of central refueling—factors that can help a fleet surmount refueling barriers. School buses, big fuel-users that drive relatively defined routes and are typically housed at a central facility, clearly fit the description.

Many schools already enjoy the benefits of alternative fuels. The NRDC and CCA report that there are approximately 2,675 alternative fuel school buses operated by nearly 130 school districts across the country. The

**M**ost kids know not to stand behind their school bus. They know the bus could back up and accidentally hit them, and they know that the black smoke expelled from the tailpipe is not good to breathe. What they (and their parents) probably don’t know is that the air inside the bus may pose an even greater health risk than what they’re breathing outside.

Earlier this year, the Natural Resources Defense Council (NRDC) and Coalition for Clean Air (CCA) published, “No Breathing in the Aisles,” based on their study of school buses in the Los Angeles area. The report claims that children riding *inside* diesel school buses are exposed to as much as 4 times the level of toxic exhaust as people *outside* of the bus—even if the buses don’t emit the telltale black smoke.

To make the problem worse, children are particularly susceptible to the harmful effects of diesel exhaust. Their bodies and lungs are still developing; they have narrower airways and faster breathing rates than adults. According to the report, although children comprise only 25% of the population, they represent 40% of the asthma cases—and asthma is the leading cause of school absenteeism related to chronic conditions.



Tulsa Public Schools, a stakeholder in the Tulsa Area Clean Cities Coalition, operates 147 school buses fueled by CNG.

majority is located in California, with large numbers also in Texas, Oklahoma, Indiana, and Pennsylvania. Many of these fleets actively participate in the Clean Cities Program—for example, Clean Cities National Partner Award winners Northside Independent School District (Alamo Area coalition), Tulsa Public Schools (Greater Tulsa coalition), and Lower Merion School District (Greater Philadelphia coalition). The Clean Cities web site features a growing number of success stories about school bus fleets using alternative fuels such as biodiesel, natural gas, and propane.

Whether they're required to (see side box) or they voluntarily pursue alternative fuels, school districts face a critical barrier—cost. Alternative fuels such as natural gas and propane may cost less than traditional transportation fuels, but the initial price of a new alternative fuel bus is approximately \$30,000 more than a conventional vehicle.

Some school districts, however, have been able to take advantage of state and local incentives to defray the initial cost. California, for example, offers several programs, including the Compressed Natural Gas School Bus Incentive Program, which can help reduce the initial purchase price of an alternative fuel bus even below the cost of a conventional diesel bus. Incentives in other states include Arizona's SB2001, New York's Clean Water/Clean Air Bond Act Funding, and Pennsylvania's Alternative Fuels Incentive Grants (AFIG) Program, among others.

Soon, schools without the benefit of local incentives may also be eligible for help. If passed, several bills pending on Capitol Hill could help local governments and school

districts finance the transition to a cleaner, alternative fuel fleet. For example, alternative fuel school buses feature prominently in the Comprehensive Energy Research and Technology Act of 2001, H.R. 2460, proposed by Congressman Sherwood Boehlert (R-NY).

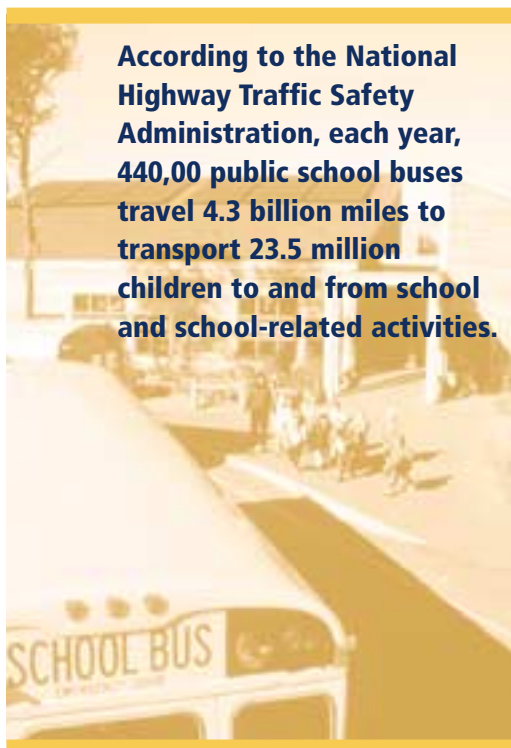
Specifically, Subtitle A of H.R. 2460, referred to as the "Alternative Fuel Vehicle Acceleration Act of 2001," would create a \$300 million, DOE-sponsored, competitive grant program to fund up to 15 demonstration projects in partnership with state and local governments. Eligible projects would include the purchase of AFVs such as school buses, as well as infrastructure to support vehicles purchased with the grant money.

Subtitle D, also called the "Clean Green School Bus Act of 2001," would establish a DOE grant program for local governments and others that provide bus service to public school systems. Funds would be available for purchases of alternative fuel or ultra-low sulfur diesel school buses that would replace older, dirtier vehicles. Buses purchased would be required to meet certain emission standards, which would become stricter over time. Funds would also be available for alternative fuel infrastructure, with an emphasis on shared or public access stations.

DOE's Clean Cities Program also offers funds for school bus purchases through the State Energy Program (SEP). Nearly \$490,000 was awarded for alternative fuel school bus projects this year. School buses will remain a project category in SEP 2002. The solicitation was expected in November 2001. Clean Cities' new school bus tool, distributed to all designated coordinators this summer, can also help school districts select the AFV buses that best meet their needs and determine the cost benefits of making the conversion.

#### Where to go for more information:

- For a copy of NRDC's "No Breathing in the Aisles," go to [www.nrdc.org/air/transportation/schoolbus/sbusinx.asp](http://www.nrdc.org/air/transportation/schoolbus/sbusinx.asp)
- To learn about the experiences of alternative fuel school bus fleets, please visit [www.ccities.doe.gov/success.shtml#school\\_bus](http://www.ccities.doe.gov/success.shtml#school_bus)
- For more on state and local incentives for alternative fuels, please visit [www.fleets.doe.gov](http://www.fleets.doe.gov)
- For more on alternative fuel school bus bills in Congress, go to <http://thomas.loc.gov> and search by the bill number (for example, H.R.2460)



#### Alternative fuel school buses are now the rule in L.A. basin

California's South Coast Air Quality Management District now requires public agencies in the greater Los Angeles area to purchase clean fuel vehicles when expanding their fleets or replacing older vehicles. The rules, which in August survived a Federal court challenge by the Engine Manufacturers Association, apply to vehicles including buses and garbage trucks. In particular, the Clean On-Road School Buses rule (#1195), now in effect, requires all new school buses purchased or leased to operate on alternative fuel. Buses may also be retrofit with a California Air Resources Board (CARB)-certified control device to reduce air toxic and criteria pollutant emissions. For more on information, please visit [www.aqmd.gov/news1/Fleet\\_court\\_decision.htm](http://www.aqmd.gov/news1/Fleet_court_decision.htm).



# BIODIESEL

## Expands Availability

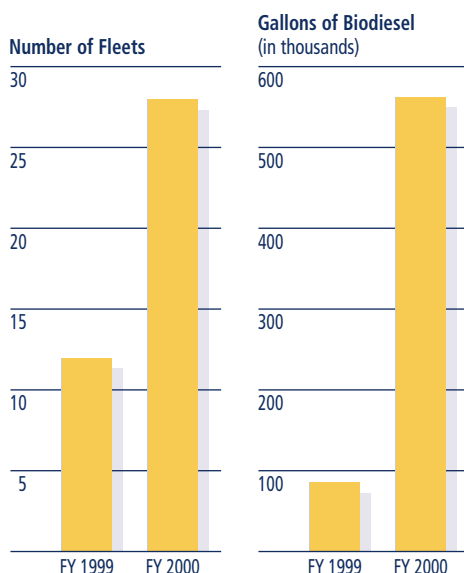


**Biologically derived diesel fuel, nearly unknown a decade ago, is gaining ground in major fleets found on farms, the open road, transit routes, and military bases.**

There were no petrol stations in Paris when French-born Dr. Rudolf Diesel demonstrated his new compression-ignition “diesel” engine in 1900. His fuel was vegetable oil—chemically similar to the soybean oil now commonly used as a feed-stock for biodiesel fuel.

A century later, biodiesel is becoming a mainstream alternative fuel. In the past decade alone, according to the National Biodiesel Board (NBB), it has gone from a nearly non-existent market position to use in more than 100 major fleets. Biodiesel is used in trucking, public transit, school districts, agriculture, public utilities, and military fleets.

**Biodiesel Usage in State and Fuel Provider Fleets**



Much of biodiesel's growth followed its addition to the short list of alternative fuels eligible for the kind of AFV acquisition credits first defined by the Energy Policy Act of 1992 (EPAct). Effective in January 2001, the Biodiesel Fuel Use Credit Final Rule (CFR4901.11.1) allows covered fleets to earn such credits through the purchase of biodiesel fuel, for use in blends of 20 percent biodiesel and 80 percent petroleum diesel (called B20) or higher.

EPAct applies to federal, state, and alternative fuel provider fleets. Biodiesel use by state and fuel provider fleets multiplied more than sixfold between 1999 and 2000, according to

their reports to DOE. In 1999, 12 such fleets used roughly 86,000 gallons. In 2000, 28 state and fuel provider fleets used 563,000 gallons of biodiesel fuel (see chart).

The main reason for biodiesel's success is its logical fit in the nation's portfolio of transportation fuels. Biodiesel can be blended in any proportion with petroleum diesel. B20 is one common blend. Pure unblended biodiesel is called B100, or “neat fuel.” Covered fleet operators can meet up to half of their AFV acquisition requirements using biodiesel. One AFV credit is earned through every 450 gallons of B100 (2,250 gallons of B20) purchased.

### Biodiesel passes the test for New Jersey schools

New Jersey's Medford School District clearly illustrates the advantages of using biodiesel in school buses. In a four-year test beginning in 1997, the district has run half of its 44 buses on B20 biodiesel fuel and the other half on petroleum diesel.

In basic performance, says district operations director Joe Biluck, no differences were detected between the two groups of buses. Fuel economy and start-up ability were identical even in colder weather. Biluck says the B20-fueled buses seemed to idle more smoothly, perhaps because of biodiesel's greater oxygen content.

“From a fleet manager's point of view the integration was completely seamless,” he says. Importantly, the biodiesel fuel emitted noticeably cleaner exhaust. With students gathering around buses every day, the heavy black smoke from petroleum diesel is a constant health hazard. At least one bus normally transports handicapped students who aren't able to move in and out of buses quickly, says Biluck.

The Medford district is not covered by EPAct. Its biodiesel test was funded by a Heavy Duty Vehicle grant from DOE to the New Jersey Board of Public Utilities, Division of Energy Department of Environmental Protection, which will largely dictate the future direction of biodiesel in the district. “If I had my way, we'd start using it in all of our buses,” says Biluck.



New Jersey's Medford School District noted no significant differences between petroleum diesel and biodiesel.



## Cincinnati bus passengers board the B20

Cincinnati this year put biodiesel into service in a big way, fueling 150 of its city transit buses with B20. The experimental program will continue through 2001. It follows several tests of alternative fuels by Cincinnati Metro dating as far back as 1993.

"Biodiesel cuts pollution without reducing engine power or mileage," claims Paul Jablonski, general manager of the agency. "It gives us yet another way to improve our region's air quality."

The agency's use of B20 will increase fuel costs by about 10 percent per gallon. The fuel cost difference is being funded by a \$50,000 grant from the U.S.

Department of Transportation's Congestion Mitigation/Air Quality program, which encourages innovative clean air solutions. The fuel is supplied by World Energy, Inc. of Boston.

Further benefits will go to Ohio farmers who grow the soybeans to make biodiesel. The state of Ohio is fifth in soybean production nationally. According to a study by the U.S. Department of Agriculture, demand for soy-based products will bring "significant economic benefits to U.S. farmers."



A U.S. Department of Transportation grant helps to defray Cincinnati's incremental fuel costs.

Biodiesel blends may require minor changes to existing fueling infrastructure. They are commonly stored in standard tanks used otherwise for petroleum diesel. Engines running on B20 generally need no modifications. But blends with higher biodiesel content are more likely to require modifications, particularly to the fuel system.

Using biodiesel in a conventional diesel engine can reduce unburned hydrocarbons, carbon monoxide, and particulate matter. A 1998 life-cycle analysis by the U.S. Department of Agriculture and Department of Energy showed a 78 percent reduction in carbon dioxide emissions from B100 compared to petroleum diesel. Acid rain-causing sulfur oxides and sulfates, components of conventional diesel, can also be reduced significantly. But emissions of nitrogen oxides (NOx) tend to show a slight increase.

Among other drawbacks, pure biodiesel can cause rubber and other components to fail, so some engine modifications may be necessary to use pure biodiesel in existing engines. There is often a reduction in fuel econ-

omy and power for pure biodiesel, varying among different engines. And because it is not widely available, biodiesel is currently more expensive than petroleum diesel.

Like standard No. 2 diesel, biodiesel thickens at low temperatures, so using it in cold climates requires

special systems. To prevent such problems, effective steps include:

- Blending with No. 1 diesel, which is lighter and more volatile;
- Using a cold-flow enhancing additive;
- Using a heater to warm the fuel tank, filter, or lines;
- Indoor storage and overnight parking.

Lowering the sulfur content of conventional diesel fuel is a widely debated, high-profile program objective of the U.S. Environmental Protection Agency. By June 2006, new EPA regulations will reduce allowable sulfur content in petroleum diesel to 15 parts per million (ppm), from the current limit of 500 ppm. The sulfur reduction may cause new problems—lost lubricity and accelerated engine wear. But biodiesel is well positioned to be part of the solution. Augmenting conventional diesel fuel with just one or two percent biodiesel can effectively

## Concrete improvements in Arizona's environment

Business owner Grant Goodman switched his entire fleet of trucks and heavy equipment from petroleum diesel to biodiesel in January 2001. Approximately 120 trucks, loaders, and aggregators now run on B100 at Rockland Materials, a concrete and gravel-mining company in Phoenix, Ariz.

Motivated by a desire to improve local air quality, Goodman researched the emissions benefits of biodiesel. "What grabbed my attention was the fact that we could reduce carcinogen and hydrocarbon emissions by such a significant amount."

Performance of the fleet was unaffected, he says. The change-over caused "zero problems"—except a shrunken bottom line. With the price of biodiesel in Phoenix running at least 25 percent higher than regular diesel, the change reduced profits. "We're running a \$300,000 deficit to our competitors," he said in September.

As a private business operator, Goodman is not regulated by EPA, and was not forced to switch. The move was voluntary. "I don't get a tax break," says Goodman, whose trucks travel the busiest streets in greater Phoenix. "With kids riding around in diesel-powered school buses, I felt I had to do something."

restore its lubricity, according to tests by Stanadyne Automotive Corp., the nation's largest independent fuel injection manufacturer. Several biodiesel-based diesel supplements are made for that purpose.

Biodiesel is made from soybean oil and other vegetable oils, and from animal fats. To produce biodiesel, the fat or oil is reacted with an alcohol, such as methanol, in the presence of a catalyst, such as sodium. The catalyst typically is recovered for re-use.

Fluctuating oil prices have pushed interest in biodiesel to levels greater than expected. Even private businesses unaffected by EPA's Act have switched from petroleum diesel (see Concrete Improvements, page 7), motivated by a desire to reduce foreign energy dependence.



Many major trucking fleets have made the switch to biodiesel; most use B20.

In its share of the overall market for domestic transportation diesel fuel, biodiesel is still small, accounting for less than one-tenth of one percent. But annual production has grown rapidly, from 5 million gallons in 2000 to an estimated 20 million gallons in 2001. Future growth could be substantial, but is difficult to quantify in part because biodiesel's success in the marketplace is so recent. Most biodiesel users are fleets, but growth in demand by individual users has spawned several publicly accessible fueling stations nationwide. Biodiesel now is produced in nine plants nationwide, with approximately 14 more in development or under construction, setting the stage for increased use in the future.

## EPA's Act credit sales spur biodiesel use in Iowa

Recent legislation in Iowa established a fund to be used exclusively to purchase biodiesel fuel for vehicles operated by the Iowa Department of Transportation. The measure, known as Senate File 465 as it moved through the State Legislature, could significantly boost the demand for biodiesel in Iowa.

According to EPA's Act, state fleets exceeding their vehicle purchase requirements may sell the excess credits. States that do so must certify that the vehicles yielding such credits were truly operated on alternative fuels. Iowa will use the funds it generated in this manner to purchase biodiesel fuel, which will help support Iowa's soybean crop.

Iowa's use of AFVs began in the early 1990s with state-level legislation mandating the use of ethanol-fueled vehicles. The state's transportation department purchased many Ford Taurus sedans and fueled them with E85. Iowa's law preceded EPA's Act's effective date, says department fleet manager David May, and pre-EPA's Act purchases commonly earned double or triple credits for the state.

EPA's Act credits earned by Iowa have exceeded requirements many times over, May says. Selling the excess credits has already generated more than \$74,000, and is expected to generate another \$50,000 in the next year. Those funds will help finance the development of another clean, domestic home-grown fuel in Iowa, where more than 100,000 gallons of B20 will be purchased in the coming year.



An abundant soybean crop helps make renewable energy possible in Iowa.

## For more information...

***Biodiesel: On the Road to Fueling the Future:*** A 20-page booklet from the National Biodiesel Board with information on biodiesel lubricity, formulation, and handling, as well as success stories. Available online at [www.biodiesel.org](http://www.biodiesel.org), or call 573-635-3893.

***Biodiesel Handling and Use Guidelines:*** A 20-page booklet from the National Renewable Energy Laboratory. A field guide for biodiesel users and distributors, with information on biodiesel quality, blending, storage, safety, and incentives. Available from the Alternative Fuels Data Center at [www.afdc.doe.gov](http://www.afdc.doe.gov), or call 800-423-1363.

***Biodiesel Offers a Better Alternative to Petroleum Diesel:*** A four-page brochure from the National Clean Cities Program. An overview of the technology, economics, and health and environmental advantages of using biodiesel, plus success stories. Available from the Alternative Fuels Data Center at [www.afdc.doe.gov](http://www.afdc.doe.gov), or call 800-423-1363.

**DOE's EPA's Act Web site:** [www.ott.goe.gov/epact](http://www.ott.goe.gov/epact). Provides guidance on EPA's Act compliance and reporting; provides full text of the Biodiesel Fuel Use Credit Final Rule.





# Coalitions Invited to Join National AFV Day

A P R I L 1 1 , 2 0 0 2

Coordinators and all stakeholders in the Clean Cities Program are encouraged to participate in National AFV Day, a celebration of alternative fuel vehicles (AFVs) on April 11, 2002.

The event was conceived by the National Alternative Fuels Training Consortium (NAFTC), a group of technical schools, colleges, and universities devoted to training auto technicians in the service of AFVs. The group has 20 full members and approximately 60 associate and affiliate members including high school automotive programs, fuel providers, and Clean Cities coalitions.

The NAFTC expects concurrent participation at the locations of many of its members and affiliates. "We're trying for at least 100 sites," said NAFTC executive director Al Ebron. "AFVs remain a well-kept secret, despite a growing number of manufacturers that produce them for the consumer market, and despite federal and state incentives for their use in government and business fleets."

The group offers a free information package with suggestions on how to stage and sponsor a local event. It includes guidelines for print communications such as press releases, and artwork for use in advertising. Also included is a draft letter of agreement, to use in signing up participants for local events.

DOE's Clean Cities Program is one of several stakeholders working with the NAFTC to make the event happen. Others include the U.S. Environmental Protection Agency, General Motors, Daimler-Chrysler, and Ford Motor Company. Organizers of local events are encouraged to seek the support of local entities to act as co-sponsors.

National AFV Day is intended to promote AFV use in general and AFV service training in particular. Events should be designed to build and strengthen relationships, and aimed at target markets. Invitees could include legislators, health and environmental organization representatives, school board officials, fleet operators, auto dealers, car club members, and civic-minded individuals. At training locations, events can be a means to attract new students.

Sponsoring a National AFV Day event shares much in common with the staging of Advancing the AFV Choice events by Clean Cities coalitions. The NAFTC encourages local sponsors to customize events according to local needs. To appeal to prospective students, for example, sponsors might include hands-on training or a scholarship giveaway. Other attractions can include:

- An AFV ride-and-drive
- Technology demonstrations
- Contests and prizes
- A fair, gala, or open house
- Exhibits and panel discussions

Educational presentations might cover:

- AFV purchasing options, vehicles, and local dealerships
- Federal and state tax incentives
- Environmental benefits; impact on demand for foreign oil
- Local refueling and service options, locations

Events staged for National AFV Day, on April 11, 2002, may have much in common with past Advancing the AFV Choice events.



Trade shows and technology displays blend well with more festive events such as an outdoor barbecue. Media coverage can be cultivated successfully, as shown by Sheble McConnellogue (top right) of Colorado's Weld/Larimer/Rocky Mountain National Park coalition.



Several Clean Cities coordinators have already expressed interest in participating in National AFV Day. One is Erin Russell, director of EVermont, which manages the Clean Cities Program in Vermont. "We're excited about the opportunity to be part of such an important event," said Russell. "Drawing attention to alternative fuel vehicles on a national scale is the key to broadening acceptance and use of these vehicles."

To learn more about National AFV Day, or to obtain a free information package, please email Al Ebron at [aebtron@wvu.edu](mailto:aebtron@wvu.edu), or call (304) 293-7882; or visit [www.nationalafvdayodyssey.org](http://www.nationalafvdayodyssey.org).



## On the Web

### Look No Further, Car-Buyers!

Consumers have a new and improved tool to help them select their new vehicle. In a kickoff to Energy Awareness Month, Energy Secretary Spencer Abraham announced the availability of new model year Fuel Economy Guide in a ceremony on October 9 at the U.S. Department of Energy (DOE). DOE produces the guide, published in print and on-line at [www.fueleconomy.gov](http://www.fueleconomy.gov), in partnership with the U.S. Environmental Protection Agency.

In addition to fuel economy information, the web-based guide offers vehicle-specific emissions, greenhouse gas, and safety ratings data, creating a comprehensive, one-stop shop for new car-buyers. A dynamic web site, [www.fueleconomy.gov](http://www.fueleconomy.gov) features an annual fuel cost calculator and allows users to search for specific vehicles by class, make and model, miles per gallon—and of course, by fuel. Side-by-side comparisons of up to three vehicles at a time also enable users to select the cleanest, safest, most fuel-efficient vehicle that meets their needs.



DOE's Fuel Economy Guide for model year 2002 is now online. The print version will be available at car dealerships later this fall.

For energy- and cost-conscious consumers, the web site offers fuel-saving drivers' tips. A new gasoline price page can also direct users to stations offering the least expensive gas in town, and a new consumer information page answers a host of frequently asked questions about fuel pricing and can help drivers understand exactly where their money goes each time they visit the gas pump.

The entire Model Year 2002 Fuel Economy Guide can be downloaded and printed from the web site. Officially printed guides will be available to the public later this fall

at new car dealerships, public libraries, and credit unions nationwide. Initially launched in the fall of 1999, [www.fueleconomy.gov](http://www.fueleconomy.gov) has experienced 1 million user sessions.

### Buyer's Guide Adds AFV Ordering Info

Vehicle ordering-window information for model year 2002 is now available on the Clean Cities Fleet Buyer's Guide at [www.fleets.doe.gov](http://www.fleets.doe.gov). The new feature, updated monthly, reports generally on production schedules for all AFV manufacturers.

Production for low-volume vehicles such as AFVs is less consistent than that of traditional vehicles. In the past, vehicle buyers have waited as long as six months to have orders filled. The new feature indicates when orders are accepted, and gives a realistic idea of anticipated delivery dates.

Available for both light- and heavy-duty vehicles, the information is accessible by clicking on "How Can You Buy an AFV?" The site also calculates the net incremental costs of buying AFVs, compared to conventional vehicles.

### Alternative Fuel Price Report

Clean Cities' Alternative Fuel Price Report provides a glimpse of fuel prices around the country. Obtained with the help of Clean Cities stakeholders, the prices are tabulated to illustrate trends and allow for price comparisons among alternative fuels, gasoline, and diesel fuel. The quarterly report is distributed to Clean Cities coordinators and posted on the Web at [www.afdc.doe.gov/periodicals.html](http://www.afdc.doe.gov/periodicals.html).

### Find Used AFVs at AFVMarket.com

Not everyone prefers a brand-new car, but used vehicles—particularly clean, alternative fuel vehicles (AFVs)—are sometimes hard to find. Now, thanks to two long-time AFV champions, shopping for a used vehicle is a little easier. EV Rental Cars and EV World.com have joined forces to create AFVMarket.com, a new web site listing pre-owned AFVs and hybrid-electric vehicles available for sale at a discounted rate, compared to the original purchase price. The AFVMarket.com inventory consists of late-model vehicles, many of which were previously used as rental cars stationed at EV Rental locations in California, Arizona, and Pennsylvania. Available vehicles include the natural gas powered Ford Crown Victoria and Honda Civic GX, as well as the hybrid-electric Honda Insight. The hybrid-electric Toyota Prius is expected soon. In addition to vehicle-specific searches by price, mileage, and location, the web site provides warranty information and offers links to the Clean Cities Fleet Buyer's Guide for details about available incentives. For more information, please visit [www.afvmarket.com](http://www.afvmarket.com).





## From the Automakers

### AFVs, Advanced Technology Vehicles Join the '02 Line-up

Flex-fuel, bi-fuel, and dedicated alternative fuel vehicles return with few changes among automakers' offerings for the new model year. A complete listing of AFVs for 2002—with powertrain, fuel capacity, and driving range information—can be found in the Alternative Fuels Data Center at [www.afdc.doe.gov/pdfs/wModel\\_Year2002AFVs.pdf](http://www.afdc.doe.gov/pdfs/wModel_Year2002AFVs.pdf).

From American Honda comes the Civic GX, a CNG-fueled version of Honda's coupe. The GX boasts one of the world's cleanest combustion engines, says its manufacturer. Also from Honda is the hybrid Insight, powered both by batteries and gasoline. A hybrid-powered Civic will join the Honda line-up next spring. Hybrids do not qualify for EPart fleet use credits, however.



Honda's natural gas-fueled Civic GX boasts of one of the world's cleanest combustion engines.

DaimlerChrysler now configures many of its vans and ever-popular minivans for natural gas and for E85 ethanol flex-fueling. In the Dodge Ram Van and Ram Wagon, a dedicated CNG-powered 5.2 liter V8 engine produces 200 horsepower. Among minivans, the Chrysler Voyager and Dodge Caravan can go more than 300 miles on a tank of E85.

For light-duty truck fleets regulated by EPart, Ford offers several variations of its half-ton pickup. The F-150 can be had with CNG-dedicated, CNG bi-fuel, and even LPG bi-fuel power. The smaller Ranger pickup is available with E85 flex-fueling; and with battery-electric power (and a range of 73 miles). Ford offers other flex-fuel vehicles including the Taurus sedan and various models of the Explorer sport-utility vehicle.

Ford Motor Company's new TH!NK enterprise, founded to create environmentally friendly vehicles, plans limited U.S. distribution of its first neighborhood electric vehicle. The TH!NK neighbor will be sold in California and in many Sun Belt states in 2002. The four-seat neighborhood electric vehicle has a top speed of 25 mph.



The Ford Ranger pickup is available with E85 flex-fueling or electric power.

Mazda's B3000 pickup—essentially the same vehicle as Ford's Ranger, made in the same factory—is offered with E85 flex-fueling as well.

Ethanol-powered pickups and SUVs from General Motors include the flex-fuel Tahoe, Suburban, and Sonoma. A small GM pickup and a passenger van offer CNG bi-fueling, with an onboard switch to select gasoline or natural gas. The electric-powered two-seat EV-1 coupe is available in California and Arizona only.

Of interest to electric utilities seeking EPart compliance may be Toyota's RAV4-EV, an all-electric mini-SUV with an advertised driving range of 125 miles. Toyota also offers the Prius, a hybrid coupe that can go 570 miles on a tank of gasoline.

To help California meet its own strict zero-emission vehicle (ZEV) requirements, Nissan offers the new Altra-EV, a mid-size wagon with lithium-ion battery power available to select fleets. Solectria's Citivan, sold nationwide, is the a service van with lead-acid battery power and a 40-mile range.



Nissan's electric-powered Altra-EV is available only in California.



## Challenge Bibendum 2001

### A rally by tire maker Michelin helps automakers put AFVs in the spotlight

Tires play an important role in fuel efficiency, and the ambitious efficiency gains expected of cars in the future will demand superior tire technology. With that assertion, French tire manufacturer Michelin kicked off its third-ever Challenge Bibendum, a competitive event for “environmentally innovative vehicles,” from Oct. 26-29, 2001.



The Michelin Man's real name is “Bibendum,” a French reference to the ability of tires to “drink up road hazards.”

The four-day event attracted both production vehicles and one-of-a-kind prototypes, powered by electricity, natural gas, propane, hydrogen, and hydrogen fuel cells, as well as diesel fuel and various hybrid-electric configurations. At least 10 vehicle makes were present, with participation by U.S., European, and Japanese automakers.

In Los Angeles, the event opened with an elegant auto show in the Spanish courtyard of the historic Auto Club of Southern California. Attended by many international journalists, the day focused on styling and design. “Beautiful cars can be environmentally friendly; let's not choose between fun and green,” said Edouard Michelin, chairman of the host company and great grandson of its founder.



An international gathering of autos and automotive journalists in the courtyard of the Auto Club of Southern California.



Track-testing pitted production vehicles against their own emissions and performance standards.



More than 30 vehicles completed the 227-mile trek across southern California and Nevada.



The ZEBus, operated by SunLine Transit, demonstrated superior range due to roof-mounted hydrogen fuel supplies.

Next was a full day of track testing at the California Speedway. Vehicles competed in tests of acceleration, fuel efficiency, driving range, noise, braking, and slalom performance. Rather than vying against each other, however, production vehicles were measured against emission and performance standards set by their own manufacturers. No overall winners were declared. A hydrogen-powered adaptation of the 1965 Shelby Cobra CSX dominated acceleration tests.

Day 3 marked the main event, a road rally, with a 32-vehicle caravan crossing the desert from southern California to Las Vegas. Few zero-emission vehicles made the 227-mile trip. One notable exception was a relay team of four fuel cell-powered cars sponsored by the California Fuel Cell Partnership. Also making the trip was the 40-passenger ZEBus, powered by Xcellsis and Ballard, and operated by the SunLine Transit Agency. SunLine, which is the driving force behind the Coachella Valley Clean Cities Coalition, provided mobile refueling of CNG and hydrogen-powered cars along the route.

The event concluded with a recap for journalists arriving in Las Vegas for one of its biggest annual conventions, that of the Specialty Equipment Market Association. The SEMA show began with a conference on “The Transportation Transformation,” focusing on sustainable mobility for the 21st Century.



# Federal News

## Air Force Base Tests AFVs as it Considers Clean Cities

In central Georgia, “Robins” refers not only to birds, and “A.F.” has more than one meaning as well. Alternative fuels and the Air Force have come together at Robins Air Force Base, 100 miles south of Atlanta.

Robins AFB occupies nearly 9,000 acres and is home to 19,800 military and civilian personnel. It has long been a leader in military transportation, with responsibility for maintaining many tactical, cargo, and fighter aircraft. Its Support Equipment and Vehicle Management Directorate procures nearly 90 percent of ground vehicles for the Air Force worldwide, and 100 percent of support equipment such as bomb loaders and electric generators.



Hybrid-electric tow tractors at Robins mate a Cummins diesel engine with 48 lead-acid batteries and a 100-kilowatt Siemens motor.

Robins also houses the Alternative Fuel Vehicle System Program Office (AFVSPO) for the Air Force. For years, the base has been using and experimenting with AFVs, hybrids, and various advanced-technology vehicles.

The Robins base and the military are interested in alternative fuels for several reasons, says Carl Perazzola, civilian director of the AFVSPO. One is strategic, related to an Air Force initiative called Single Battle Fuel Forward. The assumption is that jet fuel (known in the military as JP8) will always be present—and necessary—in combat. But a diverse range of other fuels will help ensure a constant supply of feedstocks.

That heightens the military’s interest in hydrogen fuel cells, says Lieutenant James Muldoon, an engineer working in the AFVSPO. Hydrogen can be produced by reforming many fuels including diesel, gasoline, ethanol, and CNG. It can also be derived from water through electrolysis. The AFVSPO is developing fuel cell technology in many applications and variations, including a JP8-to-hydrogen fuel

reformer. Also in progress is a solid-oxide fuel cell that runs hotter and burns less fuel than a proton exchange membrane (PEM) fuel cell. The office has worked with industry



Electric-powered Multistop Cube Vans, used daily for cargo delivery at Robins, are slated for upgrades such as a rapid-charge system from EPRI/Southern Company.

partners in developing other AFV systems, including diesel-hybrid shuttle buses that now operate on the base.

Roughly 500 vehicles at the base operate on some form of alternative fuel. The total number of vehicles present, including heavy trucks, is approximately 1,500.

The resulting environmental impact was a factor in motivating the Robins Air Force Base to investigate the Clean Cities Program. Perazzola and other base personnel have been involved in forming a new coalition in central Georgia, working with the cities of Macon, Perry, and Warner Robins.

The stakeholders hope to see their Clean Cities application completed and approved by spring of 2002. If they succeed, Robins will be one of approximately 20 military stakeholders in Clean Cities coalitions nationwide. Others include the U.S. Navy Public Works Center, the U.S. Army Corps of Engineers, and more than a dozen Air Force bases around the country.

Such organizations promise to fill an important niche market within Clean Cities. Both as an AFV buyer and a developer of technology, the military will help move the U.S. toward energy security, as part of its crucial role in national security in general.



Hawaii’s Hickham Air Force Base participated in a statewide electric vehicle demo program in July, with 15 Hyundai Santa Fe all-electric SUVs.





# Clean Cities Roundup

Top Ten Clean Cities Coalitions for 2000



## Clean Cities Announces Top Ten Coalitions

The National Clean Cities Program recently announced the “top ten” best performing coalitions in 2000, identified in the map above. The annual top ten list is determined using data collected from the annual Clean Cities Coordinator surveys which document coalition activities in the previous year. Specific criteria include the number of alternative fuel vehicles (AFVs), alternative fuel refueling stations added during the year, and the total number of AFVs and stations in a coalition’s service area.

The ranking criteria, based on a point system, are weighted according to the level of investment required and the expected amount of actual alternative fuel used. Refueling station construction, for example, receives significantly more points than individual vehicle acquisition because of the investment involved; heavy-duty AFV acquisitions receive more points than light-duty vehicle acquisitions, and dedicated vehicles earn more points than flex-fuel vehicles because they typically displace more petroleum. Coalition activities such as membership meetings, media coverage, and outreach events are also considered when developing the ranking, although no point value is assigned.

In another important note to coalition coordinators, the National Clean Cities Program also has announced a change in the timing of the annual survey. In response to coordinator concerns, survey has moved from spring to fall. Coordinators should have already received their 2001 surveys, which are due this December and intended to document year 2001 activities. To ease the transition, the new survey includes fewer questions than those from previous years and will cover only the basics, such as AFV acquisitions,

fueling station construction, and other major accomplishments. Similar to previous years, however, survey responses will be used to select winners of the annual coalition awards presented at the National Clean Cities Conference, as well as determine the annual top ten ranking—so coordinators are urged to be as accurate as possible and submit their reports on time. For more information about the annual Clean Cities Coordinator survey, please contact TG Powell at 202-586-8077 or [tg.powell@ee.doe.gov](mailto:tg.powell@ee.doe.gov).

## FuelMaker and Honda Offer Clean Cities Incentive

FuelMaker Corporation and American Honda have partnered to offer

Clean Cities coordinators and stakeholders an increased discount on purchases of FuelMaker natural gas refueling units and Honda’s dedicated natural gas-powered Civic GX.

The deal, available for vehicles purchased and delivered before March 31, 2002, increases previously available incentives and is open to private businesses and government fleets (natural gas utility fleets and individuals are ineligible).

FuelMaker will increase its individual refueling unit incentive to \$700 for each small unit and \$2,200 for each large unit. Honda will increase its incentive, offered for each group of four Civic GXs purchased, to \$1,200. For more information on the Honda-FuelMaker Clean Cities incentive, please visit [www.fuelmaker.com/ccpromo](http://www.fuelmaker.com/ccpromo) or call Paula Herbert of FuelMaker at 800-898-3835.

## Funding Available for Clean Cities Projects

Attention Clean Cities Coordinators! The 2002 State Energy Program (SEP) Alternative Fuels Special Projects grant solicitation will be available in December and can be downloaded from the Clean Cities Web site at [www.ccities.doe.gov/support.shtml](http://www.ccities.doe.gov/support.shtml). More than \$4 million will be available to fund projects in the following categories: niche markets, infrastructure, school bus technologies, alternative fuel vehicle (AFV) signage, and Clean Cities coordinator positions. Important changes include more funding available for infrastructure projects and a new AFV signage category. Only designated Clean Cities coalitions are eligible for funding. For more information, please call your DOE Regional Office Clean Cities manager.





## Toyota Supplies Electric SUVs to 10 Clean Cities Coordinators

Denver Clean Cities Coordinator Mike Gutierrez stands beside a Toyota RAV4-EV. The vehicle is one of 10 electric-powered 1998-model vehicles loaned to coordinators by Toyota Motor Company, as a gesture of support for Clean Cities coalitions. Toyota provided the vehicles for one year of use, along with one electric charging station to accompany each vehicle. An employee of public utility Xcel Energy, Gutierrez recently signed on as full-time coordinator of the Denver coalition following eight years of service by Deborah Kielian of the City and County of Denver.

NREL/PX 10545



## From the States

### AFVs: The Latest Campus Craze

With relatively short vehicle routes and central fueling capabilities, university campuses can be an ideal niche for alternative fuel vehicles (AFVs).

The University of Kentucky, for example, recently renovated its entire fueling facility and installed an E85 tank so its 75 flexible-fuel vehicles (FFVs) can use alternative fuel. Drivers at Murray State University (MSU) in western Kentucky are also fueling their 35 FFVs with E85 from a new on-site pump. But E85 isn't the only alternative fuel of choice at MSU. In response to professors' concerns, the school is considering alternatives to its gasoline and diesel-powered support equipment, including quiet, electric-powered mowers.

The University of Louisville recently replaced its older, gasoline-powered vehicles with five, zero-emission neighborhood electric vehicles (NEVs) to be used for maintenance and mail delivery. Thanks, in part, to the efforts of the Commonwealth Clean Cities Coalition, these low speed EVs are licensed for on-road use, so the door is now open for increased NEV use in Louisville.

EVs are also big news on the Emory University campus in Atlanta, Georgia. More than 40 low speed electric vehicles and two electric pickup trucks are used for activities including daily maintenance and parking enforcement.

Some faculty and staff members will also have an opportunity to drive Ford Th!nk EVs in a station car program coming soon to the university.

In addition to its EVs, Emory has a fleet of ten compressed natural gas (CNG) shuttles. Drivers refuel using a FuelNet card—the key to Atlanta's universal refueling program—to obtain CNG from a nearby station owned by the city of Atlanta. The school plans to build an on-site CNG station that will also be accessible to other fleets participating in the FuelNet program.



Emory University's "Garage Mahal."

But perhaps the most popular in Emory's AFV program is what the students call the "Garage Mahal," a new parking deck built specifically to accommodate up to 50 electric rechargers. Partially funded by a DOE State Energy Program grant in coordination with Clean Cities-Atlanta and Georgia Power, the deck will include chargers for electric buses. The

first five of the school's planned 15 buses will arrive this year.

Many campus roads are being repaved with bricks to create a park-like, pedestrian environment. And when possible, roads that must accommodate vehicle travel—such as the one connecting the Garage Mahal and Emory's main campus—will be designated "AFV only."

To obtain more information about AFVs on campus or to share success stories, please visit the Clean Cities Web site at [www.ccities.doe.gov/success/universities.shtml](http://www.ccities.doe.gov/success/universities.shtml).

## Propane-powered presidential pickup

What do Clean Cities stakeholders and the President have in common? They drive AFVs. President Bush, when visiting his ranch in Crawford, Texas, now drives a propane-powered Ford F-250 pickup truck. What's more, the vehicle prominently displays a Clean Cities window decal.

On November 7, Clean Cities Director Shelley Launey joined other propane vehicle proponents in an informal ceremony to recognize the installation of a propane refueling station on the President's ranch. Also, although the truck has been in use on the ranch since August 5, a ceremonial key to the President's new AFV was presented to Bush Ranch foreman, Kenneth Englebrecht, to mark the addition of a clean-fueled vehicle to the President's ranch fleet.

Its Texas location makes propane an excellent energy choice for the Bush Ranch. According to the Propane Energy and Research Council (PERC), Texas ranks first



AP Photo/Kenneth Lambert

in the nation in industrial propane production, the total number of vehicles and vehicle fleets that run on propane, and the total number of propane fueling stations.

In addition to Launey, ceremony speakers included Michael Williams, Texas Railroad Commission Chairman; Bruce Toellner, vice president of Mitchell Energy and Development and chairman of the Propane Education and Research Council; and Curtis Donaldson, president of Clean Fueling Technologies, a propane equipment and service provider.