

Clean Cities Now is the official publication of Clean Cities, an initiative of the U.S. Department of Energy designed to reduce petroleum consumption in the transportation sector by advancing the use of alternative fuel vehicles, idle reduction technologies, hybrid electric vehicles, fuel blends, and fuel economy.

Top Story

Conference Speaker Envisions Life after Oil

Journalist and author Paul Roberts is an expert on the complex relationships between economics, technology, and the environment. In his new book, *The End of Oil: On the Edge of a Perilous New World*, he examines oil's role in the world economy, the forces compelling and resisting change to a new energy paradigm, and scenarios for the world's energy future.

Roberts is the keynote speaker at the 11th Annual Clean Cities Conference, May 1–4, 2005, in Palm Springs, California. In February, he spoke with *Clean Cities Now* about the transformation of the world energy economy.



Paul Roberts is author of *The End of Oil*.
Paul Roberts, NREL/PIX 13801

Clean Cities Now (CCN): In your book, you write about two ways we will transition from the current energy economy to the next energy economy: gradual, peaceful, and orderly versus sudden, violent, and chaotic. What can the United States do to promote a gradual, non-disruptive transition?

Paul Roberts (PR): First, we really need to see an aggressive national policy toward energy efficiency in the automotive and building sectors, a serious effort to find alternatives to coal and oil. Second, we need to place that effort within a larger effort to cut carbon emissions in order to address climate change. In other words, we need to provide market incentives to increase fuel efficiency and promote the transition away from carbon-based fuels.

CCN: Your strategy for beginning the transition from a carbon-based energy regime to a low- or no-carbon regime includes three near-term objectives: immediate expansion of natural gas imports, institution of a carbon tax, and dramatic improvement of automotive fuel efficiency. You include increasing alternative fuel use as well as increasing national fuel economy as ways to attain the third objective. What role can Clean Cities play in advancing this objective?

PR: To succeed, a national effort like this must be broken into regional and local contexts. For example, California has been successful making air quality and energy security a "California issue"—they're making changes because the changes are good for California, not

because the EPA is telling them to. Clean Cities can make energy issues mean something to Joe and Josephine Consumer, bringing the issues from national policy to a concrete level that consumers can buy into.

CCN: People who have participated in Clean Cities for many years have seen progress in acceptance and deployment of alternative fuel and advanced vehicles, but these vehicles still constitute only a small fraction of U.S. transportation. What is needed for these vehicles to break through into widespread use in the United States?

PR: Research is critical. Government's job is to do basic research on transportation technologies until those technologies are ready for private companies to take them over. But we also need to change the cost structure of energy, so that companies and consumers have incentives to change. Hybrid electric vehicles have potential, but right now, because gasoline is so cheap, consumers buy hybrids because they're fashionable, not because they produce meaningful cost savings, which dooms them to remain a niche market. To change that, we may need to increase fuel prices, so that fuel efficiency becomes important. We may also need to give incentives to U.S. automakers to mass produce more hybrids and other efficient vehicles, and thus make them cheaper and more attractive to consumers. The point is effective transportation technologies exist today. But the marketplace must be made aware of these technologies through a change in the cost structure of the energy system.

CCN: You write about the challenge presented by low "energy literacy." How can the energy literacy of Americans be improved, so they can make informed energy choices?

PR: The way to start educating Americans is to teach about energy as part of the school curriculum. This would give kids the conceptual tools to make decisions, so when they're adults they're not coming to the topic for the first time when an energy crisis occurs. That said, people educate themselves rapidly when there's an incentive to do so. The key is to restructure the market so people want to understand the cost of energy. This goes back to creating a carbon-based incentive system that rewards low carbon production and penalizes high carbon production.

CCN: Look into the future. What will U.S. and world energy look like in 50 years?

PR: We can't really know what the energy technologies of the future will look like. There could be a dominant single technology such as the fuel cell. But I think it's more likely we will see a portfolio of technologies, with each technology being used in a sector where it makes the most economic and environmental sense.

What we do know is this: In 50 years the world will need four times the energy we use today. If we're to have a hope of affecting climate change we need to be using one quarter of the fossil fuels we use today. The bottom line is that we need to use less energy per person. Future energy sources won't have the same power density as fossil fuels do today, so technologies must be more energy efficient. We can't have five-ton SUVs powered by fuel cells. Improving the efficiency of transportation technologies is how we'll meet the lion's share of transportation energy requirements.

CCN: Clean Cities Conference attendees are knowledgeable about and committed to transportation energy issues. What message will you convey to this audience?

PR: I'm going to talk about putting energy front and center at all levels, from the national level to the local level. We can't rely on national policy alone. There must be a grassroots effort as well, and Clean Cities can be an important part of that effort.

Coalition News

Arizona Coalitions Team up to Reduce Bus Idling

The **Valley of the Sun** and **Tucson Regional Clean Cities Coalitions** on February 24 hosted a breakfast on the lawn of the Arizona House of Representatives to announce a state initiative to reduce school bus idling. The new program is based on the successful pilot conducted late last summer by the Arizona Department of Environmental Quality, a Valley of the Sun Coalition member. The program will require drivers to turn off buses when they reach a school or other destination and leave the engines off until they are ready to depart. They will also have to park buses at least 100 feet from a school air intake system. Phoenix Mayor Phil Gordon and other officials also honored some 20 Arizona fleet operators at the breakfast. These combined fleets displaced some 15 million gallons of petroleum-based fuel last year. Tours were also conducted of the Arizona Public Service Hydrogen Fueling Park.

Also in Arizona...

February was Clean Fuels Month on the "Jennie in the Morning" show on 92.9 The Mountain, a popular Tucson, Arizona, radio station. Colleen Crowninshield, coordinator for the **Tucson Regional Clean Cities Coalition**, organized and starred in four weeks of the show's "Green Tuesday" segment, where local experts discuss environmental topics and ways to preserve or better the environment. Green Tuesdays will run on the radio for the next year. In other Tucson coalition news, Arizona Petroleum in December began offering E85 at the pump. The company is the first distributor to sell E85 retail in the state.

Additionally, Clean Energy Fuels will build its third public access compressed natural gas (CNG) fueling station at Sky Harbor International Airport in Phoenix. The station will fuel 62 new natural gas transit buses, as well as taxis, shuttles, and other vehicles. The **Valley of the Sun Coalition** member will also set up CNG and liquefied natural gas stations for MV Transportation in Mesa.

Indianapolis Puts Two Hybrid Buses In Motion

On February 1, Indianapolis, Indiana's IndyGo transit agency put two new General Motors (GM) hybrid electric buses into service. A member of the Central Indiana Clean Cities Alliance, IndyGo has five electric turbine buses in its fleet and runs 40 of its diesel buses on B20.

Louisville Transit Agency Adds Five New Hybrids

The Louisville Transit Authority of River City (TARC) last fall added five GM hybrid electric buses to its fleet. The advanced vehicles feature the slogan "Breathe Easier" and are significantly cleaner than the 1989 conventional diesel buses they replaced. TARC is a member of the **Kentucky Clean Fuels Coalition** and uses E85 in its administrative fleet vehicles.



One of five hybrid electric buses acquired by the Louisville TARC last fall.
TARC, NREL/PIX 13808

Boise Opens New E85 Station

Stinker Station in Boise, Idaho, now offers E85 to area fleets. The

Treasure Valley Clean Cities Coalition and National Ethanol Vehicle Coalition helped fund the fueling station, which opened in November 2004.

Program News

SEP Special Projects Solicitation Now Open

DOE's Office of Energy Efficiency and Renewable Energy on February 18 issued the solicitation for the 2005 State Energy Program Special Projects Opportunity (DE-PS26-05NT4239-6). This year's Clean Cities Special Projects make available \$4 million.

The 2005 Clean Cities categories are:

- Alternative Fuel Vehicle Incremental Costs
- Refueling Infrastructure
- School Buses
- Coalition Support
- Idle Reduction Technologies
- Heavy-Duty Hybrid Electric Vehicles

New in 2005 is the heavy hybrid electric vehicle (HEV) category, which funds 100% of the incremental cost for heavy-duty HEVs. Also in 2005, changes were made to a couple of longstanding categories. For example, no cost share is required in the AFV category—100% of the incremental cost is covered. The same is true for the purchase of school buses (cost share is required on school bus infrastructure, however).

To review the categories, visit DOE's E-Center (<http://e-center.doe.gov>) and choose the second bullet ("Click here if you would like to browse for existing acquisition and financial assistance opportunities"). Then, in the pull down menu under "Financial Assistance Opportunities," choose "Opportunities by Program Office" and click "Browse Financial Asst."

Next, choose "Office of Energy Efficiency and Renewable Energy," and click on the appropriate sub-opportunity number (see table). At the bottom of each category page, you'll find a link to the master solicitation. Be sure to download it for reference.

Due dates pertain to the day the final submissions must be entered into the Industry Interactive Procurement System (or IIPS) by the State Energy Office (SEO). Work with your SEO to determine your pre-submission deadlines.

The category pages also contain options to "Join Mailing List" and "Submit a Question." To receive emails when documents related to the categories are posted or modified, select "Join Mailing List." To send a question about a certain category, choose "Submit a Question." When using these tools, keep in mind that you will have to sign up for mailings or submit questions separately for each category.

Category	Category Number	Sub-Opportunity Number	Due
Alternative Fuel Vehicles Incremental Costs	01A	DE-PS26-05NT42396-01A	May 2, 2005
Refueling Infrastructure	01B	DE-PS26-05NT42396-01B	May 4, 2005
School Buses	01C	DE-PS26-05NT42396-01C	May 2, 2005
Coalition Support	01D	DE-PS26-05NT42396-01D	May 6, 2005
Idle Reduction Technologies	01E	DE-PS26-05NT42396-01E	May 4, 2005
Heavy-Duty Hybrid Electric Vehicles	01F	DE-PS26-05NT42396-01F	May 6, 2005

NBB Honors Clean Cities with Industry Partnership Award

The National Biodiesel Board (NBB) on January 31 honored Clean Cities with an Industry Partnership Award at its national conference in Fort Lauderdale, Florida. According to NBB, Clean Cities "is unlike any other government program in its ability to disseminate biodiesel information in local communities, increasing biodiesel use and generating publicity for the fuel."

On behalf of Clean Cities' 88 coalitions, director Shelley Launey on February 8 thanked NBB for its recognition. "Being part of the phenomenal growth and success of the biodiesel market has been a sincere pleasure," Launey said. "We look forward to many more years of biodiesel achievement ... and continuing our partnership with you."

National Partner Award Nominations Due Soon

Attention coordinators! National Partner Award nominations are due March 11. Don't miss this chance to recognize outstanding stakeholders for their contributions. The awards will be presented at the 2005 Clean Cities Conference in Palm Springs, May 1-4, 2005. To submit a nomination, contact Marcy Rood, marcy.rood@ee.doe.gov.

Industry News

Governors' Ethanol Coalition Partners with General Motors to Promote Ethanol

Twenty-eight member states in the Governors' Ethanol Coalition (GEC) will receive E85 Chevrolet Avalanche flexible fuel vehicles (FFVs) as part of a campaign with General Motors (GM) to promote the benefits of ethanol fuels. The vehicles, which GM will begin delivering in March 2005, will be available to the participating states on one-year loans.

GM announced that it would provide the vehicles to the GEC February 8 at the Renewable Fuels Association's (RFA) National Ethanol Conference. According to RFA President Bob Dinneen, "GM's commitment to manufacturing and promoting the use of these vehicles is critical to making the most of ethanol's potential to reduce our use of imported fossil fuels."

The GEC, a bipartisan group of governors devoted to promoting ethanol, will showcase the E85 vehicles at events throughout the year. This collaborative effort is designed to increase awareness of ethanol and flexible fuel vehicles, and to promote the increased use of E85 as a renewable, alternative transportation fuel. GM is currently the largest producer of E85 FFVs in the United States.

"GM will continue to do its part by producing flexible fuel vehicles, but we will not enjoy the full benefits of ethanol until we drive as much ethanol as possible to the pumps. Collaborative efforts like the one we announced today are critical to encourage improvements to the E85 infrastructure and to help educate and encourage consumers to use E85 in their flexible fuel vehicles whenever possible," says Thomas G. Stephens, GM Powertrain Group Vice President.

For more information, visit the Governors' Ethanol Coalition Web site (www.ethanol-gec.org).



GM is offering one-year loans of Chevy Avalanche FFVs to Governors' Ethanol Coalition members.
General Motors

DOE Project Leads to New Hydrogen Fueling Station in California

ChevronTexaco opened its first hydrogen fueling station in Chino, California, in February, joined by Assistant Secretary of Energy David Garman and representatives of Hyundai-Kia and UTC Fuel Cells. According to *EERE Network News*, the station is a major part of the U.S. Department of Energy's (DOE) Hydrogen "Learning Demonstration," which brings together automobile makers and energy companies to test fuel cell vehicles and hydrogen fueling systems in real-world conditions. Hyundai Tucson and Kia Sportage SUVs, powered by fuel cells manufactured by UTC Fuel Cells, will operate throughout Southern California and refuel at the ChevronTexaco hydrogen station. The hydrogen is produced on-site from natural gas, but the station will also have the future capability to convert other renewable fuel sources, such as ethanol, into hydrogen for refueling fuel cell vehicles.

Mazda's Hydrogen Vehicle Becomes Street Legal

Japan's transport authorities recently gave Mazda permission to road test a hydrogen-fueled, rotary-engine version of its RX-8 sports car. The hydrogen-fueled RX-8 has a dual-fuel system that enables the driver to switch back and forth between hydrogen and gasoline. Mazda originally debuted this vehicle at the 2003 Tokyo Motor Show and it took approximately a year for Japan's Ministry of Land Infrastructure and Transport (MLIT) to grant Mazda permission to conduct road tests. Within the next two years, test vehicles will be leased to governments and fleet users. The vehicle delivers good performance and has sufficient interior space for four people. The hydrogen fuel tank is located in the trunk.

Success Story

CNG School Bus Fleet Logs 6 Million Miles

In the case of the Lower Merion School District in Ardmore, Pennsylvania, a journey of 6 million miles began with a single bus. In 1995, the district's first compressed natural gas (CNG) bus began serving the community. Since then, the CNG fleet has expanded to 72 buses. Over the years, the district's CNG buses have traveled more than 6.2 million miles, displacing approximately 1.3 million gallons of diesel fuel. In the 2003-2004 school year alone, the fleet logged more than 900,000 miles and used more than 180,000 gasoline gallon equivalents of CNG.



Lower Merion School District has a fleet of more than 100 CNG buses.
Michael Andre, NREL/PIX 13778

The CNG fleet is composed of:

- 72 CNG school buses, including 60 72-passenger, 8.1-L John Deer rear engine dedicated CNG BlueBird school buses
- One 72-passenger 5.9-L Cummins rear engine dedicated CNG Thomas school bus
- Seven 24-passenger 5.7-L Chevrolet converted dedicated CNG BlueBird mini school buses
- Four 30-passenger 5.4-L Ford dedicated CNG BlueBird mini school buses
- Five dedicated CNG Ford Econoline work vans
- One Chevrolet CNG Bi-Fuel Express passenger van.

Mike Andre, Lower Merion School District's Transportation Supervisor, says the switch to CNG vehicles was prompted by community members' complaints about noise and pollution generated by diesel buses. He says using CNG has addressed those concerns and offers many other benefits. "It's an inherently cleaner fuel, domestically produced, in plentiful supply, and competitively priced. The engines are also noticeably quieter than diesels."

The U.S. Department of Energy, the Pennsylvania Department of Environmental Protection, and the Philadelphia Electric Company have all contributed funding and technical support to this effort. In September of 2004, Andre received a National NGV Achievement Award from the Clean Vehicle Education Foundation and the Natural Gas Vehicle Coalition for his contributions to the advancement of natural gas. The Lower Merion School District is a member of the Greater Philadelphia Clean Cities Program Board of Directors and plans to eventually convert the majority of its 110 buses and 40 operations vehicles to CNG.

Currently, the district has two CNG refueling stations, one each in Ardmore and Rosemont. However, there are a limited number of refueling stations outside the district's normal operating area, so the fleet must include some diesel buses for lengthy trips. But Andre says the CNG fleet will keep growing, starting with the addition of six CNG buses next school year.

For more information contact Philadelphia Clean Cities Coordinator Nathalie Shapiro, coordinator@phillycleancities.org, 215-413-3122.

EPAct Update

Missouri Turns Credits into Cash

The Missouri Department of Transportation (MoDOT) found an innovative way to cash in on its excess alternative fuel vehicle (AFV) credits. MoDOT uses the Missouri Biodiesel Fuel Revolving Fund to bank funds earned from selling excess Energy Policy Act (EPAct) credits and uses the money to offset the incremental costs of using biodiesel.

Established in August 2003, the Missouri Biodiesel Fuel Revolving Fund offers state fleets a way to earn money to offset the incremental cost of biodiesel or expand biodiesel infrastructure. The fund receives payments from the sale of EPAct credits from covered fleets like MoDOT, which generates the credits through over-compliance with EPAct requirements.

To date, the revolving fund has received \$180,500 from the sale of 200 excess EPAct credits. Although the fund is open to all state fleets, most of the credits sold came from MoDOT, which earns credits by using biodiesel and purchasing more alternative fuel vehicles than it has to.

MoDOT is covered under the EPAct State & Alternative Fuel Provider Rule, which says 75% of a state fleet's annual light-duty vehicle acquisitions must be AFVs. For fuel providers, the portion of AFVs is 90%.

In fiscal year 2004, MoDOT used 804,693 gallons of B20 (20% biodiesel, 80% petroleum diesel). The fleet hopes to meet a Missouri state statute to use B20 in 75% of its diesel fleet vehicles by 2005. The statute applies as long as the fuel is commercially available and the incremental cost of B20 is not more than \$.25/gallon.

MoDOT uses B20 to operate backhoes, dump trucks, and heavy equipment, as well as on-road vehicles such as half-ton pickups. Its fleet has more than 4,000 vehicles, including more than 2,000 diesel vehicles.



MoDOT's fleet includes 2,100 heavy-duty vehicles like this dump truck, which is fueled with biodiesel.

National Biodiesel Board, NREL/PIX 13807

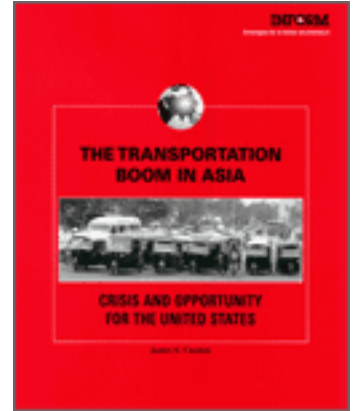
For more information, download, *Missouri Department of Transportation Turns EPA Act Credits into Biodiesel* (www.nrel.gov/docs/fy05osti/37134.pdf), which was published in January 2005.

International News

AFVs are Key to Easing Asian Oil Demand Says Report

Alternative fuel vehicles (AFVs) are key to staving off a global energy crisis and transitioning to a renewable energy transportation future, says a recent report by INFORM, a nonprofit environmental research organization.

The report, *The Transportation Boom in Asia: Crisis and Opportunity for the United States* by INFORM Senior Fellow James S. Cannon, discusses the consequences of surging motor vehicle use in China and India. Combined, these countries have 2.3 billion people and 32 million vehicles. In contrast, the United States has 290 million people and 230 million vehicles, but vehicle numbers in China and India are growing much faster. Their vehicle ranks have swelled 300% since the mid 1980s, while the number of U.S. vehicles increased only 30%. If current trends continue, China alone may have more vehicles than the United States by 2030.



This new report by INFORM says AFVs are key to staving off a global energy crisis.

China and India's oil consumption has grown along with their vehicle use. Like the United States, both countries are dependent on imported oil. In fact, China, India, and the United States combined, with roughly 40% of the world's population, possess less than 4% of the world's total crude oil reserves. The INFORM report argues that mounting demand is creating intense competition for dwindling foreign oil supplies and will result in dire economic, national security, and environmental consequences—unless something is done to avert the crisis.

That something starts with natural gas vehicles and culminates in fuel cell vehicles powered by hydrogen from renewable sources, according to the report. The report makes recommendations aimed at achieving three major U.S. policy objectives:

- Expand the U.S. natural gas vehicle industry to increase energy security and air quality in the near term while paving the way for the hydrogen vehicles of the future.
- Deploy U.S.-developed natural gas vehicle technologies in industrializing Asian nations to serve these rapidly growing markets, strengthen the U.S. AFV industry, promote worldwide environmental improvement, and ease tensions over global oil demand.
- Research and develop distributed renewable energy technologies to facilitate the shift from fuel cell vehicles powered with hydrogen derived from natural gas to those fueled with hydrogen derived from water using renewable energy.

Clean Cities International is helping bring North American AFV technology to Asia. "Clean Cities can help China and India use alternative fuels safely and leapfrog to a higher set of standards and technologies, ensuring success and making North American alternative fuel technologies more competitive," says Clean Cities International director Marcy Rood. "Asia

is a very promising AFV market—India alone has 600,000 buses and regulations mandating a switch to alternative fuels.”

North American companies are taking notice of the opportunities. Cummins Westport, Inc. (CWI)—a joint venture between U.S.-based Cummins, Inc. and Canada’s Westport Innovations, Inc.—is one such company. “CWI has developed successful customer relationships in Asia and, as a result of rising market demand, will begin introducing its B Gas International natural gas engine in both India and China later this year,” says David Demers, CEO of Westport Innovations.

“Westport is also working with a number of other engine and vehicle manufacturers in Asia to bring natural gas products to the global market,” says Demers. “This is a fast-growing opportunity.”

To obtain *The Transportation Boom in Asia: Crisis and Opportunity for the United States*, visit the INFORM Web site (www.informinc.org).

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.

For more information contact: EERE Information Center 1-877-EERE-INF (1-877-337-3463)
www.eere.energy.gov

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