

# 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.

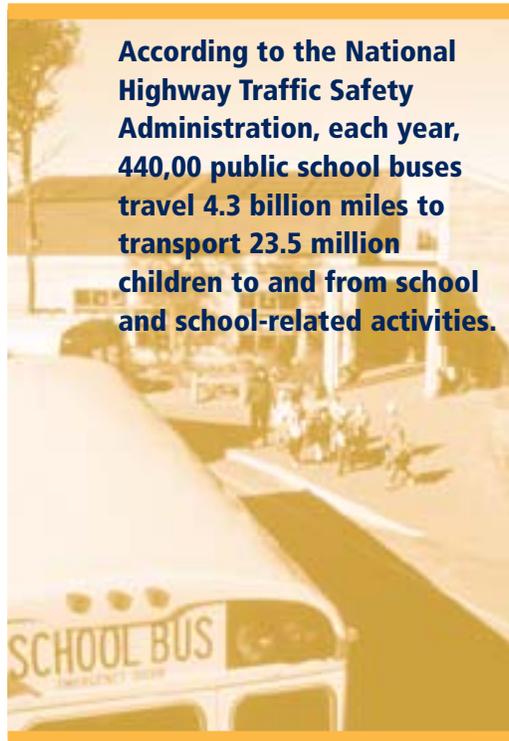
Soon, schools without the benefit of local incentives may also be eligible for help. If passed, several bills pending on Capitol Hill could help local governments and school districts finance the transition to a cleaner, alternative fuel

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.



**According to the National Highway Traffic Safety Administration, each year, 440,00 public school buses travel 4.3 billion miles to transport 23.5 million children to and from school and school-related activities.**

### **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 retrofitted 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).

### **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\\_buses](http://www.ccities.doe.gov/success.shtml#school_buses)
- For more on state and local incentives for alternative fuels, please visit [www.fleets.doe.gov](http://www.fleets.doe.gov)

NREL/FS-540-33047

Produced for the U.S. Department of Energy (DOE) by the National Renewable Energy Laboratory, a DOE national laboratory. This article appeared first in *Alternative Fuel News* (AFN), Vol. 5, No. 3, November 2001.

AFN is an official publication of the Clean Cities Program, Office of Energy Efficiency and Renewable Energy, DOE.

