

School Children Need Clean-Fuel Buses

EFFORTS TO IMPROVE AIR QUALITY FOR CHILDREN HAS RESULTED IN REGULATORY AND INCENTIVE PROGRAMS FOR CLEAN-FUEL BUSES

The South Coast Basin, including Los Angeles, San Bernardino, Riverside and Orange counties, is classified as an “extreme” non-attainment area for ozone and a “serious” non-attainment area for fine particulate matter (PM₁₀) and carbon monoxide (CO). The Federal Clean Air Act requires areas reach attainment or federal funding will be lost for transportation projects. Emphasis for fleet conversions to clean alternative fuels is a high priority since 75 percent of pollution is attributed to mobile sources.

WHY CLEAN-FUEL SCHOOL BUSES?

Nationwide school buses travel 5 billion miles per year. Currently less than one percent of school buses use alternative fuel (AF)¹. If all school buses were converted to AF, air pollution would be reduced by 150,000 tons of hydrocarbons, carbon monoxide, nitrous oxides (NO_x) and particulate matter (PM) per year, and 22 million barrels of oil, the majority imported, would be saved.

Converting the 12,000 public/private school buses operating in Southern California to alternative fuels presents a tremendous challenge.

Twenty years ago almost all school buses were gas powered; today 60 percent run on diesel. This change in preference can be attributed to diesel’s better fuel economy (6-7 mpg versus 4-5 mpg) and lower maintenance costs when compared to gasoline. While all petroleum based fuels release potentially harmful substances when burned, diesel fueled buses pose an increased health risk, as their exhaust is high in particulate matter.

¹ Alternative fuels typically include compressed natural gas (CNG), liquefied natural gas (LNG), propane, methanol, ethanol and electricity, as well as advanced technologies such as hybrids and fuel cells. The current fuel of choice for school buses is natural gas.

Particulate matter is classified by the U.S. Environmental Protection Agency as a probable human carcinogen and by the California Air Resources Board (CARB) as a toxic air component. Diesel fuel itself contains at least 40 compounds identified by the State as known carcinogens. Also, according to the recent South Coast Air Quality Management District’s (AQMD) MATES II study of toxic air pollution in Southern California, 71 percent of the cancer risk from air pollution is attributed to diesel particulate.

EFFECTS ON CHILDREN

Diesel emissions are greatest during starting and stopping, and extended idling, so short haul vehicles such as *school buses*, are large contributors to harmful emissions. Since the emissions are released at ground levels, children are especially susceptible in parking lots, for example, when they are picked up and delivered at school.

Children are more susceptible to air pollution due to their:

- + More rapid respiration rates (twice as much per pound of body weight as an adult)
- + Tendency to breathe through their mouths (bypassing natural filtering of the nose)
- + Spending a greater amount of time outdoors
- + Engaging in more physical activities that cause deeper air inhalation into the lungs
- + Small size placing them closer to the ground where the concentrations of pollutants is likely to be higher.

A 1989 study conducted by the University of Southern California found that children who live in Los Angeles had lung damage even beyond that associated with smoking.

SCHOOL CHILDREN NEED CLEAN-FUEL BUSES

RECENT ACTIONS

- + Executive Order 13045 (April 1997) directed all Federal agencies to make it a high priority to identify, assess and address the disproportionately high environmental health and safety risks of America's children.
- + In 1999, the AQMD Board adopted the "Children's Air Quality Agenda" to pursue additional measures to protect children from disproportionate impacts of diesel exhaust.
- + The CARB is preparing to conduct a study entitled "Children's Exposures During School Bus Commutes" to better estimate children's exposure to diesel exhaust particles and other bus-related pollutants.



ALTERNATIVE FUEL SCHOOL BUSES PROPOSED IN SOUTH COAST AIR BASIN

In an effort to reduce toxic air pollutants, the South Coast Air Quality Management District is developing a series of regulations, called the Clean Fleet Rules, to require public and private fleets of 15 vehicles or more to purchase clean-fueled vehicles². One of the proposed Rules (Rule 1195 Clean On-Road School Buses) is targeted at diesel-fueled school buses.

PROPOSED RULE 1195 – CLEAN ON-ROAD SCHOOL BUSES

Rule language has not yet been released by the AQMD. Preliminary discussions indicate that Proposed Rule 1195 will focus on school districts and private bus companies contracted with school districts including fleets of 15 school buses or more to acquire clean-fuel vehicles when replacing their buses. An estimated 10,800 school buses operating in the AQMD could be affected by the Rule 1195, half are operated by private companies under contract with school districts.

Some implementation issues that have been identified include:

- + **Purchase of used school buses.** School districts have indicated they often replace their buses with used vehicles to reduce costs. The availability of used alternative-fueled buses is severely limited.
- + **Cost.** The AQMD estimates the incremental cost of alternative fuel buses to be \$35,000 as compared to a new diesel-fueled bus. This cost would be greater as compared to a used diesel-fueled bus. Diesel traps and low sulfur fuels are being considered to reduce the costs of Rule compliance.
- + **Infrastructure.** CNG fueling infrastructure, which costs twice as much as diesel bus fueling stations, will be needed to accommodate the required alternative-fuel school bus fleet.

Adoption of Proposed Rule 1195 is scheduled for August 2000. The School Bus Working Group is available for affected entities to participate in the rule development process. The next Working Group meeting is scheduled for May 24th at 10:30 a.m. at the District office in Diamond Bar, CA.

For additional information, contact Jack Broadbent, AQMD Deputy Executive Officer for Planning, Rule Development and Area Sources at (909) 396-3789. Draft Rules and other related rule development documents are available at the AQMD's web site at www.aqmd.gov.

² The AQMD's Clean On-Road Fleet Vehicle Rules include:

Proposed Rule	Adoption Date
1191 – Clean On-Road Light and Medium Duty Public Fleet Vehicles	June 2000
1192 – Clean On-Road Transit Buses	June 2000
1193 – Clean On-Road Residential and Commercial Waste Refuse Collection Vehicles	June 2000
1194 – Commercial Airport Ground Access	July 2000
1195 – Clean On-Road School Buses	August 2000
1196 – Clean On-Road Heavy Duty Public Fleet Vehicles	August 2000
1186.1 – Alternative Fuel Sweepers	August 2000
431.2 – Sulfur Content of Liquid Fuels	July 2000

FUNDING FOR CLEAN-FUEL BUSES

Improving the education system is a high priority nationwide. Funding support is needed to ensure education and a clean ride to school are not in competition. Incremental costs for alternative fuel vehicle purchases and associated infrastructure needs are addressed in several state and local programs.

State Budget – Governor Gray Davis has proposed \$50 million in the state budget to support a buy-down program to exchange pre-1997 high-emission school buses.

Two Bills have been proposed in the California Senate:

- + **SB1991: Clean Alternative Fueled School Bus Program.** Establishes a CARB administered program to allocate \$50 million for the purchase of alternative fueled school buses.
- + **SB2068: Public Transit, School Buses and Public Work Trucks.** Provides until January 1, 2010, a tax exemption from the sales and use tax for the sale or lease of any natural gas, electric, or fuel cell powered bus or truck for use exclusively in public transit, school busing and public works service.

Mobile Source Air Pollution Reduction Review Committee (MSRC) – The MSRC, a government clean air funding committee responsible for allocating a discretionary fund collected from DMV registration fees, has over a six-year period, bought-down the costs of 72 CNG school buses operated in the South Coast Air Basin. A-Z Bus Sales (Colton, CA) and California Bus Sales (Fresno, CA) were the selected vendors for distributing prior years buy-down incentives of \$40,000 per qualifying school bus. The MSRC is proposing to offer \$2 million in its 2000/2001 Work Program to continue its support for clean-fuel school buses. Requests for Proposals are expected to be released in June. Contact: Ray Gorski, MSRC Technical Consultant (909) 396-2479.

Air Quality Investment Program (AQIP) – Proposals are accepted on an ongoing basis with contracts awarded quarterly. Projects considered for funding include procurement of low- or zero-emission vehicles. Contact Connie Day (909) 396-3055.

“Adopt-A-School-Bus” Program – In January 2000, the AQMD Governing Board Chairman, William A. Burke, proposed a plan similar to Caltrans’ Adopt a Highway program, to help pay the cost of reducing cancer causing diesel emissions from Southland school buses. Meetings are underway to bring together school district officials, business stakeholders, environmental groups and other interested parties to discuss the details of the program.

A Success Story: The Antelope Valley Schools Transportation Agency (AVSTA) in Lancaster, CA purchased its first alternatively fueled school buses in 1992, and now operates 48 such buses – 41 are CNG, 16 are methanol, and one is electric. Its 157 bus fleet serves four school districts and 36,000 students. Virtually all the procurement costs for the buses and fueling stations were covered by grants from local and national organizations, including the DOE with AVSTA paying the operating costs. Their records show that the newer CNG buses – with John Deere engines – cost 11 cents per mile less to operate than their advanced diesel buses after accounting for both fuel and maintenance costs.

Clean Fuels Program Fund - This program, founded in 1988, is funded primarily from the \$1 registration renewal fee on vehicles registered in the South Coast Air Basin. Through the Technology Advancement Office of the SCAQMD, funds are available for alternative fuel vehicles as well as infrastructure. Of \$4 million committed to match Carl Moyer Funds, \$2 million is designated as incentive money to encourage school districts to purchase clean buses. Contact Cindy Sullivan (909) 396-3249.

Carl Moyer Funds – In 1998-99 California budgeted \$25 million to improve the state’s air quality by replacing or rebuilding heavy-duty diesel vehicles with new clean technology engines. *Three local school bus projects were funded including: Alta Loma, Desert Sands Unified, and Montebello Unified.* Each district received \$68,000 or more to purchase two CNG school buses and an additional \$50,000 for CNG fueling stations. Noting that the demand was three times the availability statewide and five times greater in the South Coast area, the Carl Moyer Advisory Board has recommended funding this program for the next ten years at the level of \$100 million per year. At the present time, there is no money allocated in this year’s budget but the structure of the program remains.

VEHICLE AVAILABILITY

CNG seems to be the fuel of choice for manufacturer purpose-built school buses (i.e., not prototypes or conversions). However, there is one propane vehicle available and other alternative fuel buses are available – (LNG, methanol, electric) as prototypes or conversions.

VEHICLE TYPE	FUEL TYPE	ENGINE MANUFACTURER
1999 Blue Bird CV 200 ID #59 One-piece, all-steel body construction, taperleaf spring suspension	Propane	General Motors
2000 Blue Bird TC/2000 ID #57 Medium/heavy-duty, front engine, available in 25' up to 38' lengths	CNG	Cummins
2000 Blue Bird All American ID #58 Medium/heavy-duty, rear-engine, available in 37' to 40' lengths	CNG	John Deere

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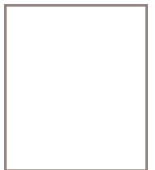
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