

**STATEMENT  
OF THE  
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION  
ON THE AIR RESOURCES BOARD'S  
REVISED LOWER-EMISSION SCHOOL BUS PROGRAM GUIDELINES**

**March 27, 2008**

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MECA is pleased to provide comments that are largely in support of ARB's proposed revisions to their clean school bus program. Since 2001, ARB's Lower-Emission School Bus Program has made an important impact on the health of California's school children by administering more than \$100 million in incentive funds to replace old buses with newer, cleaner buses and to retrofit existing buses with verified emission control technologies that significantly reduce levels of toxic diesel particulate matter. The significant level of Proposition 1B funds that have now been made available for this important program will allow for the oldest school buses still in operation in California to finally be retired and further reduce diesel particulate matter emissions from hundreds more buses through the application of Level 3 verified retrofit diesel particulate filters (DPFs). Many of the verified Level 3 DPFs options available for school bus applications are supplied by MECA members.

MECA believes that ARB's Lower-Emission School Bus Program could go even further to protect the health of school children by allowing available incentive funds targeted for school bus retrofit applications to be used for not only verified Level 3 DPFs but for retrofit "packages" that include a verified Level 3 DPF with the addition of a proven, verified closed crankcase filter on these same existing school bus engines.

MECA is a non-profit association of the world's leading manufacturers of emission control technology for motor vehicles. Our members have over 35 years of experience and a proven track record in developing and manufacturing emission control technologies for a wide variety of on- and off-road vehicles and equipment running on gasoline, diesel, and alternative fuels. A number of our members have extensive experience in the development, manufacture, and commercial application of emission control technology for heavy-duty diesel engines. Our members supply DPFs and crankcase filters on new 2007-compliant, "clean-diesel" heavy-duty engines that will be used for school bus replacements here in California (and elsewhere). In addition, several of our members have verified diesel retrofit emission control technologies, including diesel particulate filters, diesel oxidation catalysts, crankcase filter systems, EGR/DPF systems, and lean NOx catalysts, for on-road heavy-duty engines, including applications on many school buses.

Pre-2007 turbocharged heavy-duty engines (like those used in existing school buses) vent their crankcase emissions directly to the atmosphere. These crankcase emissions include many of the same constituents as diesel exhaust including fine diesel particulate and toxic hydrocarbon species. In addition, these crankcase emissions include



finely atomized engine oil that includes hazardous and toxic heavy metals associated with lubricant additives. Several recent studies, including school bus emission studies conducted in the states of Washington, Illinois, Georgia, Michigan, and New Jersey, have shown that crankcase emissions can pose a significant exposure risk of diesel particulate and other toxic air contaminants to school children (see, for example, the Clean Air Task Force's January 2005 School Bus PM Study found here: [www.catf.us/publications/view/82](http://www.catf.us/publications/view/82); the recent New Jersey school bus test program found here: [www.state.nj.us/dep/dsr/schoolbus/](http://www.state.nj.us/dep/dsr/schoolbus/); and publications/presentations by Dr. L.-J. Sally Liu, Department of Environmental and Occupational Health Sciences, University of Washington, listed here: [faculty.washington.edu/sliu/papers.html](http://faculty.washington.edu/sliu/papers.html)).

In school buses equipped with 1991-2006 model year engines, crankcase PM emissions can be in the range of 5% to 25% of the total diesel PM emissions associated with the bus (exhaust + crankcase PM; percentage depends on engine model year, engine operating mode, and total mileage accumulated by the engine). Both EPA's and ARB's most current emission regulations for new heavy-duty diesel engines recognize the importance of both exhaust and crankcase emissions as a source of diesel PM. As a result of these regulations for new engines, 2007 and later heavy-duty engines are not only equipped with diesel particulate filters but also include crankcase controls to provide reductions of the complete PM emissions footprint of the diesel engine. Engine manufacturers are expected to use the same exhaust and crankcase emission control strategies to comply with EPA's and ARB's Tier 4 off-road diesel PM regulations. That means the 2007 replacement school buses funded through California's Lower-Emission School Bus Program provide the best available technology package to reduce total diesel PM levels, while, on the retrofit side, ARB only provides incentive funds for verified filters and leaves the open crankcase emissions as a continuing health risk for school children.

ARB's current diesel risk reduction efforts have focused on reducing PM exposure risk associated with tailpipe exhaust and neglected the health exposure risks associated with direct-to-the atmosphere ventilated engine crankcases. Clean school bus programs in other states, such as Pennsylvania (specifically, Pittsburgh, see [www.dieselretrofitrebate.org](http://www.dieselretrofitrebate.org)) and New Jersey, have already recognized the benefits of retrofitting their school buses with a complete package that includes both a DPF and a crankcase filter. MECA believes that California's school children also deserve the "cleanest ride" available on their school buses by including verified, crankcase filters as part of a total retrofit package. The relatively low cost of a crankcase filter (\$700-\$900 installed), coupled with easy crankcase filter change-outs that coincide with engine oil change intervals, make this add-on to a complete DPF retrofit package very cost-effective and only marginally more expensive than the DPF-only retrofit.

Three MECA members have already verified crankcase filter + DOC retrofit combinations through either the ARB or EPA verification protocols. Each of these verified crankcase filters make use of "closed loop" filtration that captures all crankcase emissions. Since the operation of the crankcase filter is independent of the retrofit device

placed in the exhaust system (e.g., a DOC or DPF), MECA believes that any of these three closed crankcase filters could be combined with any ARB Level 3 verified DPF. The fact that each of these three crankcase filter options has completed either the ARB or EPA verification process (with a DOC) provides confidence that these crankcase filters perform as designed and are durable under real vehicle applications.

For the purpose of this school bus incentive funding program, ARB could make use of the existing reciprocity agreement between ARB and EPA on retrofit technologies to allow manufacturers that have verified a crankcase filter with any other exhaust retrofit technology to be used in a “complete” school bus retrofit package that includes any ARB Level 3 verified DPF and any verified crankcase filter (EPA’s Clean School Bus USA Program incentive funds allow this combination of any verified crankcase filter with any verified DPF technology). This pathway ensures that any retrofit products used on a California school bus have demonstrated performance and durability without subjecting manufacturers to additional verification costs or delays. Of course, verified crankcase filter manufacturers would need to agree to abide by ARB’s device warranty provisions for verified retrofit technologies to qualify for incentive funding through the Lower-Emission School Bus Program. In this manner, multiple suppliers of verified crankcase filters would potentially be able to immediately qualify for school bus incentive funding without having to amend ARB’s existing verification protocols specifically to deal with stand-alone crankcase filter technologies. MECA believes that only crankcase filters that have completed verification through ARB or EPA with any exhaust control device (e.g., with a DOC) should be potentially eligible for incentive funding as part of ARB’s Lower-Emission School Bus Program retrofit option.

In conclusion, MECA applauds California’s efforts to protect the health of the many school children that ride school buses in the state. We support the proposed revised guidelines for ARB’s Lower-Emission School Bus Program, but believe that ARB could go one step further to reduce the risk of exposure to diesel PM and other toxic air contaminants by including verified, crankcase filters as part of a complete retrofit package that addresses all sources of PM from existing school buses. Combining verified Level 3 diesel particulate filters with verified crankcase filters as part of this school bus program ensures that California’s school children have the cleanest ride to school available.

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