

**STATEMENT OF THE
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION
ON THE IMPACTS OF THE ECONOMY ON THE AIR RESOURCES BOARD'S
REGULATIONS COVERING IN-USE OFF-ROAD AND IN-USE ON-ROAD DIESEL-
FUELED FLEETS**

April 22, 2010

MECA is pleased to provide comments on the impacts of the current economic recession on ARB's regulations covering in-use on-road and off-road diesel vehicles. MECA members are committed to continue to develop and verify the VDECS technologies that will be needed to meet the emission reduction targets of this regulation.

MECA is a non-profit association made up 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 technology for a wide variety of diesel and gasoline on-road and off-road vehicles and equipment. A number of our members have extensive experience in the development, manufacture, and application of PM and NOx control retrofit technologies including a majority of the devices on ARB's verified technology list.

The ARB Diesel Risk Reduction Plan, including regulations adopted by the Board to reduce emissions from in-use trucks, buses, and off-road equipment, are critically important to meeting the state's federally mandated air quality requirements and provide significant health care benefits for the residents of California (estimated by ARB to be equal to a large multiple of the estimated costs of compliance with the regulations). These ARB diesel risk reduction regulations also provide a significant climate change co-benefit associated with the large reductions in black carbon emissions that are a major component of diesel particulate matter emissions from mobile sources. Black carbon's contribution to climate change is viewed by many leading climate experts (including Dr. Mark Jacobson of Stanford University, Dr. V. Ramanathan of the Scripps Institute at the University of San Diego, and Dr. Charles Zender of the University of California - Irvine) as second only to carbon dioxide.

Our members have invested and continue to invest significant resources in developing and verifying diesel retrofit technologies for the whole range of in-use diesel engines currently operating in California, including on-road, off-road, and stationary sources. New diesel emission control products continue to be added to ARB's list of verified retrofit technologies. The number of Level 3 VDECS suitable for off-road vehicles has more than tripled in the past two years to a total of twelve, including six passively regenerated Level 3 DPF devices. Recently one manufacturer has verified a Level 3 DPF + 40% NOx reduction technology based on HC-SCR/Lean NOx catalysts for off-road applications. The number of on-road verified devices has also increased to a total of fifteen Level 3 VDECS and two Level 2 systems designed for the trucks and busses operating in California. Manufacturers are expected to verify even more passive and active filter technologies in the coming year for off-road applications to further expand the options available to fleet owners to comply with ARB's requirements. Several manufacturers are

closely engaged in verifying urea-SCR retrofit technology with ARB for both on-road and off-road applications, and these efforts should lead to additional commercial, verified NO_x reduction retrofit technologies. Beginning last year, tighter regulations on retrofit technology require lower NO₂ emission from retrofit devices. In order to obtain a plus designation, a PM retrofit device can emit no more than 20% higher NO₂ than the baseline engine-out emissions. In 2013, off-road VDECS manufacturers will be required to re-verify existing systems using the Non-Road Transient Combined (NRTC) test cycle. Manufacturers have made significant investments in re-verifying retrofit PM reduction technologies to comply with changes to ARB's verification requirements. Furthermore, manufacturers are required to begin the in-use compliance portion of the verification process requiring removing devices from vehicles and testing. This phase of the verification process requires significant resources and added costs that manufacturers must bear at a time when their business has disappeared due to regulatory delays. The costs to verify and commercialize retrofit technologies are significant; a single system often exceeds \$1 million.

Given the substantial investment in verifying systems and delays in previous regulations, retrofit manufacturers are extremely cautious in making the investment without clear direction in the marketplace. They rely on regulatory stability in order to continue making the necessary investments to meet the commercial needs in time for implementation. Regulatory delays significantly extend the timeframe that manufacturers have to demonstrate a return on their investments.

We understand the strain on construction businesses caused by today's economic environment as manufacturers of retrofit technologies have also been impacted. MECA supported the amendments to the off-road regulation that the Board adopted in 2009 providing economic relief to end-users. MECA supports ARB's efforts to increase the availability of state incentive funds, grants and loan programs to help end-users comply with the off-road regulation. End users that have to comply with ARB's various diesel risk reduction regulations can make use of federal economic stimulus funds, state incentive funds and loan programs to help pay for clean diesel technologies and vehicles that comply with these regulations. These investments in clean diesel technologies and vehicles, in turn, create jobs in California which are quantified below.

In the process of delivering technologies to meet clean air requirements, device manufacturers contribute to growing the green economy and green jobs. A survey conducted in late 2008 shows that MECA members contribute over 65,000 green jobs around the country including more than 1,000 jobs in California. These jobs include technical and service personnel responsible for selling, developing, installing and maintaining diesel retrofits employed by MECA member companies. These do not include independent small businesses in California that install and maintain retrofit devices.

An independent economic analysis completed in early 2009 (available on MECA's diesel retrofit website, www.dieselretrofit.org, under "Useful Documents") translates investments in clean diesel vehicles and diesel retrofit technologies into jobs associated with manufacturing, sales, installation, and maintenance of advanced emission control technologies. Every million dollars spent on diesel retrofit technology creates or preserves about 21 jobs, and every million dollars spent on replacing older vehicles and equipment with newer clean diesel vehicles creates

or preserves about 15 jobs. One estimate suggests that a full-time job is created as a result of the installation of every 3-7 diesel retrofits. Another way to look at this is that the installation of 1000 retrofits creates 140 to 330 green jobs. During development of the off-road regulation, ARB estimated a demand of 80,000 retrofit devices in the first three years of implementation. This would preserve or create an estimated 11,200 to 26,400 jobs needed to sell, manufacture, install, and maintain the clean diesel retrofit and vehicle emission control technologies associated with the first three years of implementing the ARB's off-road regulation.

A relevant example of green jobs created through compliance with the diesel truck and bus regulations shows that ARB's projected annual compliance costs for this rule were estimated to be approximately \$1.25 billion in the early compliance years when significant numbers of trucks and buses will need to either install verified retrofit technologies or be replaced by new clean diesel vehicles. That translates to about 21,000 jobs that will be saved or created to manufacture, install, and maintain the clean diesel retrofit and vehicle emission control technologies associated with this ARB regulation. Many of these jobs will be in California.

In developing a strategy for any future amendments to these fleet regulations, ARB must consider the economic and market stability impacts on the retrofit device industry along with other indirect costs. Other costs include those associated with potentially not meeting the goals of the 2014 State Implementation Plan, as well as, the increased health care costs resulting from poor air quality. Rather than a complete delay of compliance dates, MECA would support a phase-in of requirements to full compliance with the emission goals of the regulation to provide a gradual but continuous demand for the products that our industry has invested in for over 20 years. Such an approach would allow technology developers to continue their investment in California's retrofit program rather than divert their resources toward other emission control market opportunities. These opportunities include development and certification of technologies for original equipment diesel engine applications or the many mandatory and voluntary retrofit program options across the country. A phased-in approach would also insure the availability of retrofit technology and manufacturing capacity to meet the emission reductions necessary to achieve the states emission reduction goals by 2014. The short term demand for retrofit technologies in California can also be supported by providing fleet owners with credits for installing verified retrofit technologies that reduce PM or, PM and NOx to compliment any phased-in implementation strategies that might be considered as a part of an economic relief package. MECA would welcome a dialog with ARB staff on various approaches that would provide economic relief to end-users while minimizing the negative economic impact on device manufacturers and insure that technologies are available when they are needed in the future.

MECA and its members have been actively engaged with ARB staff on the amendments to the verification regulation. We continue to believe that more can be done to further streamline the verification process by continuing the cooperative effort to harmonize the application and test plan approval process with U.S. EPA in an effort to move toward true reciprocity of the two processes. The workload will continue to increase as verification maintenance of existing verified devices will combine with the demand for new verifications of advanced integrated technology solutions. By 2013, existing off-road devices will need to be re-verified to comply with the recently adopted non-road transient test cycle requirements. These verification

maintenance functions will demand resources above and beyond those needed for new verifications. More and more verified devices will enter the in-use compliance phase of the verification process. In the past year half of the verification staff resources have been reassigned to address the growing needs for in-use compliance testing and verification. MECA remains concerned with the resources that ARB has dedicated to cover both the in-use and new verification process needs. We urge the Board to review the verification staff resources to determine if they are adequate to meet the future needs of the program.

General remarks on the lack-of performance of retrofit devices in off-road applications are often made with insufficient information to back them up. There are always isolated issues with any technology but in general DPF retrofit systems work and they have demonstrated a high level of durability and reliability. For over 30 years, off-road diesel engines used in the construction, mining, and materials handling industries have been equipped with exhaust emission control technology – initially with diesel oxidation catalysts (DOCs) and followed later by diesel particulate filters (DPFs). These systems have been installed on vehicles and equipment both as original equipment and as retrofit technology on over 250,000 non-road engines worldwide. Over 50,000 active and passive DPF retrofit systems have been installed worldwide on off-road applications. More than 20,000 of these filters have been successfully employed in Europe on construction equipment used in tunneling projects. A 2003 survey (SAE Paper 2004-01-0076) of 3,848 construction retrofit installations from 2001 to 2003 in Europe found a failure rate of only 1-2 percent. The failures were most often associated with proper engine maintenance and operation rather than DPF functionality. Any product issues cited in this study were easily addressed through further product improvements.

The durability and performance of PM control technologies is being demonstrated on OEM on-road applications beginning with the 2007 model year. Since 2007, nearly every new diesel vehicle sold in the U.S. or Canada has been equipped with a high efficiency diesel particulate filter to comply with the U.S. EPA's 2007/2010 on highway regulations. This represents over 800,000 new trucks operating on DPFs mostly in the U.S. In 2010 the same new highway trucks are being required to reduce NOx emissions by 90% relative to pre-2007 requirements and are being equipped with NOx control technologies such as lean NOx trap catalysts, urea-SCR catalysts and high flow EGR systems.

MECA and our members are actively involved with ARB staff to further clarify criteria used in granting exemption from retrofit requirements for applications or installations deemed to be unsafe. Having a well defined review process in place ensures that implementation of the proposed regulations are accomplished with minimal administrative delays or judgments. We are engaged in working with Cal/OSHA, ARB and interested stakeholders to develop effective and realistic amendments to the California Code of Regulations that will serve to ensure that modifying construction equipment with VDECS is done with consideration to the safe operation of the vehicle, the operators and workers on construction sites. Safety must continue to be an essential component of the engineering and installation of retrofit emission control devices.

A safe work environment must also consider the hazards associated with the ambient air quality at the work site. A 2004 study conducted at five construction sites in the Northeastern

United States measured air quality at the perimeter of the sites and within the cab of construction equipment. Analysis of measurement results found that construction workers were exposed to up to 16 times more PM_{2.5} than the average ambient level outside the construction site and peak concentrations during active work may present acute health risks to workers and nearby residents. When averaged over 24 hours, in cabin measurements of PM_{2.5} were shown to exceed the National Ambient Air Quality Standard (NAAQS) by 4-6 times. The study also found elevated levels of benzene, 1,3-butadiene, formaldehyde, acetaldehyde and heavy metals commonly found in diesel fuel and lubricants. The levels of some of these compounds exceeded the 8-hour exposure limit established by the American Conference of Governmental Industrial Hygienists or ACGIH. The catalysts and filters that are components of Level 2 and 3 VDECS are designed to substantially remove these pollutants and air toxics from diesel exhaust and in effect serve as engineering controls for a safer work environment for workers on construction sites.

We commend the Air Resources Board for its continuing efforts to provide the people of California with healthy air quality and for demonstrating true leadership in their Diesel Risk Reduction Plan that will significantly reduce PM and NOx emissions from in-use, off-road and on-road diesel vehicles operating in the state. We urge the Board to remain vigilant on any attempts to stay or delay the overall goals of ARB's various in-use fleet rules or ARB's broader Diesel Risk Reduction Plan. These important emission reductions strategies not only protect the health of all the citizens of California but also provide an important source of economic growth and green jobs for the state. We also wish to thank the ARB staff for its willingness to work closely with all interested parties throughout the regulatory process. MECA will work with ARB staff and all the stakeholders in helping to develop effective economic relief recommendations to ARB's on and off-road regulations. Our industry is committed to do its part to help achieve the goals of these regulations.

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