

**STATEMENT OF THE  
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION  
ON THE CALIFORNIA AIR RESOURCES BOARD PROPOSED REGULATION FOR  
STATE IMPLEMENTATION PLAN CREDIT FROM  
MOBILE AGRICULTURAL EQUIPMENT**

*October 7, 2013*

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The Manufacturers of Emission Controls Association (MECA) is pleased to provide comments to the California Air Resources Board (ARB) proposed regulation for state implementation plan credit from mobile agricultural equipment. MECA generally supports ARB's proposal to ensure that available incentive programs used to reduce emissions from existing mobile agricultural equipment used in California are eligible for credits within California's state implementation plan.

MECA is a non-profit association of the world's leading manufacturers of emission control technology for mobile sources. Our members have over 40 years of experience and a proven track record in developing and manufacturing emission control technology for a wide variety of on-road and off-road vehicles and equipment, including extensive experience in developing emission controls for gasoline and diesel engines and vehicles in all world markets. Our industry has played an important role in the emissions success story associated with mobile sources in the United States, and has continually supported efforts to develop innovative, technology-forcing, emissions programs to deal with air quality problems.

Although MECA supports this proposed ARB regulation that uses available incentive programs to reduce emissions from California's mobile agricultural equipment, MECA would like to provide ARB with comments on the emission characteristics of future Tier 4-compliant nonroad engines that will be available in the coming years for use in California's agricultural sector. MECA strongly supported EPA's Nonroad Tier 4 Regulations. At the time the rule was finalized, EPA, MECA and others expected nonroad diesel engine manufacturers to utilize compliance strategies that were expected to be used in the highway diesel sector to comply with EPA's 2007-2010 heavy-duty highway emission limits: diesel particulate filters (DPFs) for achieving Tier 4 final PM limits and urea-SCR systems for achieving Tier 4 NOx limits. Continued development of diesel engine combustion systems have opened up alternative compliance pathways for Tier 4 final diesel nonroad engines that allow the Tier 4 final PM standards for some ranges of engine power ratings to be met without the use of diesel particulate filters. MECA has tracked announcements from engine manufacturers over the past two years on their Tier 4 final design strategies and a number of engine manufacturers have indicated that some of their Tier 4 final diesel engines will not use diesel particulate filters. MECA has provided at the end of these comments a chart published earlier this year in North American Diesel Progress that summarizes the Tier 4 final technology announcements made by many nonroad diesel engine manufacturers (Figure 1).

In many cases, these non-DPF Tier 4 final engines intend to make use of improved diesel engine combustion strategies that facilitate low engine-out PM levels combined with the use of SCR systems to achieve Tier 4 final NOx levels. An analysis of recent Tier 4 interim certification data indicates that engines certified without DPFs have a much smaller compliance

margin with respect to PM compared to engines certified with DPFs (by as much as a factor of 10). This difference in compliance margin is highlighted in a recently released MECA report entitled: “Ultrafine Particulate Matter and the Benefits of Reducing Particle Numbers in the United States,” available on the MECA website: [www.meca.org](http://www.meca.org) (under Resources >> Reports).

As has been shown in the heavy-duty highway sector, DPFs are extremely efficient at reducing particulate emissions over a wide range of particle sizes, including reducing emissions of the smallest, ultrafine particles emitted by a diesel engine. In the highway, heavy-duty sector, DPF-equipped engines are routinely being certified at PM emissions levels that are 90% or more below the 0.01 g/bhp-hr 2010 EPA PM heavy-duty highway diesel engine standard. The “bonus” PM reductions provided by DPFs in the highway sector provide significantly more public health benefits than estimated by EPA in their final 2007-2010 heavy-duty highway regulation. In addition to “bonus” public health benefits afforded by DPFs, DPFs have also provided important co-benefits on climate change due to the large reductions in black carbon emissions that result from the use of high efficiency DPFs (the ARB funded study highlighting the significant impact of reducing black carbon emissions from diesel engines on climate change was released in June 2013). These same opportunities for increased protection of public health and reduced climate change impacts are lost on Tier 4 final off-road diesel engines that are not certified with DPFs. In some cases, OEMs may choose to remove DPFs that were certified with engines for Tier 4 interim compliance in certifying the Tier 4 final configuration. MECA encourages ARB to characterize the regulated and unregulated exhaust emissions of similar Tier 4 final nonroad diesel engines certified with and without DPFs to more completely understand the impacts of these alternative compliance pathways on public health and climate change.

MECA is concerned about the PM emissions durability of nonroad Tier 4 engines certified without DPFs. There is ample evidence that engine-based PM control strategies are prone to higher in-use emissions than DPF-equipped engines, due to factors such as cold starts, poor maintenance, and the large variety of duty cycles encountered in the nonroad sector. Given the expected, relatively small compliance margins of nonroad Tier 4 final engine designs that do not utilize DPFs, MECA believes that ARB (and EPA) should closely scrutinize Tier 4 final certification packages of non-DPF diesel engines and allocate extra compliance and enforcement resources to follow up with in-use emissions testing of any Tier 4 nonroad engines certified without a DPF. MECA also believes that ARB and EPA should also strongly consider adoption of a manufacturer run, in-use emissions testing program in the nonroad sector that utilizes the latest portable emissions measurement technology to ensure that Tier 4 final nonroad engines are delivering the emission reductions associated with the Tier 4 nonroad standards. The nonroad sector could also benefit from the adoption of on-board diagnostic requirements that are similar in scope to the heavy-duty highway diesel on-board diagnostic requirements required by ARB. In-use testing and OBD ensure that the emissions performance of the engine/equipment is maintained over the regulated full useful life.

To lock-in the public health and climate change benefits associated with the application of DPFs on on-road and off-road diesel engines, ARB needs to consider more stringent emission standards on diesel particulate emissions. This could include tighter PM emission standards on both new on-road and off-road diesel engines, and/or the adoption of stringent particle number emission limits on these engines (similar in stringency to particle emission limits that have been adopted by the European Union for light-duty diesel vehicles, heavy-duty highway diesel vehicles, and light-duty gasoline direct injection vehicles). In sectors that ARB does not have

the authority to set its own stringent particle emission limits, ARB needs to encourage EPA to act on more stringent particle emission limits for mobile sources.

MECA also submitted comments to EPA recently concerning proposed technical amendments for heavy-duty engines and vehicles, and nonroad engines. MECA's comments were largely aligned with comments provided by ARB to EPA on these proposed amendments. MECA and ARB expressed concerns with several technical amendments to the nonroad Tier 4 regulations that could result in unintended and adverse consequences to air quality in general, including expansion of the Tier 4 Transition Program for Equipment Manufacturers (TPEM). MECA believes that manufacturers are already utilizing Tier 4 program flexibilities like the Transition Program for Equipment Manufacturers to a very large degree. The wide scale use of the TPEM flexibility delays the transition to cleaner, Tier 4 engines and the emission reductions associated with these cleaner engines. MECA understands the need to provide manufacturers with some degree of compliance flexibility but is also supportive of accelerating the introduction of cleaner Tier 4 technology into the U.S. market.

MECA and ARB also expressed concerns with EPA's proposal that would lessen the stringency of the upper limit of Tier 4 engines certified under the federal Averaging, Banking and Trading (ABT) program. MECA and ARB questioned whether local exposure effects have been closely considered or modeled in developing this proposal. Additionally, EPA's proposal would likely result in fewer Tier 4 final engines, especially if manufacturers choose to use their banked emission credits to continue certifying dirtier engines. It does not appear that this additional flexibility is really needed by the manufacturers.

In conclusion, MECA supports ARB's proposal to ensure that available incentive programs used to reduce emissions from existing mobile agricultural equipment used in California are eligible for credits within California's state implementation plan. However, MECA is concerned with the introduction of Tier 4 final nonroad diesel engines without DPFs. ARB needs to consider regulatory strategies to lock-in the public health and climate change benefits of applying DPFs to all on-road and off-road diesel engines

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Figure 1

