

**WRITTEN STATEMENT OF THE  
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION  
ON THE  
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT'S  
PROPOSED AMENDMENTS TO RULE 4702**

*August 2, 2011*

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The Manufacturers of Emission Controls Association (MECA) is pleased to provide comments to the San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD) proposed amendments to Rule 4702 which clarifies existing emission standards and achieves additional NOx emission reductions from non-agricultural stationary spark ignited engines. MECA fully supports the proposed revisions to Rule 4702.

MECA is a non-profit association made up of the world's leading manufacturers of emission control technology for mobile and stationary internal combustion engines. MECA member companies have over 35 years of experience and a proven track record in developing and commercializing exhaust emission control technologies for a wide range of on-road and off-road vehicles and engines of all sizes including both rich and lean-burn stationary, spark ignited natural gas engines. MECA member companies are committed to ensure that the emission control technologies to achieve the emission targets of this rule are available.

***Stationary SI engines 25-50 hp***

MECA agrees with staff's conclusion that the 25-50 hp IC engines are already regulated under the U.S. EPA's NSPS and therefore the point of sale provision is the most cost effective way to insure low NOx emissions for these small stationary engines. The NSCR technology to reduce emissions from small spark-ignited, rich burn and stoichiometric off-road engines is based on automotive-type three-way catalyst closed-loop technology. This technology has been used on well over 300,000,000 automobiles with outstanding results. Three-way catalysts have also been used effectively on thousands of large, natural gas-fueled, reciprocating engines (so-called rich burn or stoichiometric natural gas engines) used for power production or pumping applications. These same catalyst technologies can be adapted to spark-ignited engines used in portable generators independent of engine displacement.

***Stationary, SI Rich-Burn engines >50 hp***

For larger displacement rich-burn engines, MECA agrees with SJVUAPCD's conclusion that non-selective catalytic reduction can be applied to meet the emission standards outlined in the proposed rule. The use of NSCR technology is a cost-effective way to reduce NOx emissions from existing stationary rich-burn engines. NSCR is a proven technology based on automotive three-way catalysts that has been installed on thousands of rich-burn engines. In addition, several MECA member companies have verified retrofit NSCR systems with ARB for use on large, spark-ignited off-road engines (engines 25 hp or greater) to reduce NOx, HCs, and CO. These verified systems can be used on existing stationary rich-burn engines as well. (A complete list of ARB-verified retrofit technologies for large, spark-ignited off-road engines is available at: [www.arb.ca.gov/msprog/offroad/orspark/verdev.htm](http://www.arb.ca.gov/msprog/offroad/orspark/verdev.htm).)

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### ***Stationary, Non-Emergency SI Lean-Burn engines >50 hp***

SCR has long been the technology of choice for NO<sub>x</sub> emission reduction in industrial processes and stationary power generation applications. The commercial use of SCR systems for the control of NO<sub>x</sub> from lean-burn stationary engines has been around since the mid-1980s in Europe and since the early 1990s in the U.S. Since 1995, one MECA member company specifically has installed over 400 SCR systems worldwide for stationary engines with varying fuel combinations. These units have been deployed in power generation applications including dozens of gas compression units. More recently, cost-effective urea-SCR systems have been developed for mobile source applications, including heavy-duty trucks, light-duty vehicles, off-road equipment, marine engines, and locomotives. In 2005, SCR using a urea-based reductant was introduced on a large number of on-road diesel heavy-duty engines to help meet the Euro 4 heavy-duty NO<sub>x</sub> emission standards. SCR is being used by most engine manufacturers for complying with U.S. EPA's on-road heavy-duty diesel engine emission standards since 2010 and in Japan since 2009. Several MECA member companies have proven experience in the installation of SCR systems for both stationary and mobile engines, as well as the installation of integrated DPF+SCR emission control systems for combined PM and NO<sub>x</sub> reductions. Since the mid-1990s, SCR technology using a urea-based reductant has been installed on a variety of marine applications in Europe including ferries, cargo vessels, and tugboats with over 200 systems installed on engines ranging from approximately 450 to 10,400 kW. These marine SCR applications include the design and integration of systems on a vessel's main propulsion engines and auxiliary engines. This technology is capable of achieving in excess of 80% NO<sub>x</sub> conversion efficiency.

MECA agrees with the cost estimates that the air district has used in their cost-effectiveness analysis in preparing these rule amendments. The final costs of a system will depend on the condition and baseline emissions of the engine and the percent level of reduction required to meet the established NO<sub>x</sub> concentration limit. Experience of our members has shown that installation costs will vary but are typically on the order of the system costs. Our members have experience with retrofitting systems both inside and outside of existing structures that house the engines. In the case where limited interior space may be available, systems have been installed in place of the existing exhaust muffler on the roof of buildings. Some systems have also been appropriately designed to operate in cold temperature climates like those in the gas fields of Wyoming or the Sierra Mountains of California.

### ***Exemptions***

In the proposed changes, staff has decided to exempt waste gas fueled engines from NO<sub>x</sub> controls due to the variability in heat content of waste gas. At least one of our members has experience with installing SCR systems on large (3500 hp) digester gas fueled engines by automatically adjusting the BTU content of the digester gas by blending in natural gas to achieve the necessary BTU content of the mixture. This SCR system is successfully achieving the NO<sub>x</sub> design target of 9 ppmv. This type of an approach may provide additional NO<sub>x</sub> reductions in the San Joaquin Valley.

MECA believes that the air district is missing a significant opportunity to reduce CO and

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VOC emissions from lean burn natural gas engines by not setting standards that would require inexpensive, passive catalyst controls that are in use today such as oxidation catalysts (OC). Oxidation catalysts have been applied to over 250,000 off-road diesel mobile source applications and hundreds of stationary lean burn SI engines. Over 50,000,000 diesel passenger cars and millions of trucks and buses have been equipped with OCs. Oxidation catalysts are extremely effective in achieving 90% reduction of hazardous air pollutants such as HC and CO from lean burn engines. These catalysts also provide significant reductions in toxic emissions by eliminating benzene, formaldehyde, acetaldehyde, methanol and other VOCs from the exhaust. Oxidation catalysts have been installed on a limited number of marine diesel applications, a duty cycle that closely mimics stationary operation. Even a relatively inexpensive oxidation catalyst can provide significant multi-pollutant co-benefits in reducing CO, HC, VOC, and SOF and, therefore, the air district should consider setting CO and VOC standards that would require emissions controls on all stationary reciprocating internal combustion engines.

In closing, MECA fully supports the proposed regulations and recognizes that they are an important step in reducing emissions from stationary SI engines. As stated above, catalyst systems such as NSCR have been used on mobile on-road and off-road engines for over 35 years. The same emission control technologies have been successfully applied to new and existing stationary engines by our members for many years. Originating in stationary applications, SCR has recently been successfully applied to on-road and off-road vehicles and engines. Both of these technologies have been commercialized to achieve the levels of emission reductions outlined in the proposed Rule 4702. MECA and its member companies look forward to working with the SJVUAPCD, the engine and equipment manufacturers, end-users, and others in implementing this proposed regulation.

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