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VIA E-MAIL (aroberts@airquality.org)

Amy Roberts
Manager, Stationary Sources Division
Sacramento Metropolitan Air Quality Management District
777 12th Street, Suite 300
Sacramento, California 95814

Re: MECA Comments on Proposed Revised BACT Determination (SMAQMD Rule 202, §205.1) for Emergency Diesel IC Engines: BACT #281

Dear Ms. Roberts,

MECA is pleased to provide comments in response to the Sacramento Metropolitan Air Quality Management District (SMAQMD) notice proposing to change the BACT determination (BACT #281) for standby diesel IC engines ("Emergency Diesel Engines"). In particular, SMAQMD is proposing that BACT for Emergency Diesel Engines rated at above 1000 hp will be NOx: 0.5 g/hp-hr and PM10: 0.02 g/hp-hr which represents Tier 4 emission standards requiring the use of selective catalyst reduction (SCR) and diesel particulate filters (DPFs) systems.

MECA is an industry trade association of the world's leading manufacturers of clean mobility technology. Our members have nearly 50 years of experience and a proven track record in developing and commercializing emission control, efficiency and electric technology for a wide variety of on-road and off-road vehicles and equipment in all world markets. Our members provide the technologies that enable heavy-duty on-road vehicles to meet the most stringent NOx and PM emission standards, as well as electrification and all-electric technologies that reduce emissions of all pollutants, criteria and climate, and allow commercial vehicles to be the cleanest possible. Our industry has played an important role in the environmental success story associated with light- and heavy-duty vehicles in the United States and has continually supported regulatory agencies in their efforts to develop innovative, technology-advancing, programs to deal with air quality and climate challenges.

It is MECA's position that the proposed BACT determination of emissions standards for standby, diesel-fueled IC engines is technically feasible based upon technology availability and in-use performance. Indeed, emission control technologies including diesel oxidation catalysts (DOCs), particulate filters (DPFs) and selective catalytic reduction (SCR) systems have been commercially available to reduce PM10, NOx and HAP's emissions on a wide range of stationary engines including emergency standby engines for over three decades. Prior to Tier 4 standards being implemented, these technologies were offered by MECA members as retrofit systems as we show in the two examples below. Or industry has extensive experience in integrating DPFs and SCR catalysts with ammonia or urea dosing strategies on stationary engines and have supplied these aftertreatment solutions in response to requirements by other air districts in California.

Feasibility of Emission Control Technologies for Existing Stationary Diesel Engines Over 1000hp

Our members have been commercializing exhaust emission controls for reducing emissions from in-use stationary diesel engines over 1000 hp for decades. This includes numerous documented California installations in the Bay Area, the San Joaquin Valley and the South Coast.

The local air districts justify the measures that protect the air quality of frontline communities and SMAQMD correctly cites a number of air district determinations including SCAQMD, SJVUAPCD, and BAAQMD that require the use of DPFs and SCR systems as BACT or TBACT.

In particular, the BAAQMD in their March 29, 2021 workshop cited several 2013 or newer state-of-the-art installations of Tier 4 engines and engines equipped with DPFs and SCR systems as BACT examples that are achieved in practice. Moreover, BAAQMD cites in their BACT technology regulation that BACT requirements are based upon the "potential to emit" (PTE) during 24 hour per day emergency operation. The BAAQMD PTE is defined as "the maximum capacity of a source or facility to emit a pollutant based on its physical and operational design". BAAQMD does not distinguish between planned and emergency operation of standby emergency engines.

Our members experience indicates that the newest facilities (typically data centers) are increasingly employing dedicated, on-site load banks to exercise emergency standby engines under load to ensure the readiness of the engine to operate under emergency full load conditions. The practice of testing under loaded engine conditions produces exhaust temperatures that also ensure the maintenance and emergency operational readiness of DPF and SCR emissions controls and their ability to continue to meet their certified emission limits.

An important part of routine preventative maintenance and testing includes the examination of fluids such as diesel fuel, engine oil, coolant and diesel exhaust fluid

(DEF). DEF (an aqueous urea solution) is a vital component in today's SCR equipped engines. It's a non-hazardous, non-toxic, non-flammable material that does not pose any serious health risks to people, so it is safe to handle and has optimal storage requirements identical to diesel fuel. Sold in dated coded containers, DEF has a shelf life of up to two years when stored under optimal conditions (between 12°F and 86°F)-again, a similar period of time to the usable life of today's diesel fuel. The inspection, cycling / use of diesel fuel and DEF are all part of the routine maintenance and management of standby emergency engines.

It is also common that SCR systems on engines >1000hp employ air-assisted urea injection systems that are capable of clearing the injector of DEF and avoiding the occurrence of deposits and plugging.

Longer Term Experience with the Application of DPF and SCR Systems to Existing Stationary Diesel Engines

Several MECA member companies have experience with the application of DPF and SCR systems to stationary diesel engines which includes successful application to engines as small as 25 hp to very large emergency standby or continuous power engines producing several megawatts of power. This experience base includes both passively regenerated DPF systems and actively regenerated DPF systems.

Below are two older examples of the earlier application of DPF+SCR emission control systems installed on stationary diesel engines highlighting that this technology is well known and proven effective. These examples pre-date the installations cited by BAAQMD:

- In July 2007, Janssen Ortho, a subsidiary of Johnson & Johnson, located in Gurabo, Puerto Rico, installed DPF+SCR systems on three 2220-hp Cummins KTTA50-G2 engines (approximately 0.2 g/bhp-hr PM). The engines are used to provide emergency backup power for their pharmaceutical R&D and manufacturing facility. Despite the limited amount of space around the engines, the company and emission control technology provider worked together to arrive at a compact and efficient solution – a platform design that allowed all of the emission control equipment to be installed above the engines. The DPF+SCR systems achieve PM reductions of >90 percent and NOx reductions of 91-92 percent.
- In September 2003, Snow Summit Ski Resort in Big Bear Lake, California, installed DPF+SCR systems on two large stationary engines. The two engines are Cummins QSK78-G6 diesel engines (0.2 g/bhp-hr PM), which power two 2-MW generators during the yearly ski season. The generators are used to operate snow-making and other auxiliary equipment during the annual ski season. Source test results showed PM reductions of greater than 90 percent and NOx reductions of greater than 94 percent.

Conclusion

MECA commends the SMAQMD for taking an important step to reduce emissions from new and existing emergency standby stationary engines and protecting the health of affected frontline communities. MECA and our member companies look forward to working with SMAQMD in implementing this proposed BACT determination.

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