



FEDERAL & STATE AUTHORITY TO REGULATE EMISSIONS FROM CONSTRUCTION EQUIPMENT FREQUENTLY ASKED QUESTIONS



The U.S. Environmental Protection Agency (EPA) continues to set and enforce tighter emissions standards for new nonroad engines, including those used in construction equipment. In May 2004, EPA finalized its most stringent set of emissions standards for new construction equipment. Currently, EPA does not require contractors to reduce emissions from their old, in-use construction fleet. Instead, the agency has adopted the “Voluntary Diesel Retrofit Program” to encourage contractors to voluntarily reduce emissions from such equipment by installing advanced emissions control technologies.

Generally, the Clean Air Act prohibits state and local governments from setting their own emissions standards for either new or old nonroad engines—a concept called federal preemption. Nonetheless, as states struggle to meet tighter federal air quality goals, some policy makers have attempted (or currently are attempting) to pass state and local laws that violate this statutory prohibition (e.g., construction bans, accelerated retirement/replacement requirements, and diesel retrofit mandates).

The question of whether states and localities can accomplish indirectly what they can not do directly will certainly be the subject of future litigation. The bottom line is that the Clean Air Act preempts state and local emissions standards for either new or old nonroad engines—apparently including state and local requirements for diesel retrofit, the purchase or use of certain equipment, and perhaps, any restrictions on the hours when such engines may run—except for certain stricter emissions standards that California may adopt, and any other state standards that identically follow California’s lead.

This paper explores the limits on federal and state (and local) authority to regulate emissions from diesel engines in construction equipment.

1. HOW DOES THE FEDERAL GOVERNMENT REGULATE EMISSIONS FROM NEW NONROAD DIESEL ENGINES IN CONSTRUCTION EQUIPMENT?

The last ten years have seen the U.S. Environmental Protection Agency (EPA) take a great and growing interest in reducing air pollution from new nonroad engines.¹ The 1990 amendments to the Clean Air Act (CAA) directed EPA to evaluate the contribution of nonroad engines to urban air pollution and to regulate them if they contributed to air quality problems. In 1991, EPA published a report showing that nonroad diesel engines² (as well as other nonroad engine categories) emit large amounts of nitrogen oxides (NO_x), hydrocarbons (HC), carbon monoxide (CO), and particulate matter (PM). In 1994, EPA finalized its first set of emissions standards (“Tier 1”) for all new nonroad diesel engines of more than 50 horsepower (hp), except those used in locomotives and marine vessels. EPA phased in the Tier 1 standards for different engine sizes between 1996 and 2000.

EPA set additional Tier 1 standards in 1998, this time for new nonroad diesel engines of less than 50 hp. The agency phased in these standards between 1999 and 2000. The agency also set more stringent “Tier 2” emissions standards for all new nonroad diesel engine sizes (phasing in between 2001 to 2006), as well as yet more stringent “Tier 3” standards for new nonroad diesel engines between 50 and 750 hp (phasing in during the 2006 to 2008 timeframe).

¹ Generally, nonroad engines are all internal combustion engines except motor vehicle (highway) engines, stationary engines (or engines that remain at one location for more than 12 months), engines used solely for competition, or engines used in aircraft.

² Nonroad diesel engines (also referred to as compression-ignition or CI engines) operate in a wide variety of applications including construction, agricultural, and industrial equipment. These engines generally operate on diesel fuel.

EPA Orders Major Emissions Reductions, Ultra-Low Sulfur Fuel for Nonroad Diesel Engines

More recently, in May 2004, EPA finalized “Tier 4” standards for new nonroad diesel engines. These standards use a “systems approach” that involves not only engines, but also diesel fuel and exhaust aftertreatment devices to achieve the greatest reduction in pollution. (Previous emissions standards focused solely on reductions that could be achieved from engineering improvements to the engine alone.)

The Tier 4 rule requires new nonroad diesel engines to reduce their emissions of pollutants by more than 90 percent by 2014. Standards for new engines will be phased in starting with the smallest engines in model year 2008, until all but the very largest nonroad diesel engines meet aggressive NOx and PM standards in 2014. In order to achieve this goal, EPA is requiring a 99 percent drop in the amount of sulfur in nonroad diesel fuel by 2010. (Sulfur leads to more PM in the atmosphere and prevents newer engines technologies from achieving maximum pollutant reductions.) Nonroad diesel fuel currently contains about 3,400 parts-per-million (ppm) sulfur. The new rule will cut that to 500 ppm in 2007 and 15 ppm by 2010.

Significantly, EPA rules do not require the retrofit or repowering of old, in-use diesel engines in construction equipment (see Question 3 below).

2. HOW WILL EPA’S TIER 4 RULES AFFECT THE CONSTRUCTION INDUSTRY?

How AGC ultimately views the Tier 4 rule will depend on its economic impact on the construction industry. More than 650,000 pieces of new nonroad diesel equipment are sold in the United States each year. They will be covered by this rule (beginning in 2008). The anticipated costs of the rule vary with the size and complexity of the equipment but are expected to range from one to three percent of the total purchase price for most nonroad diesel equipment categories. EPA estimated the added cost for low-sulfur fuel to be about seven cents per gallon.

Noteworthy are the significant technical and commercial challenges that must be overcome to achieve additional nonroad diesel emissions reductions. The Tier 4 standards are known as “technology forcing” rules, meaning that they will require the development of new technology in order to meet required emission levels. According to the Diesel Technology Forum (which represents manufacturers of engines, fuel, and emission control systems), “the field of nonroad emissions control is not without bumps.” The Forum reports that engine and equipment manufacturers, fuel refiners, and aftertreatment technology manufacturers are already collaborating on the development of systems-based strategies to meet these new, more stringent requirements. The challenges include:

- The great diversity of nonroad engines and equipment from portable electric generators with less than 10 hp to 6,000 hp mine shovels;
- The extreme duty-cycles that require engines built to both propel the vehicle and operate attachments like buckets, blades, and shovels found on construction equipment;
- The wide range of engine exhaust temperatures due to the very low engine speeds;
- The diversity of horsepower ranges required to operate heavy equipment; and
- The significant space restraints of engine compartment size and packaging due to safety, visibility, and functionality requirements that make engineering the placement of aftertreatment technologies a challenge.

AGC's Efforts

AGC submitted comments to EPA on this Tier 4 rule. AGC’s letter stressed that it firmly opposes any new emissions standards or fuel requirements that would disrupt power output, durability, ease of

maintenance, safety, cost, or other factors important to users of nonroad diesel systems.³ In addition, AGC asked EPA to appropriately sequence—with minimum overlap—the fuel specification changes (to minimize potentially major disruptions in supply that could spur sharp price increases). In the coming months, AGC will work closely with nonroad engine and equipment manufacturers, fuel refiners, and aftertreatment makers to understand (and overcome) the obstacles to developing a systems-based emissions-reduction strategy for the next generation of clean nonroad diesel engines.

3. HOW DOES THE FEDERAL GOVERNMENT REGULATE EMISSIONS FROM OLD (OR IN-USE) NONROAD DIESEL ENGINES IN CONSTRUCTION EQUIPMENT?

Although EPA continues to set and enforce emissions standards for new nonroad diesel engines (see Questions 1 & 2 above), the agency has never attempted to retroactively strengthen the standards for old, in-use engines. Currently, EPA does not require owners or operators of nonroad construction equipment to reduce emissions from their old, in-use diesel engines. Instead, the agency has adopted the “Voluntary Diesel Retrofit Program” to encourage contractors to reduce emissions from such equipment by installing advanced engines and/or emissions control systems.

At this point, EPA’s diesel retrofit initiative remains a non-regulatory, incentive-based, voluntary program. EPA also is encouraging state and local government air quality planners to create effective retrofit programs and to identify potential funding sources (see Question 5 below).

Given the prevalence and longevity of diesel engines—and the fact that EPA’s nonroad rules will not be fully implemented until 2014—there is increasing interest by government and environment/citizen groups in reducing emissions from the old, in-use fleet of construction equipment. However, so far, the federal government has provided limited funding via grants to finance the cost of retrofit.⁴ Construction contractors have little or no incentive to incur the often great expense of installing these emissions control devices. In addition, for purely technical reasons, construction contractors may have few retrofit options. The wide variety of equipment and the relatively small number of pieces of each type, make it expensive to purchase, install, and maintain emissions controls.

AGC’s Efforts

Recognizing that older construction equipment is a good candidate for such a voluntary program, AGC has been working closely with EPA to bring together everyone necessary to make the voluntary program work at the state level. AGC has partnered with EPA to provide AGC chapters and members with the information they need to make the program work wherever there is local interest.

In addition, AGC is seeking to modify the federal tax code to provide a nationwide financial incentive for contractors to retrofit their existing diesel equipment. Allowing contractors to expense (immediate write-off) the cost of modifications to existing equipment would provide a direct incentive for such modifications. It also would increase demand for emissions control devices, and to that extent, encourage emissions control manufacturers to provide more options.

³ Clean Air Act (CAA) Section 213(a)(3) calls for EPA “to establish standards that provide for the greatest degree of emission reduction available through the application of technology which the Administrator determines will be available for the engines or equipment to which such standards apply, giving appropriate consideration to the cost of applying such technology within the period of time available to manufacturers and to noise, energy, and safety factors associated with the application of such technology.” See 63 FR 56984, October 23, 1998.

⁴ Environmental groups and some government, industry groups are pursuing opportunities to make the retrofit of construction equipment eligible for funding under the Congestion Mitigation and Air Quality Improvement Program (CMAQ), at least where nonroad diesels are used to construct infrastructure and/or transportation projects. For this to occur, CMAQ language may need to be clarified to direct Metropolitan Planning Organizations (MPOs) to focus more attention on diesel retrofit and the resultant “clean air” benefits.

4. CAN STATES REGULATE EMISSIONS FROM NEW AND/OR OLD NONROAD DIESEL ENGINES IN CONSTRUCTION EQUIPMENT?

The Clean Air Act expressly prohibits state or local rules that impose emissions control standards on new nonroad engines that are used in construction equipment or vehicles and that are smaller than 175 horsepower.⁵ What is more, the Act implicitly extends this preemption to all other nonroad engines (new and old), and provides that only California may apply to EPA for authorization to adopt and enforce standards or controls (at least as protective as federal standards) governing such engines or equipment.⁶ A state with an approved nonattainment plan may thereafter adopt standards identical to California's, after notice to EPA and a statutorily required two-year lead-time before the standards take effect.

Following is a summary of the CAA provisions that address the authority of state and local governments to set emissions standards for new and/or old nonroad engines in construction equipment.

CAA Preemption Provisions Summarized

- **Category** – New nonroad engines 0-174 horsepower (hp)
 - **Federal Preemption of State Law** – No state (or any political subdivision thereof) may adopt or enforce any standards or other requirements relating to the control of emissions from new nonroad engines that are used in construction equipment or vehicles and that are smaller than 175 hp.
 - **Exception** – NONE
 - **Authority** – CAA Section 209(e)(1); 42 U.S.C. § 7543(e)(1)
- **Category** – New nonroad engines $\geq$ 175 hp and all old nonroad engines
 - **Federal Preemption of State Law** – No state (or any political subdivision thereof) may adopt or enforce any standards or other requirements relating to the control of emissions from any new nonroad engines that are larger than 175 hp or from any old nonroad engines.
 - **Exception** –California may apply to EPA for authorization to adopt and enforce emissions standards and other requirements (at least as protective as federal standards) governing such engines. A state with an approved nonattainment plan may thereafter adopt and enforce standards identical to California's, after notice to EPA and a statutorily required two-year lead-time before the standards take effect.⁷
 - **Authority** – CAA Section 209(e)(2); 42 U.S.C. § 7543(e)(2)

Pursuant to Section 209 of the Act, EPA issued regulations to implement these statutory provisions (see Question 5 below).

⁵ See Clean Air Act Section 209(e)(1); 42 U.S.C. Section 7543(e)(1).

⁶ See Clean Air Act Section 209(e)(2); 42 U.S.C. Section 7543(e)(2).

⁷ A provision included in the fiscal year (FY) 2004 spending bill for VA, HUD, and Independent Agencies, authored by Senator Christopher S. Bond (R-MO), would have amended the CAA to prohibit California (and, therefore, other states) from controlling emissions from any diesel or gasoline-powered nonroad engine (new and old) under 175 horsepower. Ultimately, this provision was removed from the bill and replaced with an alternative amendment. The alternative amendment preserves the California's authority to set emission standards (CAA Section 209(e)(2)) but prohibits other states and localities from adopting or enforcing California regulations applicable to nonroad gasoline-powered (spark-ignition or SI) engines smaller than 50 hp.

5. HOW IS THIS FEDERAL PREEMPTION PLAYING OUT IN THE STATES?

As EPA continues to tighten federal air quality standards, states are challenged to find ways (within their legal limits) to further reduce pollution from mobile and stationary sources. As discussed above, the Clean Air Act generally reserves for the federal government the authority to set emissions standards for either new or old nonroad engines; a concept called federal preemption. Nonetheless, some states have attempted (or currently are attempting) to pass laws that violate this statutory prohibition—such as restrictions on the use or purchase of construction equipment or diesel retrofit mandates—as a means of meeting national air quality goals. The question of whether states can accomplish indirectly what they can not do directly has been (and will continue to be) the subject of future litigation.

Background: What Dirty Air Means for States, Construction, and Highway Funds

EPA recently announced more stringent federal standards—known as National Ambient Air Quality Standards (NAAQS)—for ozone (smog) and fine particulates (dust). There are 474 counties in 31 states that violate the new 8-hour ozone standard. In addition, later this year EPA will designate the areas that violate the new particulate matter (PM)-2.5 standard. The states violating one of these NAAQS, or any of the other federal air standards, are required to develop state implementation plans (SIPs) to show how they will attain the federal health-based standards. States that fail to develop suitable clean-up plans (or to met EPA’s deadlines) could be subject to numerous federal sanctions, including emissions caps limiting economic development and the loss of federal highway transportation funds.

Furthermore, metropolitan planning organizations (MPOs) must demonstrate that transportation projects planned for the next 20-year period in their respective regions will result in emissions that are consistent with the SIP, through a process known as “transportation conformity.” According to the Clean Air Act conformity provisions, federal departments and agencies may not approve, permit, or provide financial support to most highway and transit projects in areas that have not attained federal air quality standards, unless such projects conform with the state plan for achieving air quality. Failure to demonstrate conformity results in a “conformity lapse,” which renders the area’s transportation program and plans invalid.

Restrictions on the Use or Purchase of Construction Equipment

It is worth noting that EPA’s regulations interpret the CAA Section 209 preemption provisions narrowly. Specifically, EPA believes there is a difference between an ***emissions control standard*** and a rule that restricts how contractors ***use and operate*** old equipment (i.e., equipment that contains a previously certified nonroad diesel engine).

“EPA believes that states are not precluded...from regulating the use and operation of nonroad engines, such as regulations on hours of usage....” *See* 40 CFR Part 89 Appendix A; *EMA v. EPA*, 88 F.3d 1075, 1093-94 (D.C. Cir. 1996) (court held that EPA had made a reasonable interpretation of the Act in finding that the preemption of state regulations did not extend to restrictions on the use of nonroad engines).

The U.S. Court of Appeals for the D.C. Circuit has upheld EPA’s interpretation, but at least one federal court has taken a different stance by overturning a state use-restriction on construction equipment. Two construction-related control measures in the SIP for the Dallas/Fort Worth ozone nonattainment area were at issue in a case brought before the U.S. District Court for the Western District of Texas (*Engine Manufacturers Association v. Robert J. Huston*). As approved, the SIP would have banned the early-morning operation of construction equipment and required early retirement and replacement of such equipment. The court struck down the so-called morning construction ban and accelerated purchase requirements, holding that the CAA deprives the state of jurisdiction over such matters—a concept called

federal preemption (see Question 4). But, at the same time, the rules were replaced legislatively with the Texas Emissions Reduction Plan (TERP) (as enacted by TX Senate Bill 5 during the 2001 session). TERP provides about \$130 million annually through 2008 to reduce pollution from construction equipment and other diesels. The program provides technical assistance and financial support through payment of the incremental cost of cleaner diesel equipment.

In a recent and related court decision, the U.S. Supreme Court overturned local air rules that would have required certain private fleet operators in the greater Los Angeles area to purchase or lease low-emitting or alternative-fuel vehicles when adding or replacing fleet vehicles (*Engine Manufacturers Association v. South Coast Air Quality Management District (SCAQMD)*). The primary distinction in this case is that the fleet rules applied to newly acquired, on-road vehicles (there was not a requirement to accelerate the retirement and replacement of older, more polluting vehicles). The Supreme Court concluded that the rules were emissions standards and preempted under the Clean Air Act. The Court was not willing to draw a distinction between regulations that compel manufacturers to meet new emissions limits (e.g., mandate the sale or production of certain types of vehicles or engines) and those that affect only the purchase of vehicles. Indeed, the Court held that a “standard” under CAA Section 209 is any mandate governing the emissions characteristics of an automobile.

The Court sent the case back to the trial court with regard to whether the SCAQMD rules pertaining to public fleets also were preempted or could be construed as internal state purchase decisions. The SCAQMD could seek a waiver from EPA that would allow the air quality district to legally adopt these fleet rules (see Question 4 above).

Future Concerns

The question of whether states can accomplish indirectly what they can not do directly will certainly be the subject of future litigation. While it may take some time for this question to resolve itself, EPA has indicated its intention to remain steadfast in its interpretation of the CAA’s preemption provision (i.e., states can restrict how contractors use and operate old equipment). For that reason, if a geographic area does not meet EPA’s air standards, states may attempt to directly impose requirements (through their SIPs) on the users of diesel engines to reduce pollution. Where states choose to pursue such construction-related control measures, litigation is likely.

Diesel Retrofit Mandates

For some states struggling to meet strict federal air quality standards, new clean diesel technologies seem like a solution. According to EPA regulations, ***states are precluded from requiring retrofitting of old, in-use nonroad engines***—except that states are allowed to adopt and enforce any such retrofitting requirements identical to California requirements that have been authorized by EPA under CAA Section 209(e)(2) (see 40 CFR Part 89 Appendix A).

Currently, California is implementing a Diesel Risk Reduction Plan that will require some fleet owners to install particulate matter (PM) controls on old, in-use engines over the next several years. In addition, the California legislature introduced in February 2004 the “Low Emission Contractor Incentive Program” (AB 2541). This bill would require construction contracts to include “bonuses or preferences” for contractors who use low-emission fleet, among other things.

The recently adopted “New York City Clean Construction Equipment Law or Local Law 77” is also worth noting. New York City Council legislation, adopted in late 2003, requires best available technology and 15 parts-per-million low-sulfur fuel for diesel-powered nonroad equipment (and vehicles) used in the performance of public works contracts as well as equipment (and vehicles) owned or operated by the city. Environmental Defense worked with city leaders to shape the law. The local law positions

New York as one of the first major U.S. cities to require cleaner diesel equipment in the solicitation and performance of public works construction. Other states appear to be following suit, however, as New Jersey has just introduced its own diesel bill (S1759 and A3182) that would establish a statewide mandatory retrofit program for all mobile sources. AGC is unclear as to whether these local retrofit mandates are legal and continues to investigate the issue.

In addition, public owners (mainly, state departments of transportation) are starting to make retrofit a “requirement” through the use of contract specifications and bid preferences (e.g., CA, CT, MA and NYC). AGC is working to educate policymakers on the serious and legitimate concerns surrounding government actions that modify contract awarding procedures to favor certain contractors, depending on whether or not they retrofit. In today’s competitive bid environment, such tactics can restrict competition and disenfranchise small and minority-owned construction companies. For public officials, the challenge is to identify a better incentive structure in an unstable economy where public funding is limited.

AGC’s Efforts

Responding to a special invitation from EPA, AGC recently assembled and moderated a panel discussion at the agency’s national conference on diesel retrofit. More than 300 senior federal and state government officials gathered in Washington, D.C. and heard industry perspectives on the challenges (technical, commercial, financial, and political) to further improvement in the emissions performance of old, in-use construction equipment. EPA continues to look to AGC to recommend ways to expand the practice of diesel retrofit in the construction industry.

Highlights of the construction panel discussion include:

- Lessons learned: Participants in the construction workshop agreed that public-private partnerships are the key to a successful retrofit program. Government officials must balance contractor business and economic concerns with air quality goals. If equipment is rendered obsolete—via mandatory retrofit or fleet replacement rules—it will “bury” the industry overnight. Ultimately, there is no “silver bullet” for the construction industry due to the limited availability of retrofit technologies; the high cost to purchase, install and maintain such devices; and the diversity of nonroad diesel engines.
- Effective incentives for expanding construction retrofits: A dedicated revenue stream through government grants, tax incentives, and/or contract incentives is needed to expand the practice of retrofit. AGC educated policymakers on the serious and legitimate concerns surrounding government actions that modify contract awarding procedures to favor contractors who retrofit (e.g., bid preferences or contract specifications).
- Next steps: AGC intends to focus on increased education and outreach, including promoting the Diesel Technology Forum’s new Clean Diesel Retrofit Took Kit (<http://www.dieselforum.net/retrofit/>), a comprehensive online guide to implementing a diesel retrofit program. A variety of key players (Caterpillar, Cummins, Johnson Matthey, Detroit Diesel, and the Association of Equipment Manufacturers) all have expressed an interest in working with AGC.

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